Advantage™ CA-XCOM® Data Transport® for OpenVMS Alpha

Installation and User Guide

3.0 SP02

B00304-1E

Contents

Chapter 1: Introduction

Chapter 2: Installing CA-XCOM for OpenVMS Alpha

Chapter 3: Configuring the Network

Chapter 4: Configuring CA-XCOM for OpenVMS Alpha

Chapter 5: Customization and Command Qualifiers

Chapter 6: The Menu Interface

Chapter 7: The Command Line Interface (DCL)

Chapter 8: The Application Programming Interface (API)

Chapter 9: Remote Spooling (XQUE)

Chapter 10: Remotely Initiated Requests and User Security

Chapter 11: Operation and Control

Chapter 12: Communicating With Other Systems

Chapter 13: Messages

Glossary

Index

Chapter 1

Introduction

This guide explains how to use the CA-XCOM for OpenVMS connectivity software with Digital Equipment Corporation (DEC) VMS systems. Its scope ranges from an overview of the software to descriptions of the parameters required to execute CA-XCOM functions. This guide is for users installing, configuring, and running CA-XCOM.

Although there are extensive similarities between all of the CA-XCOM components, you should always refer to the corresponding user guide when you require specific information about a component.

CA-XCOM supports high-speed transfers of files between all supported systems. Users can send files from the local system to remote systems across an SNA or TCP/IP network and actively retrieve files from those systems. The remote system can initiate the same range of transfer capabilities as the local system. This chapter is a general introduction to the features and functions of CA-XCOM across all of its platforms.

CA-XCOM Flexibility

CA-XCOM allows data centers in various locations worldwide to interact with each other for the following purposes:

- Sharing data
- Automating data and report distribution
- Providing unattended back-up to dissimilar computers
- Controlling and auditing network activities
- Maintaining network security
- Communicating with Point-of-Sale (POS) terminals

The applications listed above are only a few examples. Under most conditions, CA-XCOM will allow file sharing between any two computers or workstations.

Multiple User Interfaces

Any computer using CA-XCOM can communicate with any other machine using CA-XCOM. Transfers can be invoked through the following methods:

- Menu interface
- Batch/command line interface
- Application Programming Interface (API)

Unified Solution

CA-XCOM is a unified solution. It supports communications over more hardware environments than any other software product on the market today. CA-XCOM also has a solid technology base. By using LU 6.2 or TCP/IP communications protocols, CA-XCOM uses state-of-the-art technology, protecting your company's investment for years to come.

CA-XCOM Applications

The key to CA-XCOM's considerable flexibility is its ability to transfer the following:

- Files
- Jobs
- Reports

When these functions are combined, a wide variety of applications are possible.

File Transfer

CA-XCOM supports high-speed file transfers between all supported processors. In some environments, you can start thousands of transfers with a single operation. Parallel sessions are possible in varying degrees throughout the product line.

You can totally automate CA-XCOM transfers. On a PC, you can be actively engaged in the use of other applications (for example, word processing) while receiving or transmitting files in the background. Comprehensive management tools allow for effective central-site control of CA-XCOM activity, including advanced problem determination features.

CA-XCOM will support transfers between any two processors in an SNA network or a TCP/IP network with one of the following methods:

- By using the MVS, VM, or VSE mainframes for store-and-forward
- Through Independent Logical Unit (ILU) support over the SNA (Systems Network Architecture) backbone
- Through use of the TCP/IP network

Type 2.1 Support

CA-XCOM supports node Type 2.1 connections to allow the direct interchange of files between DOS PCs, AS/400s, OS/2 workstations, and others. Support for Independent Logical Units (ILUs) allows CA-XCOM to deliver data in Advanced Peer to Peer Networking (APPN) and Low Entry Networking (LEN) networks. This means that PCs and minicomputers attached to the same SNA or APPN network can exchange data even if they are not directly connected.

TCP/IP Support

CA-XCOM provides support for performing transfers using TCP/IP between CA-XCOM Version 3.0 platforms that support TCP/IP. TCP/IP support is provided between MVS, AS/400, Windows, Windows 95, Windows NT, OS/2, Tandem, OpenVMS and common UNIX platforms.

Report Distribution

CA-XCOM allows MVS, VM, VSE, AS/400 and VMS users to take print output from any supported system and automatically transfer it to another system for printing. The application programs producing the reports do not require any modification to support CA-XCOM report distribution, and no operator intervention is required at either end.

RJE/NJE Replacement

Current Remote Job Entry (RJE) systems contain inherent limitations. Remote computers can submit work to the host for processing and receive print data, but the host cannot distribute processing tasks to idle processors residing on the network. A further concern for data processing managers is the requirement that users have a knowledge of Job Entry Subsystem (JES) commands to operate the system.

CA-XCOM avoids these limitations by taking advantage of the LU 6.2 and TCP/IP protocols, providing a peer-to-peer relationship between all supported systems. Any CA-XCOM system is able to send and receive batch jobs and print data from any other CA-XCOM system without formatting constraints.

For example, an AS/400 user can do the following:

- Automatically retrieve files from a number of attached PCs.
- Process the data.
- Generate a report.
- Send one copy of the report back to the source PC for printing.
- Send another to the MVS mainframe for printing on a high-speed printer.

You can easily implement CA-XCOM without any changes to your existing applications programs. Data is transferred with greater integrity and higher efficiency.

CA-XCOM Features

CA-XCOM provides peer-to-peer communications using LU 6.2 or TCP/IP over a wider range of systems than any other product. All of CA-XCOM's major features are supported across the product line.

Modular Support of Most Systems

By supporting the LU 6.2 and TCP/IP protocols, CA-XCOM can transfer data between a diversity of platforms. CA-XCOM is now available on the following systems:

IBM MVS	SCO OpenServer
IBM VM	Sun Solaris
IBM VSE	NCR 3000 (AT&T)
IBM AS/400	PC or MS-DOS
Stratus	NetWare
OpenVMS Alpha	OS/2
OpenVMS VAX	Windows
Tandem	Windows 95
IBM RS/6000	Windows NT

HP 9000	Sequent

Data Link Types

CA-XCOM supports the following data link types:

- SDLC
- COAX
- X.25
- Async, Autosync
- Local Area Network (Token Ring, Ethernet, etc.)
- All SNA data links, including channel-based links
- TCP/IP

Standard Features

The following features are standard to CA-XCOM:

- ***Simple installation*** - You can install CA-XCOM without hardware changes to your system.
- ***Initiation by either computer (any-to-any)*** - Either computer can send and retrieve data files.
- ***Low maintenance*** - There are no hooks or patches into the operating system.
- ***Choice of interfaces*** - You can choose from batch/command line, programming (on supported platforms), and menu interfaces.

Standard Functions

The following functions are offered over most of the CA-XCOM platforms:

- ***Compression*** - CA-XCOM provides a wide variety of compression algorithms to reduce the size of the data prior to transmission. In certain cases, throughput is significantly higher than the actual line speed.
- ***ASCII/EBCDIC translation*** - CA-XCOM can translate data between ASCII and EBCDIC formats as needed. Translations occur on the ASCII-based platform.
- ***Checkpoint/Restart*** -All components of CA-XCOM running Version 2 or higher support checkpoint/restart. Transfers that are stopped or fail prior to completion automatically resume, continuing from the last checkpoint.
- ***Store-and-forward*** - Users communicating through a common MVS, VM, or VSE hub can perform data transfers even if the remote (target) machine is

not communicating or turned on at the time of the initial transfer. CA-XCOM ensures that the data is sent as soon as the device is available.

- ***Remote spooling*** - CA-XCOM allows VM, MVS, VSE, AS/400 and VMS users the following reporting options:
  - CA-XCOM on all platforms can receive reports.
  - CA-XCOM on all platforms can send a file to a remote CA-XCOM partner, requesting that it be treated as a report.
  - Some CA-XCOM platforms can also take reports off the system spool and forward them to another CA-XCOM platform without operator action. This automatic report transfer facility is called Process SYSOUT on MVS and VSE, and it is called XQUE on AS/400 and VMS. VM does not allow automatic processing of spooled files. However, spooled files on VM can be manually received and redirected.

High Capacity and Performance

CA-XCOM is optimized for high-speed bulk data transfer. For instance, the CA-XCOM MVS product can allow up to 1,000 simultaneous, active file transfers from a single machine, depending upon your hardware and software configuration.

Security

CA-XCOM interfaces with the native security facility on all supported systems. When security is invoked, you are required to provide a valid user ID and password for the remote system. For example, in the MVS environment, an interface is also provided to RACF, CA-ACF2, and CA-TOP SECRET. On PC and OS/2 versions of CA-XCOM (where no native security exists), you are given the option to create an ID/password table to prevent unauthorized use of CA-XCOM.

CA-XCOM also has special security capabilities which can help data centers handle their individual needs. For example, CA-XCOM's security features allow installer specification of what can or cannot run under the privileges of someone other than the person requesting the transmission. These security features can also force user IDs from both remote computers to be the same or different. For otherwise unsatisfied security needs, CA-XCOM supplies a variety of user exits which enable user-written security packages to be fully integrated.

Management

An important feature for any enterprise-wide information product is the ability to effectively control and manage the distribution of files and work throughout

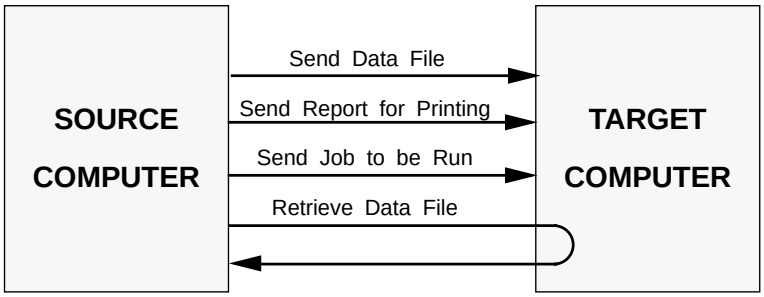
the network. CA-XCOM systems maintain a comprehensive log of all transfer activity. Utilities are provided to allow the system administrator to view the log on-line and modify the status of pending or currently-active transfers.

Details of any transfer errors are also maintained in the log, allowing rapid problem determination and resolution. In addition, messages signaling the completion of any CA-XCOM event can be directed to a user in the network.

Types of Transfers

CA-XCOM will perform the following transfers:

- ***Sending files*** - With CA-XCOM, a computer can send a data file to be stored on the remote system in a specified "remote" file.
- ***Sending reports*** - CA-XCOM can send a report to be printed on a remote system.
- ***Sending batch jobs for execution*** - CA-XCOM can send a job to be executed on a remote system.
- ***Retrieving files*** - When a computer starts the transmission request, it can also retrieve a file from a remote computer and store it in a specified local "remote" file.



Answering Remote Requests

CA-XCOM monitors the network for incoming requests. Upon detecting one, CA-XCOM determines whether it is a request to send a file inbound (from the remote system to this machine) or outbound (from this machine to another system).

- ***Files*** - The remote system can send or retrieve files. When a remote system requests CA-XCOM to send it a file, CA-XCOM tries to allocate and open the file. CA-XCOM then reads the data records and transfers them to the remote system.

- ***Jobs*** - The remote system can use CA-XCOM to submit jobs to the local system.
- ***Reports*** - The remote system can send the local system a report. CA-XCOM writes the report to an output spool file. Each supported system has unique spooling capabilities and CA-XCOM has been designed to provide a high degree of print redirection and manipulation.

Invoking CA-XCOM

CA-XCOM is both easy to use and diverse enough for the most complex applications. Data transfer can be completed through any one of three interfaces, and reports can be printed on a remote printer using the Remote Spooling feature. These are described fully in later chapters.

Menu Interface

The menu interface provides a simple, fill-in-the-blanks approach to file transfer. You are prompted for required information and can use the extensive on-line help facilities provided with each product. CA-XCOM menus always have the "look and feel" appropriate to the system on which they are running. For example, the micro-computer platforms use a graphical user interface with menus, tool bars, pop-up windows, etc., while MVS is written for the popular ISPF Dialog Manager.

Batch/Command Line Interface

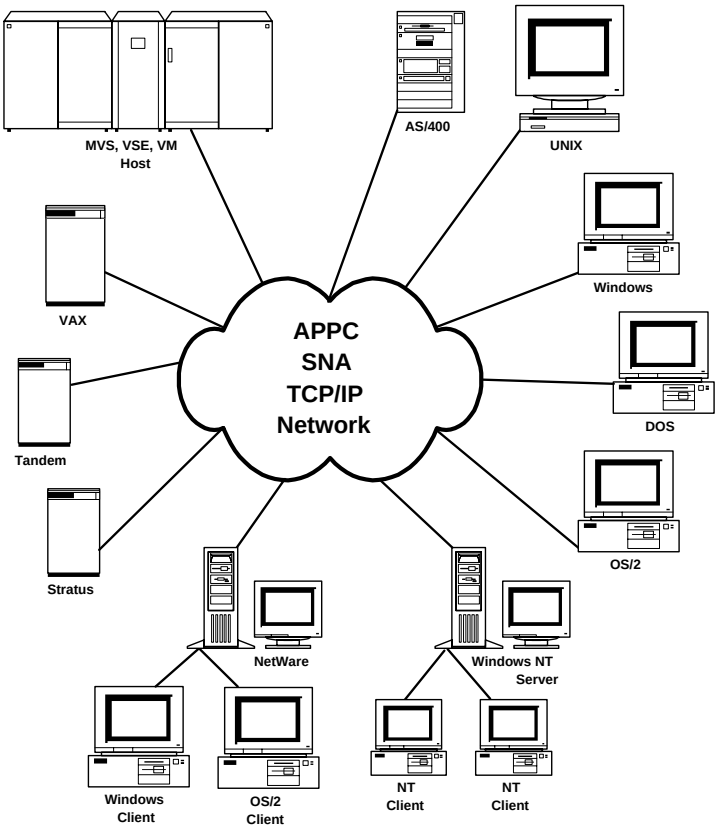
CA-XCOM can also be initiated with a batch file on your computer. For example, a transfer can be invoked through a JCL batch job on MVS and a CMS EXEC on VM. On mini and microcomputers, a transfer can be initiated via a command entered at the operating system prompt/command line or placed in a batch file to be executed with other commands.

Programming Interface

Any programming language supporting callable subroutines can call CA-XCOM. Examples of calling programs from common programming languages are given in each user manual, for supported platforms. For instance, the OS/2 and PC/DOS versions of CA-XCOM allow direct API calls to specific CA-XCOM functions in addition to allowing you to run CA-XCOM as a subprogram. CA-XCOM also provides exits on many systems which allow you to control or be informed about certain CA-XCOM events involving security and completed transfers.

CA-XCOM Connectivity

The diagram below shows how CA-XCOM can provide connectivity across very diverse environments. Any client node using CA-XCOM can send and receive files from any of the remote systems shown in this example or any other CA-XCOM component (see Modular Support of Most Systems in this chapter).



Note: TCP/IP support is provided for CA-XCOM Version 3.0 platforms as noted on page 1-4.

Network Levels in the SNA Model

An SNA network is divided into levels of physical and logical components. The logical components are interconnected by a path control network that runs over the physical components.

As data is passed up and down the SNA functional layers, each layer performs a set of control functions and adds control information to the data in the form of a header. The headers do not change the information in the data, but communicate with the next layer of SNA to ensure that the data is understood.

As the data is passed through the layers, headers that are added at one end of the network are stripped off and read by the receiving end. Thus, when the data reaches its final destination, it is back to its original form.

The End User Level

The end user level consists of transaction programs (like CA-XCOM) that communicate with other transaction programs using LUs. In a CA-XCOM transfer request, the local end user specifies the following:

- Type of transfer (send report, file, or job, or receive file)
- Name of the local file
- Name of the remote file to create, append, or replace

The request is then processed by the CA-XCOM transaction program on the local system which sends an allocate verb and header record to the remote system to establish an LU 6.2 session. When a session is established and all of the parameters are confirmed by the remote system, CA-XCOM on the local system will send the file, broken into data records, across the physical connection.

The remote CA-XCOM transaction program is then invoked by the allocate verb sent by the local system (some systems cannot be automatically invoked and must already be active to receive the allocate verb). The remote transaction program then creates or opens the requested file, receives the data records, and places them in the file. When all the records have been received, CA-XCOM on the remote system will send a trailer record to the local system stating the number of records transmitted.

The Logical Level

The logical level consists of logical units (LUs) which link the physical units (PUs) and transaction programs (TPs). Each CA-XCOM user should be assigned a unique LU name for gateway or workstation identification. Each data record

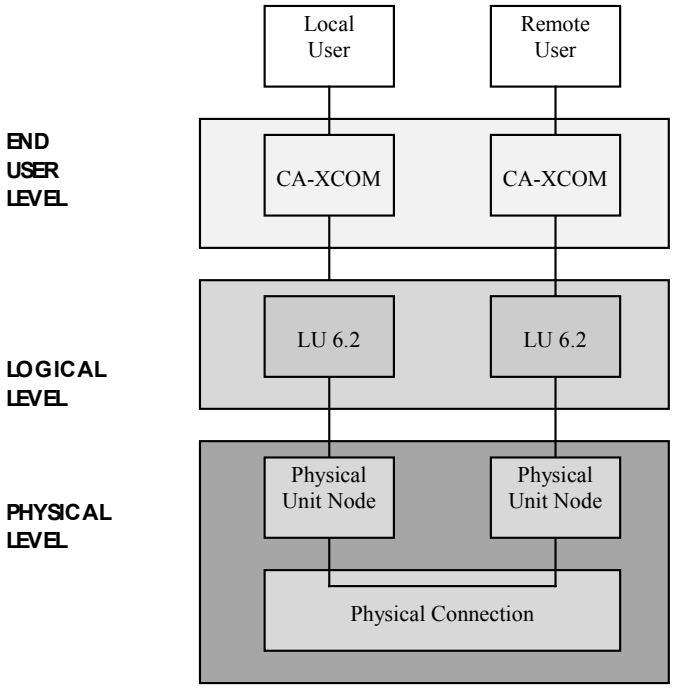
traveling across the line will contain LU 6.2 protocol information containing instructions for the remote system.

The Physical Level

The physical level consists of physical unit (PU) nodes linked by a physical connection. CA-XCOM supports transfers between physically-connected systems whether they are directly or indirectly connected. PU Type 2.1 nodes can make a direct logical link even without a direct physical connection. Transfers involving PU Type 2.0 nodes (like VMS) can be made using the store-and-forward feature of CA-XCOM.

Network Level Diagram

The diagram below shows the various network levels used to communicate with CA-XCOM:



Benefits of LU 6.2 (APPC)

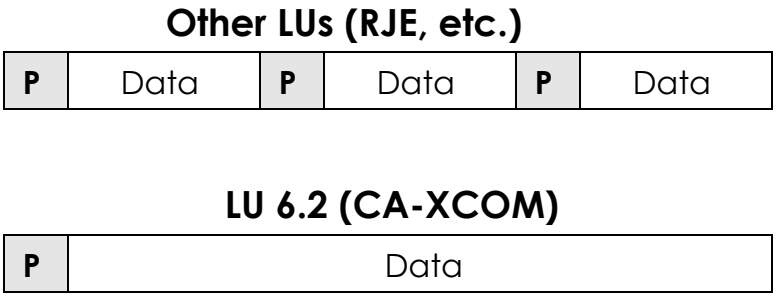
CA-XCOM is built upon the LU 6.2 protocol. LU 6.2 is also known as Advanced Program-to-Program Communications (APPC) and is IBM's most powerful enhancement to the Systems Network Architecture (SNA) suite of communications protocols.

Improved Throughput

When CA-XCOM uses the LU 6.2 protocol, it does not place hardware restrictions on the size of the data that it sends. RJE-based data transfer packages (LU Type 1) limit the size of a data frame (RU) to 80 characters, while 3270-based transfer packages (LU Type 2) often limit the size to 1,920 characters, the size of one screen. LU 6.2 allows RU sizes of up to 65,536 characters.

Each transmitted string of data is wrapped in a protocol envelope. Larger RU sizes, such as those allowed with CA-XCOM, mean less protocol overhead and a higher percentage of actual data traveling across your communication links.

P = Protocol Overhead



Support for Advanced Networking

For SNA, LU 6.2 fully exploits the PU Type 2.1 "peer" protocol. This means that LU 6.2 is the only protocol that can use advanced functions such as "Low Entry Networking" (LEN), "Advanced Peer-to-Peer Networking" (APPN), and "Independent Logical Units" (ILUs) that are changing the face of computer networking today. If you are not familiar with these topics, you will find additional information in both the Glossary and "Appendix A. About Logical Units."

APPC allows two programs running on distinctly different computers to converse with each other in real time without regard to hardware. All other protocols assume that one of the two devices communicating is a dumb terminal and impose all the limitations of a particular terminal on the partner computer. APPC and CA-XCOM recognize that distributed processing employs intelligent

processors so they can exploit the intelligence of the computers on which they are running.

CA-XCOM in the TCP/IP Network

This section provides a discussion of the architectural and conceptual framework of the TCP/IP communications protocol as it relates to the implementation of CA-XCOM as a TCP/IP application.

TCP/IP Protocol Stack

TCP/IP is a collection of specialized communications protocols and functions organized into a stack of four layers. The layers that make up the TCP/IP protocol stack are the following:

- Network layer (the lowest protocol layer)
- Internetwork layer
- Transport layer
- Application layer (the highest protocol layer)

Each layer in the TCP/IP protocol stack provides services to the layer above it and uses the services below it.

The table below lists the protocols and functions that form the content of each layer of the TCP/IP protocol stack. (The table shows only partial contents for the top and bottom layer.)

TCP/IP Protocol Layer	Protocols and Functions
Network layer	Token Ring Ethernet X.25 etc.
Internetwork layer	Internet Protocol (IP) Control Message Protocol (ICMP) Address Resolution Protocol (ARP)
Transport layer	Transmission Control Protocol (TCP) User Datagram Protocol (UDP)

Application layer	Telnet File Transfer Protocol (FTP) Simple Mail Transfer Protocol (SMTP) Domain Name System (DNS) Sockets And so on…

The next few sections provide (1) a summary of the services that each layer of the protocol stack performs in the TCP/IP network and (2) a description of the protocols that are particularly important for the functioning of CA-XCOM as a TCP/IP network node.

Network Layer

The Network layer provides a set of protocols, Token Ring, Ethernet, etc., that define how data are transported over different physical networks.

Internetwork Layer

The protocols of the Internetwork layer provide connection services for TCP/IP. The protocols in this layer connect physical networks and transport protocols.

The **Internet Protocol** (IP) of this layer integrates different physical networks into a unified logical network known as the internet and provides for the universal addressing of computers (hosts) in a TCP/IP (internet) network. IP uses a 32-bit number (IP address) which identifies both a physical network and a specific computer within that network. The IP address is the basic transport mechanism for routing data from a source computer to a destination computer.

However, IP does not ensure a reliable communication, because it does not require that the computers participating in a data exchange acknowledge the reception of the transmitted data. The reliability of communication is implemented at the next higher protocol layer.

Transport Layer

The protocols of the Transport layer allow communication between application programs.

The **Transmission Control Protocol** (TCP) of this layer establishes a connection between the sender and receiver and provides a continuous communication service with reliability of transmissions. TCP divides the data to be transmitted into smaller units (packets, datagrams) , sends them individually using IP, and reassembles them at the destination node, comparing the received data with the data that were sent. TCP is capable of determining if the two are the same. If they

are not (i.e., data were lost or damaged during transmission), TCP resends the missing data.

Application Layer

The Application layer, which is built on the services of the Transport layer, provides a number of applications that allow users to use network services (terminal-to-terminal communication, data transfer, electronic mail, etc.).

The Application layer provides an application programming interface known as Sockets for communications applications. CA-XCOM uses this component of the Application layer to transfer files to machines in a TCP/IP network.

CA-XCOM Nodes in the TCP/IP Network

Each computer in a TCP/IP network is assigned at least one unique address, which is used by the IP and other higher-level protocols.

TCP/IP Address

TCP/IP employs an addressing scheme consisting of a 32-bit long field divided into two parts. The first part of the address field contains a network address; the second field contains the address of a specific computer.

A TCP/IP address is written in dotted-decimal notation, which is obtained by first dividing the 32-bit long address into four 8-bit long fields and then converting each of the four fields into a decimal number and separating the fields with periods.

Instead of using a numeric address, a symbolic name may be used to identify a computer in a TCP/IP network. Each computer in a TCP/IP network is assigned at last one name, which is resolved to a numeric address using either a translation file or an application known as the name server (which is part of the Domain Name System function of the Application layer).

TCP/IP Port

The notions of port and port number are extensions of the TCP/IP address. Once the TCP/IP address has been used to deliver data to the desired computer in the network, the port number is used to identify the process for which the data are intended. By using ports and port numbers one computer can provide more than one service. CA-XCOM uses a predefined port number but it can be changed if it interferes with existing application services.

Successful Send File Transfer Scenario

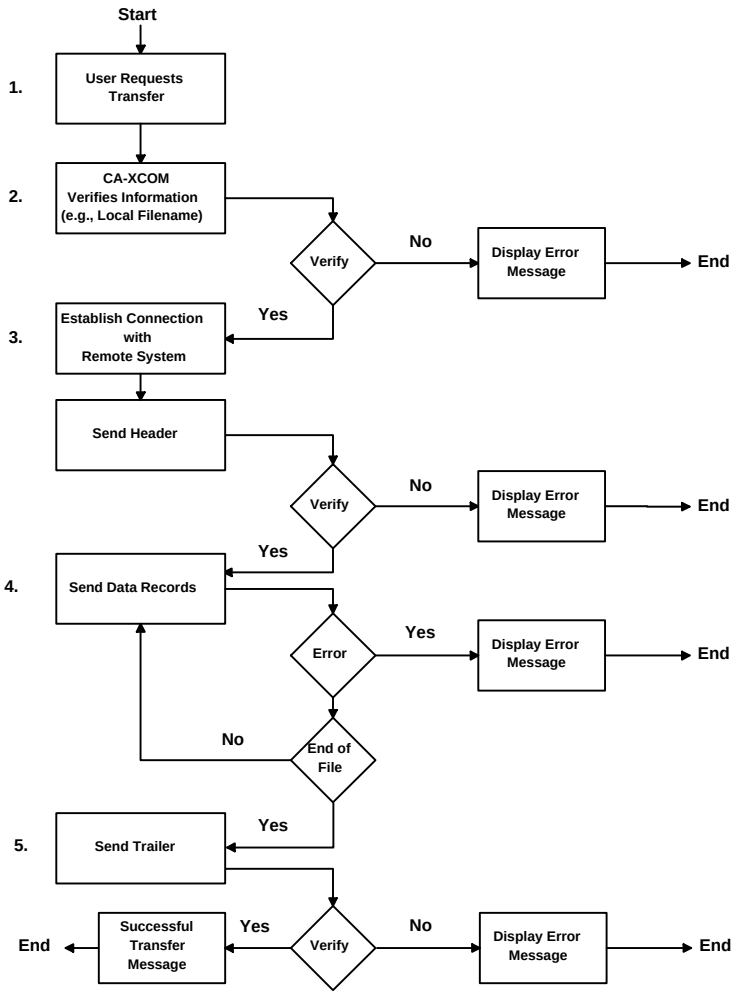
This section contains a flow chart to illustrate a typical successful send file scenario. Compare the steps below with the Send File Flowchart to follow a typical successful send file transfer.

1. The local user invokes CA-XCOM and requests a transfer.
2. CA-XCOM verifies the information contained in the request.

   Example: CA-XCOM checks to see if the local file exists on the local system.
3. CA-XCOM establishes a connection with the remote system and sends along the header record to the remote system. The header record contains transfer information regarding the request, for example, filenames and compression. The local system then waits for confirmation of the header record information.
4. Once the contents of the header record are verified, CA-XCOM begins sending data records to the remote system. CA-XCOM sends each data record, checking to see if any sending errors occur. If no errors are found, the local system checks for an end-of-file marker denoting the last record of the file. If no end-of-file marker is found, another data record is sent.
5. If an end-of-file marker is found, the local system sends a trailer record, which indicates the number of data records sent. The local system then awaits verification from the remote system that the number of records received is equal to the number of records sent. If the number of records matches, a successful send file message is sent to the user on the local system and the conversation ends. If notification was specified, CA-XCOM on the remote system notifies the user of a successful transfer.

Send File Flowchart

The following flowchart illustrates a normal CA-XCOM send file request:



Conventions

The following is a list of standard conventions used in this manual.

Variable Input

Variable input is generally shown in lowercase letters and angle brackets, in the exact format that you're supposed to use. (example: `<luname>`). Variable input should not contain spaces. When a repeated letter such as nnnnnn is used, the number of letters represents the number of characters to be entered.

Ellipses

An ellipsis (...) is used to show that there are additional items not shown.

Programs, Filenames, and Parameters

Programs, filenames, and parameters are displayed in uppercase letters to distinguish them from the surrounding text (for example, the EXCOMACP.COM file). This does not mean that they must be in uppercase when you use them in commands.

Commands and System Prompts

Command statements are displayed in uppercase letters in a different typeface to distinguish them from the surrounding text. For example:

```
SET <parameter_name>=<parameter_value>
```

Longer command statements are displayed in a table for easy reference.

Note: You must be aware of the case-sensitivity of the remote system when entering commands, programs, and parameters.

Technical Support

For further technical assistance with this product, please contact Computer Associates Technical Support at http://esupport.ca.com. Technical support is available 24 hours a day, seven days a week.

Chapter 2

Installing CA-XCOM for OpenVMS Alpha

The installation and configuration procedure for CA-XCOM consists of three parts:

- Installing the CA-XCOM software
- Configuring the SNA resources for DECnet SNA
- Configuring CA-XCOM to handle your particular transfer requirements
- Configuring TCP/IP

This chapter discusses the first step, installing the CA-XCOM software. Before starting the installation, you should review the information in this chapter and in the release notes, and work with your system administrator to complete the Installation Checklist.

Requirements for Using CA-XCOM

To use CA-XCOM, you need a physical attachment to a network and a VMS system configured for the hardware at your site. Other system requirements are described below.

Hardware and Software (for DECnet SNA)

Make sure your system has the following:

- All OpenVMS installations must have the DECnet SNA VMS APPC/LU 6.2 Programming Interface Version 2.2 or higher.
- Networked VMSes (including Micro VMSes using an ST, CT SNA Gateway, or Peer Server) must use the DECnet SNA software in addition to APPC.
- Standalone VMS systems must use a synchronous communications board with OpenVMS SNA software.

Hardware and Software for TCP/IP

- DEC TCP/IP Services for OpenVMS (UCX).
- A network adapter capable of handling TCP/IP communications.

Disk Space Requirements

The CA-XCOM program modules use a minimum of 2500 blocks of disk space.

Distribution Media CA-XCOM is distributed on a 4-mm DAT tape.

How Operating System Upgrades Affect CA-XCOM

If you upgrade the OpenVMS operating system, the following files may be modified or updated:

- SYS$SHARE:DCLTABLES.EXE
- SYS$HELP:HELPLIB.HLB

If you installed the CA-XCOM command as a system-wide command in DCLTABLES.EXE, and the CA-XCOM help topic into the system-wide help library HELPLIB.HLB, then replacing these files during a VMS upgrade deletes the respective CA-XCOM entries. The next time you enter the CA-XCOM command, a message indicates that the command does not exist. If you enter CA-XCOM as a help topic, a message indicates that there is no documentation on "CA-XCOM."

To restore information deleted during an operating system upgrade, do the following:

To reinstall...	Use this Command
XCOM.CLD in DCLTABLES.EXE	SET COMMAND
The help information in HELPLIB.HLB	LIBRARY/HELP/REPLACE

For more information on installing CA-XCOM information in system libraries, see the topic The CA-XCOM Files, later in this chapter.

Before You Begin

Before installing the CA-XCOM for OpenVMS Alpha software, make sure you read the information on this page and complete the installation checklist.

If You Are Installing CA-XCOM for OpenVMS Alpha for the First Time

If you are installing CA-XCOM for the first time, the installation procedure consists of three steps:

1. Load the software. Instructions for using the VMSINSTAL procedure begin on the next page.

2. Configure the network's basic SNA services. If you are using DECnet SNA, you can use the auto-install feature XCOM_INSTALL_PART_2 to configure the network's basic SNA services. If you don't want to use auto-install, you can enter the SNA configuration manually as described as described in the section Installing CA-XCOM Manually.

3. Configuring DEC TCP/IP Services.

If You Are Installing a CA-XCOM for OpenVMS Alpha Upgrade

If CA-XCOM is already installed and you are upgrading to a newer version, follow the VMSINSTAL procedure that begins on the next page.

Note: Do not use the auto-install procedure for upgrades. To change the SNA configuration, enter the information manually as described in the section Installing CA-XCOM Manually.

The CA-XCOM for OpenVMS Alpha Installation Checklist

Before starting the installation procedure, read and complete the checklist below.

Pre-installation Checklist (All Users)	Comment/Sample Response
■ Ensure availability of disk space.	Requires 2500 blocks of disk space
■ Pick directory name for CA-XCOM (use default if possible).	The default directory is SYS$SYSDEVICE:[XCOMV3]
■ Decide whether to install help.modules in system-wide HELP library	YES is the recommended value
■ Decide whether XCOM is to be a system-wide command.	YES is the recommended value

Installing the CA-XCOM for OpenVMS Alpha Software

To load the CA-XCOM software on an OpenVMS AXP system, use the VMSINSTAL procedure. In addition to loading the software, VMSINSTAL installs CA-XCOM as a system-wide command and inserts CA-XCOM help text in the system help files.

It is possible to use VMSINSTAL to install CA-XCOM while DECnet SNA and other processes are active. However, if an active process is using a previously installed version of CA-XCOM, that process might interfere with the CA-XCOM installation and should be discontinued.

For more information on VMSINSTAL, see your VMS documentation.

Tip: To abort the installation procedure, press CTRL + Y. This deletes all files created during the installation procedure and displays the DCL prompt. To retry the installation, run VMSINSTAL again.

Accessing the System

Before starting the VMSINSTAL procedure, log on to a fully privileged system manager's account on the OpenVMS computer where CA-XCOM is to be installed. Confirm the following:

- The distribution volume is mounted on the device.
- The device is software enabled or set online.

Then, follow the installation procedure appropriate to your system to install the software.

Installing CA-XCOM for OpenVMS Alpha Using VMSINSTAL

The instructions in this section describe how to use VMSINSTAL to install CA-XCOM software from a 4-mm DAT tape. Your installation sequence may differ slightly from the steps below.

1. At the $ prompt, type the following command and press Enter:

   ```
   @SYS$UPDATE:VMSINSTAL XCOM MUA0:
   ```

   Result: The system asks whether you are satisfied with your system disk backup.

2. If you are satisfied with the backup, press Enter.

   Result: The system prompts you to mount the CA-XCOM OpenVMS tape.

3. Mount the tape and press Enter.

   Result: The system asks whether you are ready to continue the installation.

4. To continue, type **Y** and press Enter.

   Result: The system displays the name of the tape drive where the disk is mounted, begins the installation, and displays the default directory where the files will be installed.

5. To install CA-XCOM in the default directory, press Enter, or type the disk and directory name where you want to install CA-XCOM and press Enter.

   Result: A message confirms that the directory was created and asks whether you want to purge the files that were replaced during the upgrade.

6. To delete the old CA-XCOM files, press Enter. Or, to save these files, type N and press Enter.

   Note: If you are installing CA-XCOM for the first time, press Enter.

   Result: A prompt asks whether you want to install the online help text.

7. To install the online help in the system-wide help library SYS$HELP:HELPLIB.HLB, press Enter.

If you don't want to install online help, type N and press Enter.

   Result: A prompt asks whether you want a system-wide CA-XCOM DCL command.

8. To add the CA-XCOM DCL command to SYS$LIBRARY:DCLTABLES.EXE, press Enter.

If you don't want to add this command, type N and press Enter.

   Result: The installation continues until the following prompt is displayed:

```
Installation of CA-XCOM V3.0 completed at 23:53

VMSINSTAL procedure done at 23:53
```

Note: If you selected YES for online help text and the system-wide CA-XCOM command, the SYS$HELP:HELPLIB.HLB and SYS$LIBRARY:DCLTABLES.EXE files have been updated to include this information. After you have configured your network to work with CA-XCOM as described in the next section, you must reboot your system to allow the new settings to take effect.

Installing CA-XCOM for OpenVMS Alpha From a CD

CA-XCOM is supplied on an ISO 9660 format CD. To install from a CD, copy file XCOM030.A to a temporary directory. Alter the header with the following command:

```
$ SET FILE/ATTRIB=(ORG:SEQ,RFM:FIX,LRL:32256,MRS:32256)  XCOM030.A
```

Run the install specifying the location of file XCOM030.A. When the installation is complete, delete the xcom030.a file.

Example

```
$ MOUNT DKA400 /MEDIA=CDROM /OVERRIDE=ID
$ COPY DKA400:[000000]XCOM030.A []
$ DISMOUNT DKA400
$ SET FILE/ATTRIB=(LRL:32256)  XCOM030.A
$ SYS$UPDATE:VMSINSTAL XCOM SYS$SYSDEVICE:[USERA]
```

Sample Installation Log

```
Welcome to OpenVMS AXP (TM) Operating System, Version V6.1

Username: SYSTEM

Password:

Welcome to OpenVMS AXP (TM) Operating System, Version V6.1 on node YEW

Last interactive login on Monday, 13-FEB-1998 16:01:03.37

Last non-interactive login on Friday, 10-FEB-1998 14:08:14.45

OpenVMS AXP Software Product Installation Procedure V6.1

It is 13-FEB-1995 at 16:36.

Enter a question mark (?) at any time for help.

%VMSINSTAL-W-ACTIVE, The following processes are still active:

  DECW$TE_0182

  _FTA38:

  DECW$SERVER_0

  _FTA42:

* Do you want to continue anyway [NO]? yes

* Are you satisfied with the backup of your system disk [YES]?

Please mount the first volume of the set on  MKA0:.

* Are you ready? yes

%MOUNT-I-MOUNTED, XCOM02 mounted on _YEW$MKA0:

The following products will be processed:

XCOM V3.0

             Beginning installation of XCOM T3.0 at 16:36

%VMSINSTAL-I-RESTORE, Restoring product save set A ...

%VMSINSTAL-I-RELMOVED, Product's release notes have been moved to SYS$HELP.
```

```
   VMS CA-XCOM V3.3-0 Installation proceeding...

This procedure will create a directory for all XCOM files.|.  The default directory
used will be YEW$DKA200:[XCOMV3].  You may Enter an alternative. If the directory
does not  exist it will be created.

* XCOM directory [YEW$DKA200:[XCOMV3]]: YEW$DKA200:[BETA]

%VMSINSTAL-I-SYSDIR, This product creates system disk directory  YEW$DKA200:[BETA].

%CREATE-I-EXISTS, YEW$DKA200:[BETA] already exists

* Do you want to purge files replaced by this installation [YES]?

The 'XCOM' online help text can be added to the system wide help   library
'SYS$HELP:HELPLIB.HLB'.  After this installation it can be viewed by just typing
"help xcom".  If the 'XCOM' help text is not added to the system-wide help library
then the DCL command:

"$ HELP/LIBRARY=XCOM$IMAGE:XCOMHELP"

must be executed to view the online help text

* Provide system-wide XCOM help? [Y]?

The 'XCOM' command is usually inserted into the DCL command tables
'SYS$LIBRARY:DCLTABLES.EXE". After the system is rebooted 'XCOM' will become
another DCL command. If the 'XCOM'|command is not inserted into the tables then the
DCL command:

"$ SET COMMAND XCOM$IMAGE:XCOM"

 must be executed prior to using the 'XCOM' command.

* Provide system-wide XCOM DCL command? [Y]?

%XCOM-I-DONEASK, No further questions will be asked.

%XCOM-I-HLPLIBMOD, XCOM help topic added to SYS$HELP:HELPLIB.HLB%XCOM-I-DCLTBLMOD,
XCOM command added to DCLTABLES.EXE

%XCOM-I-REBOOT, Please reboot your system after the installation procedure is
finished!

%XCOM-I-XCOMSTRTUP, Building XCOM$STARTUP.COM.

1. This installation of CA-XCOM V3.0-0 is about to complete.

Please be sure to read the release notes in:

SYS$HELP:XCOMV30.RELEASE_NOTES


2. To start using this new release execute the XCOM startup file, located in the
XCOM installation directory:

XCOM$STARTUP.COM

You may want to add a call to this command procedure in your
SYS$MANAGER:SYSTARTUP_VMS.COM so that XCOM is automatically setup for usage
whenever your system is rebooted.


3. The present XCOM V3.0 configurator is NOT compatible with the V1.5 configuration
file.  An empty V3.0 configuration file is provided by this installation procedure.
You can use the configurator to add XCOM node definitions to this file.

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...

            Installation of XCOM T3.0 completed at 16:37

Adding history entry in VMI$ROOT:[SYSUPD]VMSINSTAL.HISTORY

Creating installation data file: VMI$ROOT:[SYSUPD]XCOM024.VMI_DATA

            VMSINSTAL procedure done at 16:38
```

```
$ lo
SYSTEM       logged out at 13-FEB-1995 16:38:17.52
```

Post-Installation Cleanup

If you are using the VMSINSTAL procedure to upgrade an existing version of CA-XCOM, the following files are created during the update to supersede the ones from the previous version:

- SYS$COMMON:[SYSLIB]XCOMAPI.EXE
- SYS$COMMON:[SYSLIB]XCOMTRATBL.EXE
- SYS$COMMON:[SYSMSG]XCOMMSG.EXE
- SYS$COMMON:[SYSEXE]XCOMPRTSMB.EXE
- SYS$COMMON:[SYSEXE]XCOMCKPSVR.EXE

To ensure that old files are no longer in the system, check the root directory for the following files and delete any that you find:

- SYS$SYSROOT:[SYSLIB]XCOMAPI.EXE
- SYS$SYSROOT:[SYSLIB]XCOMTRATBL.EXE
- SYS$SYSROOT:[SYSMSG]XCOMMSG.EXE
- SYS$SYSROOT:[SYSEXE]XCOMPRTSMB.EXE
- SYS$SYSROOT:[SYSEXE]XCOMCKPSVR.EXE

Adding CA-XCOM for Open VMS Alpha to SystemStartup

When you install the CA-XCOM software, a file called XCOM$STARTUP is created in the CA-XCOM directory. This file defines the logical names XCOM$IMAGE and XCOM_CONFIG_FILE.

- The XCOM$IMAGE file specifies which directory contains the CA-XCOM executable images.
- The XCOM_CONFIG_FILE file defines CA-XCOM 's default configuration file XCOMV30.CFG.

Both of these logical names must be defined to issue local CA-XCOM requests.

The XCOM$STARTUP file also creates the XCOM$RECOVER queue and starts the print queues used by CA-XCOM. EXCOMACP.COM is executed by XCOM$STARTUP to start the process(es) for remotely initiated transfers.

Configuring SNA Network Resources Using Auto-Install

Note: The Auto-Install feature is valid for SNA configurations only.

If you are installing CA-XCOM for the first time, you can use the auto-install procedure described in this section to configure your SNA resources to run CA-XCOM. If you don't want to use the auto-install feature, or if you are upgrading an existing CA-XCOM configuration, you can configure the network manually as described later in this chapter.

The checklist below identifies the information you will need to configure your SNA resources:

Site-Dependent Checklist (First Time User)		Sample Response
❑	DECnet name of SNA Gateway (if used)	0 (No Gateway)
❑	Circuit name connecting to IBM mainframe (found in SNA configuration file)	SNA-0
❑	Session number(s) used by IBM mainframe to initiate requests as defined in VTAM (local addr)	5,7
❑	Session number(s) used by VMS to initiate requests as defined in VTAM (local addr)	6,8
❑	XCOM LOGMODE name as specified in VTAM Logon Mode Table for the remote system	XCOMMODE
❑	APPLID defined for the remote system as specified in VTAM	XCOMAPPL
❑	Symbolic name used in reference to the remote IBM system	BIGBLU
❑	Default local username to be used by remote users of CA-XCOM (can be provided via DECnet proxy accounts and/or by the chosen default account name and password)	

About the Auto-Install Feature

The automatic installation procedure for configuring your network is called XCOM_INSTALL_PART_2.COM. This procedure is intended for new CA-XCOM installations. It is not necessary for upgrades.

XCOM_INSTALL_PART_2.COM does the following:

- Creates a file SYS$MANAGER:XCOMDEFINE.TXT that will contain the ACCESS NAMES that have been defined for locally and remotely initiated requests. You must edit the text in this file and then add it to the SNA configuration file located on either the load node or the OpenVMS itself.
- Runs XCOM$IMAGE:XCOMCFG to add the SYSTEM NAMES and their configuration settings for the remote systems with which you will communicate for locally initiated transfers.
- Edits the XCOM$IMAGE:EXCOMACP.COM file to add entries for the ACCESS NAMES you will use for receiving remotely initiated requests.

Note: Before you begin the auto-install procedure, make sure that the XCOM$IMAGE logical name defines the CA-XCOM installation directory.

Using Auto-Install

To run auto-install in your SNA configuration, follow the steps below. Because of hardware and software variations at your site, your installation sequence may differ slightly. This installation sequence is for loading a gateway from the local node.

1. At the DCL $ prompt, type the following :

   ```
   @xcom$image:xcom_install_part_2
   ```

   Result: The system displays a description of the auto-install procedure.

2. Press Enter to continue.

   Result: The system displays the questions you will need to answer to complete the installation. Make sure you have this information available on your configuration worksheet before continuing the installation.

3. After reading the questions, press Enter to continue.

   Result: The system asks for the gateway name.

4. To accept the default name, press Enter, or type the gateway node name specified on your worksheet and press Enter.

Result: The system asks you to verify the name.

5. To verify the gateway name, press Enter.

   Result: The system asks which circuit connects your gateway to IBM.

6. To accept the default circuit, press Enter, or type another circuit and press Enter.

   Result: The system asks you to verify the circuit.

7. To verify the circuit value, press Enter.

   Result: The system asks which session number IBM will use to initiate requests to the OpenVMS.

8. Type the session number (from your configuration worksheet) and press Enter.

   Result: The system asks you to verify the session number.

9. To verify the session number, press Enter.

   Result: The system asks which session number the OpenVMS will use to initiate a CA-XCOM request.

10. Type a session number and press Enter. Repeat this step to enter as many session numbers as you want to use.

    After entering all the numbers, press Enter to continue to the next step.

    Result: The system asks you to verify the session number(s).

11. To verify the session number(s), press Enter.

    Result: The system asks for the logon mode name for the sessions you just defined.

12. Press Enter to accept the default mode name, or type another mode name and press Enter.

    Result: The system asks you to verify the mode name.

13. To verify the mode name, press Enter.

    Result: The system asks for the application name for the sessions you defined.

14. Press Enter to accept the default application name, or type another name and press Enter.

    Result: The system asks you to verify the application name.

15. To verify the application name, press Enter.

    Result: The system asks which name you want to use for the IBM mainframe.

16. Press Enter to accept the default system name, or type another name (up to 8 alphanumeric characters) and press Enter.

    Result: The system asks you to verify the system name.

17. To verify the system name, press Enter.

    Result: The system asks if you want to continue.

18. To continue with the installation procedure, press Enter.

    Result: The system completes the installation and displays the network configuration that you entered, which may look something like this:

```
CA-XCOM is configured as follows:

Remote system BIGBLU gateway: VMS/SNA
   Gateway access name: XCOMLOC
   Line speed: 0 bits per second
   Connection type: directly connected
   System Type: IBM MAINFRAME, E.G. MVS MAINFRAME
   Character set: EBCDIC
   Description: ADJACENT NODE.

Finished!
```

19. Press Enter to continue.

    Result: The system displays a series of configuration reminders, including instructions to reboot the system before using CA-XCOM.

20. Instead of rebooting the system, issue the following command:

```
@<install-dir>:xcom$startup
```

When the $ prompt appears, you are ready to continue to the next step, defining the system-wide DCL command.

Installing CA-XCOM for OpenVMS Alpha Manually

Note: For DECnet SNA, you must use the manual installation procedure.

You must add ACCESS NAMES for the LUs you want to use for CA-XCOM. Different LUs must be used for locally and remotely initiated requests. For the ACCESS NAMES that you add, the SESSION or LU LIST must be the LOCADDR defined in VTAM, the APPLID must be the name of the mainframe XCOM APPLID, and LOGON must be the name of the mode defined in VTAM.

If you are already familiar with the CA-XCOM installation procedure, you can configure the SNA services manually as described below:

1. Run XCOM$IMAGE:XCOMCFG to add the REMOTE SYSTEM NAME associated with the SNA ACCESS NAME or TCP/IP information for the LUs that you have designated for locally initiated transfers.

For more information on running XCOM$IMAGE:XCOMCFG, see the chapter "Configuring CA-XCOM".

2. For SNA configurations, edit the XCOM$IMAGE:EXCOMACP.COM file to add the ACCESS NAMES you will use for receiving remote requests. For more information, see the chapter "Configuring CA-XCOM".

To configure DEC TCP/IP Services, execute command procedure SETUP_XCOM_TCPIP.COM.

3. Configure the DECnet SNA by editing your SNA configuration file. For a sample SNA configuration, see the chapter "Configuring CA-XCOM". The filename and command syntax will vary, depending on the version and type of DEC SNA you are running.

4. To start CA-XCOM automatically when you boot the system, include the DCL command

```
@<install-dir>:XCOM$STARTUP
```

in the system startup command procedure

```
SYS$MANAGER:SYSTARTUP_VMS.COM
```

5. Create and start the checkpoint queue as described in the "Options and Controls" chapter.

6. Create and start CA-XCOM print queues as described in the "Remote Spooling (XQUE)" chapter.

Defining the System-wide "CA-XCOM" DCL Command

If desired, you can insert the CA-XCOM command in the DCL command tables to define it as a system-wide command.

At the DCL prompt, type the following:

```
$ SET COMMAND/TABLE=SYS$LIBRARY:DCLTABLES.EXE/OUTPUT= SYS$LIBRARY:- _$
DCLTABLES.EXE XCOM$IMAGE:XCOM.CLD
```

where the initial "$" and "_$" are DCL prompts.

This command definition permanently defines the CA-XCOM command in the DCL tables. To ensure that the new command takes effect immediately for all users on the system, you should reboot the VMS system. If the system is not rebooted, users cannot access the command until they log out and log back into the system.

Inserting "CA-XCOM"Help Text in the System-wide Help Library

If desired, you can update the system-wide help library to include the CA-XCOM help text.

At the DCL prompt, type the following:

```
$ LIBRARY/HELP/REPLACE SYS$HELP:HELPLIB.HLB XCOM$IMAGE: XCOMHELP.HLP
```

where the initial "$" is the DCL prompt.

The CA-XCOM for OpenVMS Alpha Files

EXCOMACP.CLD	Command Language Definition file for the program EXCOMACP.EXE (see below).
EXCOMACP.EXE	Program used to create the XCOMACP.
EXCOMACP.COM	Command procedure used to start the EXCOMACP image.
SETUP_XCOM_TCPIP.COM	Command procedure used to configure DEC TCP/IP Services.
STOP_XCOMACP.COM	Command procedure to stop the XCOMACP.
XCOM.CLD	Command Language Definition file for all user CA-XCOM commands.
XCOMV30.FDL	File Definition Language file for the CA-XCOM Version 3.0.0 Configuration File.
XCOMnn.RELEASE_NOTES	Contains release notes for this version of CA-XCOM. “nn” is the release number.

XCOM62F.EXE	Handles user commands for locally initiated CA-XCOM transfers from the DCL /SENDFILE command procedure.
XCOM62G.EXE	Handles user commands for locally initiated CA-XCOM transfers from the DCL /GETFILE command procedure.
XCOM62J.EXE	Handles user commands for locally initiated CA-XCOM transfers from the DCL /SUBMIT command procedure.
XCOM62M.EXE	Handles user commands for locally initiated CA-XCOM transfers from the Menu Interface.
XCOM62R.EXE	Handles user commands for locally initiated CA-XCOM transfers from the DCL /PRINT command procedure.
XCOMACP.EXE	Contains the image which handles all remotely initiated requests.
XCOMCFG.EXE	Contains a utility program used to maintain the CA-XCOM Configuration File.
XCOMIP.CLD	Command Language Definition file for the program XCOMIP.EXE.
XCOMIP.COM	Command procedure used to start the XCOMIP image.
XCOMIP.EXE	Program that handles TCP/IP transfers initiated by another system (CA-XCOM partner).
XCOMPRTSMB.EXE	Contains the CA-XCOM print symbiont (XQUE).
XCOM_HELP*.*	Contains the CA-XCOM help libraries and modules.

Chapter

3

Configuring the Network

This chapter covers the second part of the installation and configuration process, configuring the network's resources to run CA-XCOM.

CA-XCOM uses DIGITAL TCP/IP Services for TCP/IP transfers.

CA-XCOM uses DEC's APPC software to provide LU 6.2 services. This chapter contains step-by-step instructions for configuring the appropriate APPC to run CA-XCOM.

Before configuring the SNA resources, consult a systems programmer or network administrator to obtain the configuration information for your network.

Defining DECnet SNA Connections

The DECnet SNA configuration file defines the SNA connections.

The worksheet shown next lists the information you will need to configure the SNA connection. Use it as a guide in the configuration process.

Required Information	Sample Response	User Response
Circuit name used by the SNA product	SNA-0 or LC-0	
Session number used by the IBM mainframe to initiate requests to VMS (the LOCADDR value in the IBM NCP generation)	1	
Range of session numbers used by OpenVMS to initiate requests to the IBM mainframe	2,4	
Mode name (the LOGMODE value in the IBM NCP generation)	XCOMMODE	
VTAM Application name	XCOMAPPL	
DECnet name of SNA/GATEWAY (if used)		
Access name(s) (also required by the CA-XCOM Configurator, in reference to the session number(s) previously chosen)	XCOMLOC	

Configuring DECnet SNA for CA-XCOM for OpenVMS Alpha Transfers

As part of the CA-XCOM configuration procedure, you must add access names (LUs) for both local and remotely initiated transfers and insert these names into the SNA Configuration file.

If you installed CA-XCOM using the auto-install procedure described in Chapter 2, the LUs have been generated for you already. All you have to do is insert them into the SNA configuration file.

If you did not use auto-install and are configuring the SNA manually, use the DECnet SNA or VMS/SNA SNANCP utility and the SET ACCESS command to define LUs for locally and remotely initiated transfers.

```
$++++++++ XCOM ACCESS NAME DEFINITIONS ++++++++++++++++++++++++++++++++++++
SET ACCESS NAME XCOMRMT-
           LU LIST 1 -
           APPLICATION XCOMGA -
           LOGON XCOMMODE -
           PU SNA-0

!
SET ACCESS NAME XCOMLOC -
           LU LIST 2 -
           APPLICATION XCOMGA -
           LOGON XCOMMODE -
           PU SNA-0
```

Figure 3-1: CA-XCOM Set Access Definitions

Figure 3-1 shows the CA-XCOM LU definitions that the automatic installation procedure generates.

CA-XCOM ACCESS NAME Definitions

ACCESS NAME

Enter a name (up to eight alphanumeric characters) you want to assign to an LU or a range of LUs.

For an LU assigned to local transfers, the name must match the access name in the CA-XCOM Configuration file XCOMV30.CFG. For an LU assigned to remotely initiated transfers, the access name must match the access name entered in the EXCOMACP.COM command file. This file starts an XCOMACP process for each LU that handles remotely initiated transfers.

The default access name for the LU assigned to local transfers is XCOMLOC. The default access name for the LU assigned to remote transfers is XCOMRMT.

LU LIST

Enter the session number(s) the IBM mainframe uses to initiate requests to the OpenVMS (the LOCADDR value in the IBM NCP generation).

If the access name indicates that an LU is assigned to remotely initiated transfers (XCOMRMT in the above example), then you have to specify only a single LU. If the access name indicates that an LU is assigned to local transfers (XCOMLOC in the above example), enter the session number(s) that the OpenVMS uses to initiate requests to the IBM mainframe.

PU SNA

Enter the PU that corresponds to either the Gateway node name or to the VMS/SNA PU identification that will match the appropriate entry in the XCOMCFG file.

APPLICATION

Enter the name (up to 8 characters) of the CA-XCOM mainframe application that you want to access.

Example

```
XCOMAPPLID
```

LOGON

Enter XCOM's logon mode table entry (this corresponds to the LOGMOD value in the IBM NCP generation). The default is XCOMMODE.

The SNA Configuration File

Below is an SNA configuration file, with the access names defined for CA-XCOM transfers inserted at the end of the file.

VMS/SNA Version 2.X uses the following startup configuration file:
`SYS$COMMON:[SNAVMS$]SNAVMS$CFG_node-name.COM.`

DECnet SNA Version 2.X uses the following startup configuration file:
`SYS$COMMON:[SNA$CSV]SNAGATEWAY_gateway-node-name_SNA.COM.`

```
$! VMS/SNA configuration file.  If the first character on a line is an
$! Exclamation point, the line is regarded as a comment.  If the last
$! character on a command line is a hyphen, the command continues on
$! The next line.
$!
$RUN SYS$SYSTEM:SNANCP
!
!Set the state of the lines and circuits off.
!
SET KNOWN CIRCUITS STATE OFF
SET KNOWN LINES STATE OFF
!
Clear all lines, circuits, and PUs.
!
CLEAR KNOWN PUs ALL
CLEAR KNOWN CIRCUITS ALL
CLEAR KNOWN LINES ALL

Set the communications line parameters:

! SET LINE line-id                                {DPV|DSV|DMB|DST|DSB|DSH}
!             BUFFER [SIZE] number        {frame size, in decimal between 265-1482}
!             DUPLEX keyword                      {HALF|FULL}
!             LOGGING [ENABLED]keyword    {ALL|INFORMATIONAL|WARNING|ERROR|FATAL}
!             NOTE [“]string[“]           {0 to 30 characters}
!             PROTOCOL keyword            {SDLC TRIBUTARY|SDLC POINT}
!             RECEIVE [BUFFERS] number    {in decimal between 16-512}
!             SIGNALLING keyword          {NORMAL|NRZI}
 STATE keyword                          {ON|OFF}
SET LINE DPV-0-
              BUFFER SIZW 521-
              DUPLEX HALF-
              LOGGING ENABLED ALL-
              NOTE UHAO:-
              PROTOCOL SDLC POINT-
              RECEIVE BUFFERS 32-
              SIGNALLING NORMAL-
              STATE OFF
!
!  Set the SDLC circuit parameters
!  SET CIRCUIT CIRCUIT-ID                          {SDLC-N}
```

```
!             COUNTER [TIMER] value       (0 TO 65535 seconds)
!             DUPLEX keyword                      {HALF|FULL}
!             IDLE [TIMER] value          (15 to 1800 seconds)
!             LINE line-id                        {from SET LINE command}
!             LOGGING [ENABLED} keyword   {ALL|INFORMATIONAL|WARNING|ERROR}
!             NOTE [“]string[“]           (0 to 30 characters)
!             STATE keyword                       {ON|OFF}
!             STATION ADDRESS address (2 digit hex number)
!             STATION ID value            (8 digit hex XID value)
!
SET CIRCUIT SDLC-0 -
        COUNTER TIMER 0 -
        DUPLEX HALF -
        IDLE TIMER 30 -
        LINE DPV-0 -
        LOGGING ENABLED ALL -
        STATION ADDRESS C1 -
        STATION ID 05000FFF -
        STATE OFF
!
!  Set the Physical Unit (PU) parameters.
!
!  SET PU pu-id                                {SNA-n}
!             CIRCUIT circuit-id          {SDLC-n|QLLC-n}
!             LOGGING [ENABLED] keyword   {ALL|INFORMATIONAL|WARNING|ERROR}
!             LU [LIST] values            (numbers of ranges, separated by commas)
!             SEGMENT [SIZE] value        (segment size, in decimal)
!
SET PU SNA-0 -
        CIRCUIT SDLC-0 -
        LOGGINH ENABLED ALL -
        LU LIST 1-64 -
        SEGMENT SIZE 521
!
SET KNOWN LINES STATE ON
SET KNOWN CIRCUITS STATE ON
!
!  Set access names and their parameters:
!
!  SET ACCESS [NAME] name                      (1 to 16 alphanumeric characters)
!             PU physical_unit             {SNA-n}
!             LU [LIST] address(es)       (numbers or ranges, separated by commas)

$! VMS/SNA configuration file.  If the first character on a line is an
$! exclamation point, the line is regarded as a comment.  If the last
$! character on a command line is a hyphen, the command continues on
$! the next line.
$!
$RUN SYS$SYSTEM:SNANCP
!
!Set the state of the lines and circuits off.
!
SET KNOWN CIRCUITS STATE OFF
SET KNOWN LINES STATE OFF
!
Clear all lines, circuits, and PUs.
!
CLEAR KNOWN PUs ALL
CLEAR KNOWN CIRCUITS ALL
CLEAR KNOWN LINES ALL

Set the communications line parameters:
! SET LINE line-id                            {DPV|DSV|DMB|DST|DSB|DSH}
```

Figure 3-2: Sample SNA Configuration File

Configuring DIGITAL TCP/IP Services for CA-XCOM for OpenVMS Alpha Transfers

TCP/IP must be configured to receive incoming transfers. TCP/IP is called "UCX" on some VMS systems.

Configuring UCX

To configure UCX :

1. Ensure logical XCOM$IMAGE is defined.

2. Run command file "setup_xcom_tcpip.com"

The port is set to 8044. If a different port is required, edit the setup_xcom_tcpip.com file and change port parameter.

To verify the UCX setup, type the command:

```
UCX SHOW SERVICE/FULL XCOM
```

Output should be similar to that shown below.

```
Service: XCOM
                        State:     Enabled
Port:             8044  Protocol:  TCP             Address:  0.0.0.0
Inactivity:          5  User_name: SYSTEM          Process:  XCOMIP_UCX_AUXS
UXS
Limit:               2  Active:      0             Peak:       1

File:          XCOM$IMAGE:XCOMIP.COM
Flags:         Listen Multi

Socket Opts:   Rcheck Scheck
 Receive:            0  Send:               0

Log Opts:      None
 File:         not defined

Security
 Reject msg:   not defined
 Accept host:  0.0.0.0
 Accept netw:  0.0.0.0
```

The UCX service waits for incoming activity on the relevant port. When there is an incoming transfer on the port the command procedure XCOMIP.COM is started. XCOMIP.EXE then runs and processes the transfer.

Providing a Trace

CA-XCOM technical support may request a trace. Tracing is turned on by editing file XCOMIP.COM and changing command "$ xcomip" to "$xcomip/trace".

Chapter 4

Configuring CA-XCOM for OpenVMS Alpha

After installing the CA-XCOM software and configuring the SNA resources, you can customize CA-XCOM's communications configuration to handle your particular transfer requirements.

This chapter explains how to configure the following CA-XCOM files:

Filename	Transfer type	Node
XCOMCFG.EXE	Locally initiated	DECnet SNA
EXCOMACP.COM	Remotely initiated	DECnet SNA

Configuring the Local Request Handler (XCOMV30.CFG)

This section describes the CA-XCOM Configuration File and the XCOMCFG.EXE utility that lets you modify the file.

The CA-XCOM Configuration File XCOMV30.CFG

XCOMV30.CFG maintains a list of entries, each of which defines the connection to a specific remote system. Each entry includes the following information:

- Remote system name
- Local LU name
- Remote LU name
- Mode name
- Code type
- Operating system type

XCOMV30.CFG is located in the XCOM$IMAGE directory. You must define the logical name XCOM_CONFIG_FILE to point to XCOMV30.CFG.

To change the configuration file settings, use the XCOMCFG.EXE utility in the XCOM$IMAGE directory. For more information about XCOMCFG.EXE, see the next section.

Once XCOMV30.CFG has been configured, you can request a specific transfer by entering a remote system name on the command line or in the menu interface. CA-XCOM then obtains the configuration information for the specified remote system from the configuration file.

The CA-XCOM for OpenVMS Alpha Configuration Utility XCOMCFG.EXE

XCOMCFG.EXE is the CA-XCOM configuration utility that lets you modify XCOMV30.CFG to define access to remote systems. After a CA-XCOM remote node is defined, local users on your system can send and receive data to and from this node.

Note: The configuration file is referred to by the logical name XCOM_CONFIG_FILE. The actual filename is XCOM$IMAGE:XCOMV30.CFG.

XCOMCFG.EXE uses the following commands:

- ADD
- DELETE
- LIST
- HELP
- EXIT

More information about these commands and their associated parameters appears later in the chapter.

Running XCOMCFG.EXE

There are two ways to invoke XCOMCFG.EXE:

- From the command line.
- From within a DCL command procedure.

Invoking XCOMCFG.EXE From the Command Line

1. Use the DCL command to display the XCOMCFG> prompt.

2. Invoke the ADD command.

   Result: The system prompts you for the necessary information as shown in the examples below. The transfer protocol you select determines which prompts are displayed and which defaults are used.

To make an entry for a system using SNA:

```
$ run xcom$image:xcomcfg.exe
XCOMCFG> add
_HOSTNAME: tso44
      Operating system? [UNKNOWN] :mvs
      Protocol? [SNA] :
      Gateway node name? ('0' for VMS/SNA) [0] :gcgw02
      Access name? [] :xcom57
      Is the system directly connected? [Y] :y
      Character set, EBCDIC or ASCII? [EBCDIC] :
      Description? [] :IBM Mainframe
Record added!


XCOMCFG> add
_HOSTNAME: tso44
      Operating system? [UNKNOWN] :mvs
      Protocol? [SNA] :
      Gateway node name? ('0' for VMS/SNA) [0] :gcgw02
      Access name? [] :xcom60
      Is the system directly connected? [Y] :n
      Link logical unit (LU) name? [] :LU102
      Character set, EBCDIC or ASCII? [EBCDIC] :
      Description? [] :Texas mainframe
Record added!
```

To make an entry for a system using TCP/IP:

```
XCOMCFG> add
_HOSTNAME: usausu00
      Operating system? [UNKNOWN] :unix
      Protocol? [SNA] : tcpip
      TCP/IP Port number? [8044] :
      Is the system directly connected? [Y] :y
      Character set, EBCDIC or ASCII? [ASCII] :
      Description? [] :FreeBSD 2.2.5
Record added!
```

3. When you are finished, press CTRL + Z or use the exit command to exit XCOMCFG.EXE.

The XCOMCFG.EXE Commands and Qualifiers

This section describes the five XCOMCFG.EXE commands and their qualifiers.

The ADD Command

The ADD command defines and adds the remote system to the CA-XCOM network of accessible computers. CA-XCOM associates this symbolic name of the remote system with the attributes defined by the ADD command. CA-XCOM users should specify this symbolic name when referring to this system.

There are two formats available for defining the remote systems (TCP/IP and SNA, as previously described).

"Hostname" is a symbolic name (up to 254 characters) used by CA-XCOM file transfer commands to identify the remote partner.

Note: When you configure these parameters, make sure the settings match those on the remote system.

ADD Command Fields and Descriptions

The ADD command will prompt for various fields. The fields and their descriptions are described next.

Access name	An up to 16 character access name defined in the VMS/SNA or SNA Gateway installation procedure. For directly connected systems, this is simply the access name for 'hostname'. For indirectly connected systems, this is the access name defined for the system that 'hostname' is connected to. Access names are defined further by the VMS/SNA or SNA Gateway installation procedures. See the appropriate DEC documentation.
Character set, EBCDIC or ASCII	Specifies 'hostname' is an ASCII or EBCDIC system.
Description	A character string used to describe remote system 'hostname'.
Gateway node name	For SNA transfers, specify the gateway to be used.
HOSTNAME	An up to 14 character name that will be used in all XCOM software to refer to the defined system.
Is the system directly connected	Specify 'Y' for direct transfers, 'N' for indirect transfers.
Link logical unit (LU) name	SNA: For systems that are connected INDIRECTLY to the VAX, an up to 8 character logical unit name used on the routing directlyconnected system to route messages to 'hostname'. Since the IBM MVS mainframe is currently the only system that can be connected directly to the VAX (an VMS/SNA and SNA Gateway restriction), luname will be a logical unit name on the MVS mainframe that the IBM system programmer defined to access 'hostname'. TCPIP: Enter the hostname of the system that will act as the intermediate node of an indirect transfer.

Operating System	The Operating System of the remote system. The Options are : MVS VM VMS IBMPC UNIX AS400 SUN UNKNOWN
Protocol	Specify TCP/IP or SNA transfer protocol.
TCP/IP Port number	For TCP/IP transfers, the port number to be used.

The DELETE Command

Deletes the remote system from the CA-XCOM network of accessible computers.

Format:

```
DELETE [hostname]
```

Hostname (up to 254 characters) is a symbolic name that refers to the defined system. If you don't enter a name, all of the defined nodes are displayed.

The LIST Command

Displays one or all of the CA-XCOM computer systems and their defined attributes.

Format:

```
LIST [hostname]
```

The HELP Command

Provides online help for all five XCOMCFG commands.

The EXIT Command

Terminates the execution of the XCOMCFG utility. You can also exit the XCOMCFG utility by pressing CTRL + Z.

Direct and Indirect Connections to Remote Systems

A direct connection refers to an adjacently attached remote system. An indirect connection refers to a remote system, or node, which can be reached via the IBM mainframe to which it is attached.

A direct file transfer exchanges data with an adjacently attached remote system or node. An indirect file transfer exchanges data with a remote system via an adjacently attached IBM mainframe system which stores and then forwards the data to the target node.

The Link logical unit (LU) qualifier of the ADD command is used to distinguish between a directly and indirectly attached remote system. Figure 4-1 shows an example of direct and indirect remote systems configuration.

```
$ run xcom$image:xcomcfg.exe
XCPMCFG> list
Remote system USAUSU00
Xcom Version 2
 Transfer Protocol: TCP/IP
 TCP/IP Port: 8044
 Connection type: directly connected
 System Type: Generic UNIX system
 Character set: ASCII
 Description: FREEBSD 2.2.5 IN AUSTIN

Remote system USAUSU01
Xcom Version 2
 Transfer Protocol: TCP/IP
 TCP/IP Port: 8044
 Connection type: directly connected
 System Type: Generic UNIX system
 Character set: ASCII
 Description: SOLARIS X86 IN AUSTIN

Remote system XCPS
Xcom Version 2
Transfer Protocol: SNA
 Gateway name: GCGW02
 Gateway access name: XCOM57
 Connection type: directly connected
 System Type: IBM MVS MAINFRAME
 Character set: EBCDIC
 Description: MVS

Remote system XCPS2
Xcom Version 2
 Transfer Protocol: SNA
 Gateway name: GCGW02
 Gateway access name: XCOM58
 Connection type: indirect via LU name: LU101
 System Type: IBM MVS MAINFRAME
 Character set: EBCDIC
 Description: MVS in main office

XCOMCFG>
```

Figure 4-1: XCOMCFG List

Note that the output differs depending on the transfer protocol. For TCP/IP, the port number is shown, but the gateway is not because it is not relevant. For SNA, the gateway information is shown, but the port number is not because it is not relevant.

Configuring the CA-XCOM for OpenVMS Alpha Remote Request Handlers

For remote requests, you must configure one of the following files:

- EXCOMACP.COM (for DECnet/SNA)
- XCOMIP.COM (for TCP/IP)

Configuring EXCOMACP.COM

An ancillary control process exists for CA-XCOM which handles all remotely initiated transfer requests. This is known as the XCOMACP process. Just as your local VMS system can originate CA-XCOM file transfer requests with remote CA-XCOM systems, any one of these remote systems can initiate a file transfer with your local VMS system.

The XCOMACP process creation is initiated via a command procedure file generated by the CA-XCOM installation procedures. This file is known as the XCOM$IMAGE:EXCOMACP.COM file. Within this command procedure file is the EXCOMACP command (containing many qualifiers) which initiates the creation of the XCOMACP process. The major qualifiers are /DEFACCNT, /DEFPSWRD, /NODE, /ACCESS, and /POLL.

In the EXCOMACP.COM file, create a separate entry for each remote LU with which you want to establish a connection. These LUs are dedicated to remotely initiated requests only. A process running XCOMACP.EXE will be created for each entry.

Each process assumes the name of the access parameter name in the EXCOMACP.COM entry. This naming convention facilitates associating each XCOMACP process with the LU session it is conducting. A logfile is also created for each process, in the following format:

```
XCOMACP_FOR_<access_name>_ON_<node>.log is
```

The following provides an example of the XCOM$IMAGE:EXCOMACP.COM file:

```
$! PROCEDURE TO CREATE XCOM ACP(s). Created 14-JUN-1996 13:35:13.68
$!
$! Define EXCOMACP command
$  set command xcom$image:excomacp
$!
$! create XCOM ACP(s)
$!
$! rename old log files
$ set noon
$ log = f$search("xcom$image:xcomacp*.log")
$ if log .nes. "" then rename xcom$image:xcomacp*.log;* *.old;0
$ set on
$
$! execute acp startup routine
$ assign/user sys$command sys$input
$ excomacp -
    /defaccnt=DECNET-    ! use decnet account as the default
    /defpswrd=DECNET-    ! default password
    /node=GCGW02         -       ! gateway node name or VMS/SNA unit #
    /access=XCOM58       -       ! access name (defined in config file)
    /poll="0 00:05:00.00"        ! delta time between session polls
$!
$! remove this verb
$ set command/delete=excomacp
```

Figure 4-2: EXCOMACP.COM File

The EXCOMACP.COM Qualifiers

Qualifier	Default	Description
/ACCESS=accname	none	The access name (up to 8 characters) as defined in the DECnet/SNA or VMS/SNA configuration file (the default is XCOMRMT).
/ASTLM=nn	24	The AST process astlm quota. It should be 24 or greater.
/BATCH_QUEUE	SYS$BATCH	Default queue where jobs are sent.
/BIOLM=nn	18	The process biolm quota. It should be 18 or greater.
/BYTLM=nnnnn	20480	The process bytlm quota. It should be 20480 bytes or greater.
/DEFACCNT=username	DECnet	The default username used when no username is specified. Report and job requests received without a username will be submitted under this account.
/DEFAULT_OWNER		If set, then the file is owned by the UIC for the user specified in the userid field in the request. If not set, or set to /NO_DEFAULT_OWNER, the file is owned by one of the following: The owner UIC of an existing version of the file, if the creating process has ownership rights to the previous version. The owner UIC of the parent directory, if the creating process has ownership privileges to the parent directory. The UIC of the creating process.
/DEFPSWRD=password	DECnet	Password for the default username above.
/DIOLM	18	Direct I/O limit.
/FILLM=nn	40	The process fillm quota. It should be 40 or greater.
/NODE=node-id	0	Gateway node name or VMS/SNA unit number associated with the /ACCESS qualifier. (For VMS/SNA this number is usually 0 because it doesn't use a gateway.)

Qualifier	Default	Description
/PGFLQUOTA=nnnnn	100000	The process page limit. It should be a value of 40000 pages or greater.
/POLL=delta-time	0 00:05:00.0	Delta time value between session polls, when the OpenVMS might be unavailable to receive BINDs from the IBM host. The ACP uses this value to determine how often it should check for lost sessions when LU and PU have already been activated.
/PRINT_QUEUE	SYS$PRINT	Where jobs are sent to await printing.
/PRIORITY=nn	4	The priority at which the ACP runs.
/PRIVILEGE	1340229331	Privileges for the XCOMACP process.
/SESSADDR	0	The LU that will be used for XCOMACP.
/WSDEFAULT=nnn	250	The default size of the process working set. It should be a value of 250 or greater.
/WSEXTENT=nnnn	2048	The size of the process working set. It should be a value of 1024 or greater.
/WSQUOTA=nnn	500	The quota for the process working set. It should be a value of 250 or greater.

DEC TCP/IP Services

DEC TCP/IP Services for OpenVMS (or UCX) takes care of starting CA-XCOM when a transfer is initiated by another system running CA-XCOM. The UCX Auxiliary Server listens for a request for the CA-XCOM service, normally on port 8044. When a request comes in, the UCX Auxiliary Server starts XCOMIP.COM, a command procedure file. XCOMIP.COM runs XCOMIP.EXE, the CA-XCOM program that handles incoming TCP/IP transfers.

You may customize XCOMIP.COM as you like. Here is the file distributed with CA-XCOM for OpenVMS AXP.

```
$ set noon
$! uncomment the next line to make a log.
$! everything after this will appear in the log file
$! define sys$output xcom$image:xcomip_startup.log
$ define sys$error sys$output
$ set command xcom$image:xcomip.cld
$ xcomip /default_owner
$ set command/delete=xcomip
```

The XCOMIP.COM Qualifiers

Qualifier	Default	Description
/ASTLM=nn	24	The AST process astlm quota. It should be 24 or greater.
/BATCH_QUEUE	SYS$BATCH	Default queue where jobs are sent.
/BIOLM=nn	18	The process biolm quota. It should be 18 or greater.
/BYTLM=nnnnn	20480	The process bytlm quota. It should be 20480 bytes or greater.
/DEFACCNT=username	DECnet	The default username used when no username is specified. Report and job requests received without a username will be submitted under this account.
/DEFAULT_OWNER		If set, then the file is owned by the UIC for the user specified in the userid field in the request. If not set, or set to /NO_DEFAULT_OWNER, the file is owned by one of the following: The owner UIC of an existing version of the file, if the creating process has ownership rights to the previous version. The owner UIC of the parent directory, if the creating process has ownership privileges to the parent directory. The UIC of the creating process.
/DEFPSWRD=password	DECnet	Password for the default username above.
/DIOLM	18	Direct I/O limit.
/FILLM=nn	40	The process fillm quota. It should be 40 or greater.
/PGFLQUOTA=nnnnn	100000	The process page limit. It should be a value of 40000 pages or greater.
/PORT	8044	Specifies the port number in TCP/IP transfers.
/PRINT_QUEUE	SYS$PRINT	Where jobs are sent to await printing.
/PRIORITY=nn	4	The priority at which the ACP runs.
/PRIVILEGE	1340229331	Privileges for the XCOMACP process.
/SESSADDR	0	The LU that will be used for XCOMACP.

Qualifier	Default	Description
/WSDEFAULT=nnn	250	The default size of the process working set. It should be a value of 250 or greater.
/WSEXTENT=nnnn	2048	The size of the process working set. It should be a value of 1024 or greater.
/WSQUOTA=nnn	500	The quota for the process working set. It should be a value of 250 or greater.

Note: After installing CA-XCOM, run DCL command file setup_xcom_tcpip.com to configure DEC TCP/IP Services.

Completing the Configuration

Modify the system startup procedure SYS$MANAGER:SYSTARTUP_VMS.COM to invoke the CA-XCOM startup procedure XCOM$IMAGE:XCOM$STARTUP.COM. To invoke this command procedure from the system startup procedure, use the actual installation disk and directory. This is typically SYS$SYSDEVICE:[XCOM]. When this is completed, CA-XCOM will be started each time the system is rebooted.

Note: The XCOM$STARTUP.COM procedure defines the system-wide logical name XCOM$IMAGE.

The CA-XCOM startup procedure does the following:

1. Defines the logical name XCOM$IMAGE, which is the location of the CA-XCOM installation directory.

2. Defines the logical name XCOM_CONFIG_FILE, which is the location of the CA-XCOM configuration file.

3. Executes the command procedure XCOM$IMAGE:EXCOMACP.COM, which starts the XCOMACP process.

When all these items have been completed, and you have just finished installing CA-XCOM, then reboot the system. If you are using a DECnet SNA Gateway, reload the configuration file with either of the following DCL commands:

```
$MCR NCP TRIGGER NODE gtway
```

or

```
$MCR NCP LOAD NODE gtway
```

where "gtway" is the name of the gateway. Consult the NCP utility manual for more information.

Chapter

5

Customization and Command Qualifiers

This chapter explains the following topics:

- DCL XCOM command customization
- DCL XCOM command qualifiers
- DCL EXCOMACP command customization
- DCL EXCOMACP command qualifiers

DCL XCOM Command Customization

The command definition file XCOM$IMAGE:XCOM.CLD defines the XCOM command verb and all its qualifiers to the Digital Command Language (DCL). This file is used by the CA-XCOM installation procedure to define the XCOM command during installation . This command definition file also defines the defaults described in the next section.

Note: Before you modify the XCOM$IMAGE:XCOM.CLD file, make sure you understand how to use VMS Command Definition Utility. For more information about this utility, see the DEC publication "The VMS Command Definition Utility Manual".

Modifying the CA-XCOM for Open VMS Alpha Command Definition File

The file XCOM$IMAGE:XCOM.CLD defines the XCOM command verb to the OpenVMS command language interpreter. It also defines default values for the command qualifiers.

Use a text editor to modify the XCOM$IMAGE:XCOM.CLD file as described below:

1. Change or add the default values desired for a qualifier.

Note: Before you do this, make sure you understand how to use the VMS Command Definition Utility.

2. Redefine the XCOM command verb to ensure that your changes take effect. Do the following:

   a. Log on to the system as a privileged user with access to the SYS$LIBRARY:DCLTABLES.EXE file.

   b. At the DCL prompts $ and _$, type the following:

```
$ SET COMMAND/TABLE=SYS$LIBRARY:DCLTABLES.EXE-
$ /OUTPUT=SYS$LIBRARY:DCLTABLES.EXE XCOM$IMAGE:XCOM.CLD
```

This command will redefine the XCOM command in the DCL tables. Reboot the OpenVMS system to ensure that this change takes effect immediately for all users on the system. If the system is not rebooted then for users to have access to the modified XCOM command they must log out and then log back into the system.

CA-XCOM for OpenVMS Alpha Command Qualifiers

The DCL XCOM command qualifiers and defaults are listed below:

/APPEND

Valid for the /SENDFILE and /GETFILE qualifiers.

Specifies that the transferred data be appended to the destination file.

If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.

Default: /CREATE

/ASA
/NOASA

Valid only for the /PRINT function code.

/ASA indicates that CA-XCOM is to convert the file to ASA print format, also called FORTRAN carriage control. /ASA is a format supported by most IBM and DEC printers.

/NOASA indicates there is to be no ASA conversion of the file.

Default: /NOASA

/BINARY

Valid for the /SENDFILE and /GETFILE qualifiers.

Specifies that the transferred file is a binary file. No translation will be performed.

If neither /BINARY nor /TEXT is supplied, then /TEXT is the default.

Default: /TEXT

/CHECKPOINT[=[dddd-] hh:mm:ss.cc]
/NOCHECKPOINT

Valid for the /SENDFILE, /GETFILE, and /PRINT qualifiers.

/CHECKPOINT indicates how long CA-XCOM will wait before restarting an interrupted transfer. After the specified wait time has elapsed, CA-XCOM automatically resumes the transfer from the point where the transfer stopped. To enter the wait time, use standard OpenVMS delta time format. If you don't enter a checkpoint time, the default setting is used.

CA-XCOM retries an interrupted transfer until the transfer either completes successfully or reaches an aging time limit and is then aborted. The as-delivered default setting is 1 hour (001:00:00). /NOCHECKPOINT indicates that an interrupted transfer is not to resume.

A delta time has the following format: **[dddd-] [hh:mm:ss:cc]**

dddd The number of days.
hh The number of hours.
mm The number of minutes.
ss The number of seconds.
cc The number of hundredths of seconds.

The fields located on the righthand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified.

Default: /NOCHECKPOINT

/CLASS=class-id

Valid for the /PRINT function code.

Specifies the print class, (a one character string) through which the print request is to be placed on the remote system. If the remote system is an IBM mainframe, then this field indicates the JES2 SYSOUT class.

Default: None

/COMPRESS=compression method
/NOCOMPRESS

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

/COMPRESS indicates the transmitted data be compressed. Valid values for the compression method are:

- NO
- YES
- RLE
- LCOMPACT
- LZSMALL
- LZMEDIUM
- LZLARGE
- COMPACT

/NOCOMPRESS indicates the transmitted data should NOT be compressed.

Default: /COMPRESS=NO *or* /NOCOMPRESS

/COPIES=nnn

Valid for the /PRINT function code. This qualifier must contain a maximum of three (3) ASCII, decimal, or numeric characters.

Specifies the number of copies to be printed on the remote system. Specify a range between 1 and 999 copies.

Default: 1

/CREATE

Valid for the /SENDFILE and /GETFILE qualifiers.

Specifies that the destination file is to be created.

If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.

Default: /CREATE

/DELETE
/NODELETE

Valid for the /PRINT function code.

/DELETE indicates that the file be deleted after printing on the remote system.

/NODELETE indicates that the file be kept or retained on the remote system after it is printed.

Default: /NODELETE.

Note: With respect to remotely initiated transfers, (i.e., a user on a remote system initiates a report print on an OpenVMS system) the default is to delete the file after it has printed on the OpenVMS.

/DESTINATION=string

Valid for the /PRINT function code.

Specifies the print destination for the output on the remote system. Enter a maximum of 21 characters; the actual number of valid characters is dependent on the remote system.

Default: The system's default printer

/FCB=xxxx

Valid for the /PRINT function code.

Used only when printing a file on a remote IBM mainframe. It specifies the Forms Control Buffer (FCB) and is used to supply a 1 to 4 character FCB that JES will use to define the forms control parameter used when printing on the remote system.

Default: None

/FORM=string

Valid for the /PRINT function code.

Used to inform the remote operator of the type of form the print request is to be printed on. Specify a maximum of ten (10) characters; the actual number of valid characters is dependent on the remote system.

Default: None.

/GETFILE

Used to retrieve a data file from a remote IBM mainframe, and place it into a specified file on your system. If the local file exists, then the transferred data can append to this file or overwrite it. If the local file does not exist, CA-XCOM will create a file to hold this data. See the chapter "The Command Line Interface (DCL)" for more information.

If you enter the XCOM command on a command line by itself, then /MENU is the default.

Default: /MENU

/HOLD
/NOHOLD

Valid for the /PRINT function code.

/HOLD specifies that the print request be placed on HOLD status on the remote system.

/NOHOLD specifies that the print request be sent for immediate printing on the remote system.

Default: /NOHOLD

/LNOTIFY=username

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

Identifies which local OpenVMS username (up to 12 characters) to notify when the data transfer is complete. You must have WORLD privilege to use this field to notify a user on the system other than yourself.

Default: None

/LOG=filename
/NOLOG

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

/LOG specifies that the filename is to receive time-stamped CA-XCOM status, or log messages. Enter a maximum of 64 characters for the filename. If a filename is not entered then CA-XCOM writes the log to XCOM.LOG.

/NOLOG specifies that there is to be no message logging.

Default: /LOG

/MENU

Specifies that you want the screen interface of CA-XCOM.

If the XCOM command is entered on a command line by itself then /MENU is the default.

Default: /MENU

/BLOCKL=nnnnn

Valid for the /SENDFILE and /GETFILE qualifiers.

Specifies the number of records contained inside a block. This qualifier must contain a maximum of five (5) ASCII, decimal, or numeric characters and is used only when creating a file on a remote IBM mainframe. Note that "creating" signifies that the "/CREATE" qualifier is specified either explicitly or by default.

For Fixed record or Fixed Blocked files, /BLOCKL must be a multiple of the /RECL field value. For Variable record files it must be at least four bytes larger than the /RECL field value. For Undefined record file format, /BLOCKL must be at least as large as the largest record length.

If the /BLOCKL qualifier is not specified and the transfer is to an IBM mainframe, CA-XCOM will generate an acceptable value.

Default: Dependent on file type

/FORMAT=rcd-format

Valid for the /SENDFILE and /GETFILE qualifiers.

Required when creating files on an IBM mainframe. Equivalent to the DCB RECFM parameter in the JCL. The keyword choices are:

- FIXED
- FIXED_BLOCKED
- VARIABLE_BLOCKED
- UNDEFINED

FIXED	Specifies that the records all have the same length, (i.e., they are fixed) with multiple records contained in one block.
FIXED_BLOCKED	Specifies the fixed record length of one record per block.
VARIABLE_BLOCKED	Specifies the variable record length with multiple records per block, each of which can have a different length.
UNDEFINED	Specifies the undefined record format of one variable length record per block, where the maximum record length is the blocksize.

Default: FIXED

/RECL=nnnnn

Valid for the /SENDFILE and /GETFILE qualifiers. Used only when creating a file on a remote IBM mainframe.

Specifies how many bytes are in a record. It is ignored for undefined records.

For Variable records, /RECL equals the maximum record size + 4.

For Fixed and Fixed Blocked records, /RECL specifies the actual record length (up to 5 ASCII, decimal, or numeric characters).

If you don't specify the /RECL for a transfer to an IBM mainframe, CA-XCOM generates an acceptable value.

Default: Dependent on file type

/PACK
/NOPACK

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

/PACK is a Boolean item code that specifies record packing. It is valid only for text files (not binary files). When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them.

/NOPACK is a Boolean item code that specifies that packing will not be used.

/PACK is ignored when /BINARY is specified.

Default: /NOPACK

/PASSWORD=string

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

Specifies the password (up to 31 characters) associated with the user ID under whose set of resource access privileges CA-XCOM is to execute on the remote system. It should be the password known to the remote security system (e.g., RACF, CA-ACF2, and CA-Top Secret on an IBM mainframe.)

Note: To preserve lower case, place the password value in double quotes.

Default: None

/PORT=n

Specifies a port number other than the default of 8044 for TCP/IP transfers. /PORT is relevant only when /TCPIP is specified.

Default: 8044

/PRINT

Sends a file from your system to a remote system for printing.

If you enter the XCOM command on a command line by itself, then /MENU is the default.

Default: /MENU

/QUEUE=queue-name
/NOQUEUE

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

/QUEUE specifies the name (up to 31 characters) of a standard OpenVMS execution queue where this CA-XCOM transfer request will be placed. /QUEUE indicates that the transfer request be executed off-line as a batch job. The value for this qualifier specifies the queue name. If no value is specified then SYS$BATCH, the default VMS batch queue, will be used.

/NOQUEUE specifies that the transfer request not be queued for execution off-line as a batch job.)

Default: /NOQUEUE

/REPLACE

Valid for the /SENDFILE and /GETFILE qualifiers.

Indicates the destination file be replaced.

If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.

Default: /CREATE

/RESUME

Valid for the /SENDFILE and /GETFILE qualifiers.

Resumes a transfer that has been checkpointed, interrupted and is awaiting restart. Specifies that the indicated transfer be restarted immediately.

Default: None

/RMTFILE=remote-file-spec

Valid for the /SENDFILE and /GETFILE qualifiers.

Specifies which file on the remote system you want to access. The filename (up to 255 characters) must be fully qualified as to its location.

If the remote system is an IBM mainframe, then specify the qualified dataset name. No TSO prefix will be appended to the entry. If the remote system is an IBM PC, then specify the DOS or OS/2 filename and include path information.

To specify the remote filename, use the following format:

```
["]filename.typ[[.typ]...]["]
```

Default: None

/RMTSYS=remote-system-name

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

The name of the remote system (up to 254 characters).

This name is defined in the CA-XCOM configuration file. For more information about defining remote system names, see the chapter, "Configuring CA-XCOM."

Note: If you specified the remote system name as part of the remote file specification, you don't need to supply this qualifier.

Default: None

/RNFLAG=keyword code

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

Specifies the user ID type of the remote user to be notified when the data transfer is complete. The keyword choices available are:

NONE	No Notification
TSO	Notify TSO user
LOG	Write to log
CICS	Notify CICS User
LU	Notify Logical Unit
ROSCOE	Notify Roscoe User
VMSUSER	Notify VMS User

Default: NONE

/RNOTIFY=remote-user-name

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers. This qualifier contains the remote user ID string.

Indicates which remote user ID to notify when the data transfer is complete. The remote notify name can be a maximum of 12 characters.

Default: None

/SENDFILE

Sends a copy of a specified file from your system to a specified file on a remote computer. If the file exists on the remote computer, the transferred data can be added to the remote file or used to replace the current data. If the remote file does not exist, CA-XCOM can create a file to hold this data.

If the XCOM command is entered on a command line by itself then /MENU is the default.

Default: /MENU

/SNA

Specifies use of the SNA LU6.2 protocol for the file transfer.

/SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.

Default: /SNA

/SUBMIT

Sends a job for execution on a remote system.

If the XCOM command is entered on a command line by itself then /MENU is the default.

Default: /MENU

/TCPIP

Specifies use of the TCP/IP protocol for the file transfer.

/SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.

/TEXT

Valid for the /SENDFILE and /GETFILE qualifiers.

Specifies that the file be treated as an ASCII text file. When sending information to, or receiving information from a remote system that uses a different character representation (e.g., EBCDIC), the file will automatically be translated.

If neither /BINARY nor /TEXT is supplied then /TEXT is the default value used.

Default: /TEXT

/TITLE=string

Valid for the /PRINT function code.

Specifies the report title (up to 21 characters) for a print request on a remote system. Although the title is generally used as a comment and will not be printed as part of the request, some operating systems (such as OpenVMS) allow a print title to be spooled with the print data.

Default: None

/TRACE

This qualifier is used at the request of CA-XCOM Technical Support to collect information which will help diagnose a problem.

Default: /TRACE

/TRUNCATE
/NOTRUNCATE

Valid for the /SENDFILE and /GETFILE qualifiers.

/TRUNCATE indicates a record can be truncated if it is too long.

/NOTRUNCATE indicates that the conversation abend or abort if a record is encountered that exceeds the maximum allowable record size.

Default: /NOTRUNCATE

/UNIT=unit-name

Valid for the /SENDFILE and /GETFILE qualifiers.

Used only when creating a file on a remote IBM mainframe. ("Creating" signifies that the "/CREATE" qualifier is specified, explicitly or by default.) The /UNIT qualifier specifies the generic unit name under which the file will be placed.

If /UNIT is not entered, the CA-XCOM default unit name will be used as defined in the CA- XCOM MVS Default Options Table. The string can be a maximum of 10 characters.

Default: None

/USERID=username

Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.

Specifies the remote user ID under whose set of resource access privileges CA-XCOM is to execute on the remote system. It should be the user ID known to the remote security system (e.g., RACF, CA-ACF2, and CA-Top Secret on an IBM mainframe.) For other systems, this is the user's login username. The string can be a maximum of 12 characters.

Note: To preserve lower case, place the userid value in double quotes.

Default: None

/VOLUME=volume-name

Valid for the /SENDFILE and /GETFILE qualifiers.

Used only when creating a file on a remote IBM mainframe. Note that "creating" signifies that the "/CREATE" qualifier is specified, explicitly or by default. /VOLUME specifies the volume name (up to 10 characters) under which the file is to be placed.

If /VOLUME is not supplied, the CA-XCOM default volume name will be used as defined in the XCOM-MVS Default Options Table.

Default: None

/WAIT[=[dddd-] hh:mm:ss.cc]
/NOWAIT

Valid for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.

/WAIT specifies that the transfer request should wait if the remote system is unavailable. This qualifier contains the wait time in standard VMS delta time format. The default time used is 3 minutes, (i.e., 0 00:03:00) if no value is supplied with the qualifier.

A delta time has the following format: **[dddd-] [hh:mm:ss:cc]**

dddd The number of days.
hh The number of hours.
mm The number of minutes.
ss The number of seconds.
cc The number of hundredths of seconds.

The fields on the right side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified.

/NOWAIT aborts the transfer request if the remote system is unavailable.

Default: /NOWAIT

DCL EXCOMACP Command Customization

The EXCOMACP command is defined, executed, and subsequently removed by the XCOM$IMAGE:EXCOMACP.COM command procedure. A user should have no reason to execute the EXCOMACP command directly. The easiest method for modifying default values is to place the desired values directly into the XCOM$IMAGE:EXCOMACP.COM command procedure.

DCL EXCOMACP Command Qualifiers

The DCL EXCOMACP command generates the XCOMACP process which handles remotely initiated transfer requests. The values of the qualifiers associated with this command are either used for XCOMACP process quotas, or passed to the XCOMACP process to set up SNA sessions.

The EXCOMACP command qualifiers and their defaults are listed below:

/ACCESS=accname

Access name as defined in the DECnet SNA or VMS/SNA transport software configuration file.

Default: None

/ASTLM=nn

The AST process astlm quota. It should be 24 or greater.

Default: 24

/BATCH_QUEUE=string

The remote request handler for the ACP which handles job requests. It specifies the name of the execution batch queue. The value of "string" can be a maximum of 31 characters. If you do not specify a value the default value is used.

Default: SYS$BATCH

/BIOLM=nn

The process biolm quota. It should be 18 or greater.

Default: 18

/BYTLM=nnnnn

The process bytlm quota. It should be 20480 or greater.

Default: 20480

/DEFACCNT=username

The default username used when no username is specified. Report and job requests received without a username will be submitted under this account.

Default: DECNET

/DEFAULT_OWNER

If specified, then the file uses the following VMS defaults:

1. The owner UIC of an existing version of the file if the creating process has ownership rights to the previous version.
2. The owner UIC of the parent directory, if the creating process has ownership privileges to the parent directory.
3. The UIC of the creating process.

If not set, or set to /NO_DEFAULT_OWNER, then the file will be owned by the UIC for the user specified in the userid field in the request.

/DEFPSWRD=password

Password to the default username above.

Default: DECNET

OUTDENT = /DIOLM=nn

The number of concurrent direct I/O that can be in progress.

Default: 18

/FILLM=nn

The process fillm quota. It should be 40 or greater.

Default: 40

/NODE=nodeid

Gateway node name or VMS/SNA unit number associated with the /ACCESS qualifier. (For VMS/SNA this number is usually 0.)

Default: 0

/PGFLQUOTA=nnnnn

The process page limit. It should be 40000 or greater.

Default: 100000

/POLL=delta-time

Delta time value between session polls.

This is the duration of time the OpenVMS might be unavailable to receive BINDs from the IBM host. The ACP uses this value to determine how often it is to check for lost sessions if PU and LU are active.

Default: 0 00:01:00.0

/PRINT_QUEUE=queue-name

The remote request handler for the ACP which handles the printing of report requests. It specifies the name of the print queue. The print queue name can be a maximum of 31 characters. If you do not specify a value the default value is used.

Default: SYS$PRINT

/PRIORITY=nn

The priority at which the ACP runs.

Default: 4

/PRIVILEGE=nn

The type of access granted to a user. This is a quad word field (2 longwords = 64 bits) in which each bit represents a particular privilege. This indicates that there are 64 different privileges available. If a bit is set on (i.e., the bit is 1) then that privilege is enabled. If the bit is 0 then that privilege is disabled. This number is the signed decimal integer representation of this quad word field. For further information as to the bit representation of this quad word field see "SYS$SETPRV System Service" in the *VMS Systems Services Reference Manual.*

Default: -1340229331

/SESADDR=nn

The gateway secondary logical unit (SLU) address.

Default: 0

/WSDEFAULT=nnn

The default size for the process working set. It should be 250 or greater.

Default: 250

/WSEXTENT=nnnn

The size of the process working set. It should be 1024 or greater.

Default: 2048

/WSQUOTA=nnn

The quota for the process work set. It should be 250 or greater.

Default: 500

DCL XCOMIP Command Customization

The XCOMIP command is defined, executed, and subsequently removed by the XCOM$IMAGE:XCOMIP.COM command procedure. A user should have no reason to execute the XCOMIP command directly. The easiest method for modifying default values is to place the desired values directly into the XCOM$IMAGE:XCOMIP.COM command procedure.

DCL XCOMIP Command Qualifiers

The DCL XCOMIP command generates the XCOMIP process which handles remotely initiated transfer requests. The values of the qualifiers associated with this command are either used for XCOMIP process quotas, or passed to the XCOMIP process to set up TCP/IP sessions.

The XCOMIP command qualifiers and their defaults are listed below:

/ASTLM=nn

The AST process astlm quota. It should be 24 or greater.

Default: 24

/BATCH_QUEUE=string

The remote request handler for the ACP which handles job requests. It specifies the name of the execution batch queue. The value of "string" can be a maximum of 31 characters. If you do not specify a value the default value is used.

Default: SYS$BATCH

/BIOLM=nn

The process biolm quota. It should be 18 or greater.

Default: 18

/BYTLM=nnnnn

The process bytlm quota. It should be 20480 or greater.

Default: 20480

/DEFACCNT=username

The default username used when no username is specified. Report and job requests received without a username will be submitted under this account.

Default: DECNET.

/DEFAULT_OWNER

If specified, then the file uses the following VMS defaults:

1. The owner UIC of an existing version of the file if the creating process has ownership rights to the previous version.
2. The owner UIC of the parent directory, if the creating process has ownership privileges to the parent directory.
3. The UIC of the creating process.

If not set, or set to /NO_DEFAULT_OWNER, then the file will be owned by the UIC for the user specified in the userid field in the request.

/DEFPSWRD=password

Password to the default username above.

Default: DECNET

OUTDENT = /DIOLM=nn

The number of concurrent direct I/O that can be in progress.

Default: 18

/FILLM=nn

The process fillm quota. It should be 40 or greater.

Default: 40

/PGFLQUOTA=nnnnn

The process page limit. It should be 40000 or greater.

Default: 100000

/PORT=n

Specifies a port number other than the default of 8044 for transfers over TCP/IP.

Default: 8044

/PRINT_QUEUE=queue-name

The remote request handler for the ACP which handles the printing of report requests. It specifies the name of the print queue. The print queue name can be a maximum of 31 characters. If you do not specify a value the default value is used.

Default: SYS$PRINT

/PRIORITY=nn

The priority at which the ACP runs.

Default: 4

/PRIVILEGE=nn

The type of access granted to a user. This is a quad word field (2 longwords = 64 bits) in which each bit represents a particular privilege. This indicates that there are 64 different privileges available. If a bit is set on (i.e., the bit is 1) then that privilege is enabled. If the bit is 0 then that privilege is disabled. This number is the signed decimal integer representation of this quad word field. For further information as to the bit representation of this quad word field see "SYS$SETPRV System Service" in the *VMS Systems Services Reference Manual.*

Default: -1340229331

/SESADDR=nn

The gateway secondary logical unit (SLU) address.

Default: 0

/WSDEFAULT=nnn

The default size for the process working set. It should be 250 or greater.

Default: 250

/WSEXTENT=nnnn

The size of the process working set. It should be 1024 or greater.

Default: 2048

/WSQUOTA=nnn

The quota for the process work set. It should be 250 or greater.

Default: 500

When You Are Done...

You have now successfully installed and customized CA-XCOM.

Chapter

6

The Menu Interface

The CA-XCOM Menu Interface lets you perform all file transfer functions by selecting menu options and entering parameter values in screen fields. Because the menu interface identifies the information required to execute each CA-XCOM transfer, it is especially helpful for inexperienced CA-XCOM users.

The diagram below illustrates the CA-XCOM screen hierarchy.

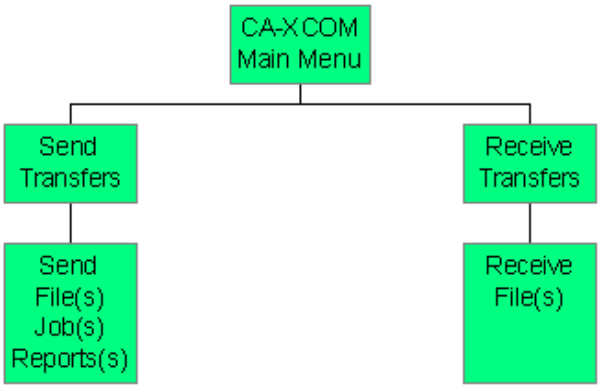


Figure 6-1: Menu Relationships

Using the Menu Interface

To invoke the CA-XCOM menu interface from the DCL, enter the CA-XCOM command and the /MENU qualifier at the $ prompt. This displays the CA-XCOM Main Menu. If you enter the CA-XCOM command without the /MENU qualifier or any other command qualifiers, then the menu interface is invoked by default.

For more information on the CA-XCOM Main Menu, see Figure 6-2.

XCOM/MENU Valid Qualifier

Qualifier	Default	Description
/LOG=<filename> **/NOLOG**	/LOG	The log file where CA-XCOM messages are written for file transfers initiated from the menu interface. If this qualifier is not used, the message log is written by default to the file XCOM.LOG in the user's default directory. To suppress the report, specify XCOM/NOLOG.
/TRACE	/TRACE	This qualifier is used at the request of CA-XCOM Technical Support to collect information which will help diagnose a problem.

Transmission Report

CA-XCOM automatically produces a log of all its processing activities called the Transmission Report. Each file transfer transaction and all messages generated during the conversation are time-stamped. This log can serve as an audit trail of all CA-XCOM status and activities. Messages will also appear on the user's terminal.

The transmission report is a cumulative file of unlimited size. Users can find messages recording the most recent CA-XCOM activity at the end of this file. For a more detailed description of the Transmission Report and an example, see the chapter, "Messages."

The default is XCOM.LOG.

The Function Keys

From the CA-XCOM menu interface, the function keys can be used to prompt CA-XCOM for assistance, execute DCL commands in the foreground, abort a request, or terminate processing. The line at the bottom of each menu screen displays the PF keys and their functions.

Key	Description
PF1	Exits the menu interface and returns to the DEC command line. Although you can press this key from any screen field on any CA-XCOM menu screen, note that any values entered in the screen fields will be lost if you do.
PF2	Accesses the online HELP. Pressing PF2 once displays a single line of help text that describes the screen field being accessed. Pressing PF2 again displays a full page tutorial. To exit online HELP and return to the menu, press any key.
PF3	Returns the user to the previous screen. All input to the current screen is saved in case the user wishes to return to it at a later time. For more detail on the CA-XCOM screen hierarchy, see Figure 6-1.
PF4	Suspends the CA-XCOM process and starts a new process, displaying an XCOM_$ prompt to indicate that your CA-XCOM image is suspended. To return to CA-XCOM exactly where you were before you suspended the process, use the LOGOUT (LO) command.
CTRL+G	Terminates an in-progress transfer request. CA-XCOM will attempt to clean up any control areas and free resources allocated to this task. After aborting the transfer, you are taken to the message screen.
CTRL+E	Displays a message screen that lists all messages generated during the current CA-XCOM session.

CA-XCOM Main Menu

The main menu, shown below, is the entry point into the CA-XCOM menu interface.

```
Thu Mar 19 18:39                  CA-XCOM  Rel    3.x.yymm           SYSTEM
sys$sysdevice: [al]           Main Menu                 sys$sysdevice: [al]


       Select Function:


                      (1). Send files, Reports or Jobs
                      (2). Receive Files


                                                (C) COPYRIGHT 1998 Computer Associates
PF1=EXIT   PF2=HELP  PF3=PREV SCREEN  PF4=DCL  CTRL-G=ABORT   CTRL-E=MSG SCREEN
```

Figure 6-2: Main Menu Screen

Select Function 1 to send a file, report, or job to a remote computer. Select Function 2 to receive a file from a remote computer.

Send Functions Menu

The Send Functions Menu below displays the three types of outbound transmissions that CA-XCOM can generate. Data can be sent to a remote system in the form of a standard data file, a report, or a job.

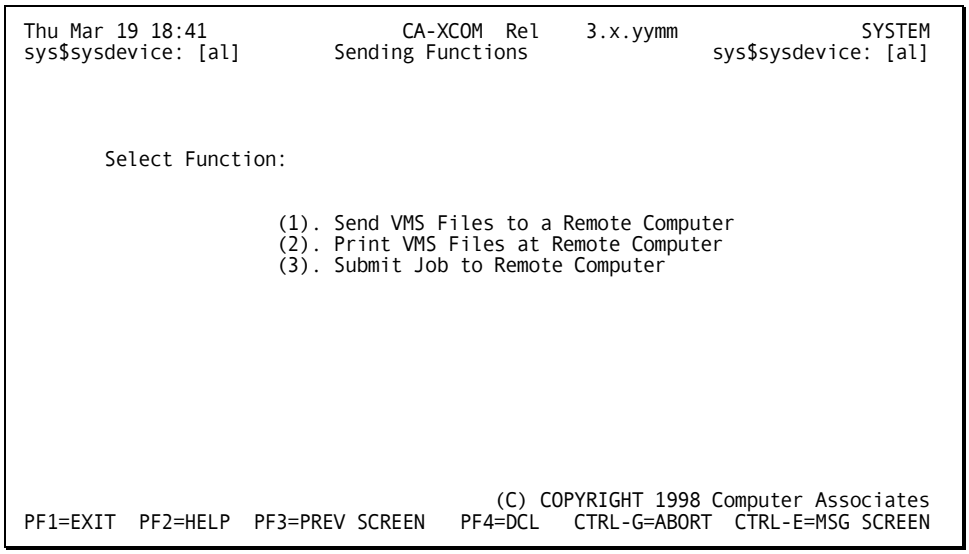


Figure 6-3: Sending Functions Screen

Select Function 1 to send a file from your computer for storage in a file on a remote computer. Select Function 2 to send a file to be printed on a remote computer. Select Function 3 to send a file for execution, as a batch job, on a remote system.

Note: The file should contain the control statements necessary to execute the job on the remote computer (such as JCL for an IBM mainframe, or DCL for a VMS system).

Send a File Screen

The Send a File screen is where you enter the information for transferring a data file from your computer to a file on a remote computer. Figure 6-4 shows the Send a File screen with its default values.

```
Thu Mar 19 18:41                CA-XCOM  Rel    3.x.yymm               SYSTEM
sys$sysdevice: [al]                    Send a File         sys$sysdevice: [al]


 VMS File Name:A.A

 SNA or TCP/IP (S/T): T             TCP/IP PORT : 8044
 Remote System Name:

 Remote File Name:


 Remote User ID:                    Remote Password:

   Notify Local User:                Notify Remote User:
   Remote Notify Flag: T             Packing: N
   Queue the Request (Y/N): N       Wait for Remote System (Y/N): N
   Compress Data : N                File Type; Binary or Text (B/T): T
   Chkpnt/Resume/None (C/R/N): N    Create/Append/Replace Remote File (C/A/R):C



                                        (C) COPYRIGHT 1998 Computer Associates
PF1=EXIT  PF2=HELP   PF3=PREV SCREEN  PF4=DCL   CTRL-G=ABORT  CTRL-E=MSG SCREEN
```

Figure 6-4: Send a File Screen

Screen Fields

VMS File Name

Enter the OpenVMS filename to be transferred. All VMS file naming conventions apply.

The default is none.

SNA or TCP/IP

Enter the transfer type.

The default is S.

Valid options are:

S	SNA Transfer
T	TCP/IP Transfer

TCP/IP Port

Enter the TCP/IP port. This screen field is displayed only for TCP/IP transfers.

The default is 8044.

Remote System Name	Enter the symbolic name of the remote computer where the file is being sent. Valid symbolic names are defined in the CA-XCOM configuration file XCOMV30.CFG. See the chapter, "Configuring CA-XCOM", for more detail on predefined symbolic names.	The default is none.
Remote File Name	Enter the name of the file on the remote system to which you are transferring data. If you are creating the file, ensure the designated filename is consistent with the file naming conventions of the remote system.	The default is none.
Remote User ID	Enter the user ID under whose system resource privileges this file transfer is to be processed on the remote system. This parameter is necessary if the remote computer has a security system, since the ID authorizes the use of the necessary system resources to perform the transfer.	
Remote Password	Enter the password (up to 31 characters) associated with the Remote User. For security reasons, the password will display on the screen as XXXs.	The default is none.
Notify Local User	Enter the user on your system CA-XCOM will notify once it has completed this procedure. If users have VMS WORLD privileges, any local user can be designated.	The default is none.
Notify Remote User	Enter the user on the remote system CA-XCOM will notify once it has completed this procedure. Note that the CA-XCOM message log on the remote system is always written to when this procedure completes.	The default is none.

Remote Notify Flag	Enter the user-ID type of the remote user to be notified when the data transfer is complete. The flag codes are listed below: **N** No Notification **T** Notify TSO User **W** Write to log **C** Notify CICS user **L** Notify Logical Unit **R** Notify CA-ROSCOE user **A** Notify OpenVMS user	The default is N.
Packing	To turn record packing on, enter Y. It is valid only for text files and is ignored for binary files. When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them. To turn record packing off, enter N	The default is N.
Queue the Request	To place this procedure in the system queue and execute it as an off-line batch job, enter Y. To execute this procedure immediately, enter N.	The default is N.
Wait for Remote System	If you want the system to wait until a session is established with a remote system before attempting the transfer, enter Y. If the remote system is currently unavailable and you want to abort the procedure, enter N.	The default is N.
Compress Data	Indicates that the transmitted data be compressed. Valid values for the compression method are: N = No M = LZMEDIUM Y = Yes L = LZLARGE R = RLE C = COMPACT S = LZSMALL T = LCOMPACT N indicates the transmitted data should NOT be compressed.	The default is N.

File Type;Binary or Text	Specifies what kind of data is being transferred, and whether the transferred data is to be translated from ASCII to EBCDIC. If the file being sent is a DATA file or a source code file, select T. CA-XCOM will check whether the Remote System Name designated is an ASCII or an EBCDIC system. These identifications were designated during the installation procedure. If it is an EBCDIC system, CA-XCOM will perform the translation according to standard translation tables. For more information on the installation procedure, see the chapter, *Installing CA-XCOM.* If an executable file such as a file with an .EXE extension is being transferred, select B. (XCOM assumes that because this is a binary file, it should not be converted to EBCDIC.)	The default is T.
Chkpnt/Resume/None	The Chkpnt option lets you continue an interrupted transfer from the point where the transfer was stopped. In other words, the interrupted transfer will automatically resume at a specified delta time (t) from the point at which it was interrupted, without having to return to the beginning of the file. The wait time is in standard VMS delta time format. For more information, see Checkpoint Restart Menu in this chapter. The Resume option specifies that the indicated transfer be restarted immediately. Resume works only for previously checkpointed transfers.	The default is none.
Create/Add/Replace Remote File	Determines how CA-XCOM handles the file that receives the transferred data on the remote system. This is the file named in the Remote File Name field. Valid options are: **C** Create a new file on the remote system. (For an explanation of the additional parameters that appear on the popup menu, see Creating Mainframe Files.) **A** Append this data to an existing file on the remote system. **R** Replace an existing file on the remote system.	The default is C.

Checkpoint Restart Menu

The sample screen below displays the menu that appears if you select Chkpnt/Resume/None (C/R/N): C. The additional fields on this menu are described below.

```
Thu Mar 19 18:43                  CA-XCOM  Rel    3.x.yymm        SYSTEM
sys$sysdevice: [al]                 Send a File           sys$sysdevice: [al]


 VMS File Name:A.A

 SNA or TCP/IP (S/T): S
 Remote System Name:XCPS

 Remote File Name:a


 Remote User ID:                Remote Password:

   Notify Local User:               Notify Remote User:
   Remote Notify Flag: T         Packing: N
   Queue the Request (Y/N): N    Wait for Remote System (Y/N): N
   Compress Data : N             File Type; Binary or Text (B/T): T
   Chkpnt/Resume/None (C/R/N): C Create/Append/Replace Remote File (C/A/R):C

   Checkpoint Size:  1000
   Checkpointed Transfer Retry Delta-time: 0000 01:00:00.00
                                          (C) COPYRIGHT 1998 Computer Associates
PF1=EXIT  PF2=HELP  PF3=PREV SCREEN  PF4=DCL   CTRL-G=ABORT   CTRL-E=MSG SCREEN
```

Figure 6-5: Checkpoint Restart

Screen Fields

Checkpoint Size

The number of records (1 - 9999) to be transferred between checkpoints.

Checkpointed Transfer Retry Delta Time

The amount of time (delta time) CA-XCOM will wait on an interrupted, restartable transfer before it retries the operation. Delta time has the following format:

The default is 0 01:00:00:.0.

[dddd-] [hh:mm:ss.cc]

dddd	The number of days.
hh	The number of hours.
mm	The number of minutes.
ss	The number of seconds.
cc	The number of hundredths of seconds.

You can truncate delta time on the right. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks separating the fields are specified.

Creating Mainframe Files

The sample screen below displays the menu that appears if you select Create/Append/Replace Remote File (C/A/R):C. The additional fields on this menu are described below.

```
Thu Mar 19 18:43            CA-XCOM  Rel    3.x.yymm               SYSTEM
sys$sysdevice: [al]           Send a File                 sys$sysdevice: [al]

 VMS File Name:A.A

 SNA or TCP/IP (S/T): S
 Remote System Name:XCPS

 Remote File Name:a


 Remote User ID:                Remote Password:

   Notify Local User:                  Notify Remote User:
   Remote Notify Flag: T              Packing: N
   Queue the Request (Y/N): N         Wait for Remote System (Y/N): N
   Compress Data : N                  File Type; Binary or Text (B/T): T
   Chkpnt/Resume/None (C/R/N): N      Create/Append/Replace Remote File C/A/R):C
   Prim Alloc: 0         Sec Alloc: 0      Alloc Type: C         Trun: N
   Unit Name:                         Volume Name:
   Format:    FB  Physical Block Size:    28     Record Length:    28

                                                 (C) COPYRIGHT 1998 Computer Associates
PF1=EXIT    PF2=HELP    PF3=PREV SCREEN    PF4=DCL     CTRL-G=ABORT    CTRL-E=MSG SCREEN
```

Figure 6-6: Creating Mainframe Files Screen

Screen Fields

Prim Alloc	Specifies the MVS Primary Allocation.	The default is 0.
Sec Alloc	Specifies the MVS Secondary Allocation.	The default is 0.
Alloc Type	Specifies the MVS Allocation Type. Valid options are: **C** Cylinders **T** Tracks **B** Blocks	The default is C.
Trun	Specifies whether to truncate the date or not.	The default is N.
Unit Name	The unit name for the intended tape drives.	The default is none.
Volume Name	The volume name where the data set is or will be residing.	The default is none.

Format	The record format of the data set. This format correspond to the JCL RECFM sub-parameter. The following are valid options: **Fixed** Specifies that the records all have the same length, (i.e., they are fixed) with multiple records contained in one block. **Fixed Blocked** Specifies the fixed record length of one record per block. **Variable Blocked** Specifies the variable record length with multiple records per block, each of which can have a different length. **Undefined** Specifies the undefined record format of one variable length record per block, where the maximum record length is the blocksize.	The default is F.
Physical Block Size	Specifies the block size of the data set. When using a fixed or fixed block record format, this value must be a multiple of the record length. A variable record format must be 4 bytes larger than the record length. Undefined record formats must be larger than the largest record length. Enter a value from 5 to 32760. If this field is omitted CA-XCOM will attempt to generate an acceptable value.	The default depends on the file format.
Record Length	Specifies the actual or maximum length of a logical record in bytes. The variable blocked record format value should equal the maximum record length + 4. Fixed or fixed block record format values should equal the constant record length. Skip this field for undefined record formats. Enter a value from 5 to 32760. If this field is omitted CA-XCOM will attempt to generate an acceptable value.	The default depends on the file format.

Initiating the Transfer

After you fill in the screen fields, the following prompt is displayed:

```
Is this information correct? [Y/N] :
```

Enter Y if you are satisfied with this information.

Enter N to change any of the parameters. The cursor returns to the top of the screen, where you can resume editing the parameter settings.

If the file transfer initiates now, the screen displays a WORKING... prompt in the lower left corner. As the file is being sent, CA-XCOM displays the percentage completed above the prompt. Once the transfer completes, CA-XCOM displays the transfer statistics and any error messages.

Print a File Screen

Use the Print a File screen shown below to enter the information for transferring a report file from your computer to a remote computer for printing.

```
Thu Mar 19 18:45              CA-XCOM  Rel    3.x.yymm                SYSTEM
sys$sysdevice: [al]            Print a File               sys$sysdevice: [al]

 VMS File Name:A.A

 SNA or TCP/IP (S/T): S
 Remote System Name:XCPS
 Remote User ID:                Remote Password:

 Print Title:                        Print Destination:
             Print Writer:
   Notify Local User:                Notify Remote User:
   Remote Notify Flag: T            Packing: N
   Queue the Request (Y/N):N        Wait for Remote System (Y/N):N
   Compress Data :N                 Hold Printing (Y/N):N
   Chkpnt/Resume/None (C/R/N):N     Copies:1
   Form Type:                       Print Class:
   Delete file after printing:Y     ASA Conversion (Y/N):N
 Form Control Buffer:


                                        (C) COPYRIGHT 1998 Computer Associates
PF1=EXIT  PF2=HELP  PF3=PREV SCREEN  PF4=DCL   CTRL-G=ABORT   CTRL-E=MSG SCREEN
```

Figure 6-7: Remote Printing Screen

Screen Fields

VMS File Name	Enter the OpenVMS filename to be transferred. All the VMS file naming rules apply.	The default is none.
SNA or TCP/IP	Enter the transfer type. Valid options are: S SNA Transfer T TCP/IP Transfer	The default is S.
TCP/IP Port	Enter the TCP/IP port. This screen field is displayed only for TCP/IP transfers.	The default is 8044.
Remote System Name	Enter the symbolic name of the remote computer where the file is being sent. Valid symbolic names are predefined in the CA-XCOM Configuration File. See the chapter "Configuring CA-XCOM" for predefined symbolic names.	The default is none.
Print Title	Enter a title (up to 21 characters) describing the contents of the print file. This field is normally used only as a comment, and is not printed as part of the report. However, on some systems, such as VMS, this title will be spooled with the printout.	The default is none.
Print Writer	Enter the MVS system WRITER name that will receive a report. A maximum of 8 characters may be entered.	The default is none.
Print Destination	Enter the printer or other device on the remote system that users wish the report to be sent to. If not specified, the remote system will send it to the system's default printer. A maximum of 16 characters may be entered.	The default is none.
Notify Local User	Enter the user on your system CA-XCOM will notify once it has completed this procedure. If users have VMS WORLD privileges, any local user can be designated.	The default is none.

Notify Remote User	Enter the user on the remote system CA-XCOM will notify once it has completed this procedure. Note that the CA-XCOM message log on the remote system is always written to when this procedure completes.	The default is none.
Remote Notify Flag	Enter the user-ID type of the remote user to be notified when the data transfer is complete. The choices available are: **N** No Notification **T** Notify TSO User **W** Write to log **C** Notify CICS user **L** Notify Logical Unit **R** Notify CA-Roscoe user **A** Notify OpenVMS user	The default is N.
Packing	To turn record packing on, enter Y. It is valid only for text files and is ignored for binary files. When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them. To turn record packing off, enter N	The default is N.
Queue the Request	Specify Y to place this procedure on the system queue and execute it as an off-line batch job. Specify N to execute this procedure immediately.	The default is N.
Wait for Remote System	Specify Y if the system is to wait until a session is established with the remote system before attempting the transfer. Specify N if the remote system is currently unavailable and the procedure is to be aborted.	The default is N.

Compress Data	Indicates that the transmitted data be compressed. Valid values for the compression method are: N = No Y = Yes R = RLE S = LZSMALL M = LZMEDIUM L = LZLARGE C = COMPACT T = LCOMPACT N indicates the transmitted data should NOT be compressed.	The default is N.
Hold Printing	Indicates whether the transferred report file is to be placed on "HOLD" status on the remote system or be printed immediately. Type Y to request that it be held.	The default is N.
Chkpnt/Resume/None	Chkpnt allows CA-XCOM users to continue an interrupted transfer from the point at which the transfer was stopped. In other words, the interrupted transfer will automatically resume at a specified delta time (t) from the point at which it was interrupted, without having to return to the beginning of the file. The wait time is in standard VMS delta time format. See the topic, Checkpoint Screen, for more information about this screen. Resume specifies that the indicated transfer be restarted immediately. It is effective only when the transfer has been previously checkpointed.	The default is none.
Copies	Specifies the number of copies of the report to be printed. Enter a value from 1 to 999.	The default is 1.
Form Type	Indicates to the remote operator or user what kind of form to print the report on. Enter a maximum of 10 characters.	The default is null.
Print Class	Indicates the print class assigned to this report on the remote system. If the remote system is an IBM mainframe then this field indicates the JES2 SYSOUT class. This is a 1 character field.	The default is null.

Delete file after printing	Indicates whether the file is to be deleted once it has printed on the remote system. The file is deleted after printing by default. To keep the file, enter N.	The default is Y.
ASA conversion	Indicates whether to convert the file to ASA print format. The file is NOT converted to ASA print format (also called FORTRAN carriage control) by default. Enter Y to convert the file.	The default is N.
Form Control Buffer	Indicates the 1 to 4 character FCB that JES is to use to define the forms control parameters when printing on the remote system. This screen field is only displayed when the remote system is an IBM mainframe.	N/A.

When You Are Done...

You have the option of revising any of the values defined or initiate the procedure. See Initiating the Transfer in this chapter for information on initiating a transfer.

Checkpoint Screen

Use the Print a File screen shown below to set the checkpoint delta-time interval.

```
Thu Mar 19 18:46           CA-XCOM  Rel    3.x.yymm                      SYSTEM
sys$sysdevice: [al]       Print a File                    sys$sysdevice: [al]

 VMS File Name:A.A

 SNA or TCP/IP (S/T): S
 Remote System Name:XCPS
 Remote User ID:                Remote Password:

 Print Title:                         Print Destination:
              Print Writer:
   Notify Local User:                 Notify Remote User:
   Remote Notify Flag: T              Packing: N
   Queue the Request (Y/N):N          Wait for Remote System (Y/N):N
   Compress Data :N                   Hold Printing (Y/N):N
   Chkpnt/Resume/None (C/R/N):C       Copies:1
   Form Type:                         Print Class:
   Delete file after printing:Y       ASA Conversion (Y/N):N

   Checkpoint Size:  1000
   Checkpointed Transfer Retry Delta-time:    0 01:00:00.00
                                        (C) COPYRIGHT 1998 Computer Associates
PF1=EXIT  PF2=HELP  PF3=PREV SCREEN  PF4=DCL   CTRL-G=ABORT   CTRL-E=MSG SCREEN
```

Figure 6-8: Checkpoint Screen

Screen Fields

Checkpoint Size	Specifies the number of records (1 - 9999) to be transferred between checkpoints.	The default is 1000.
Checkpointed Transfer Retry Delta Time	The amount of time (delta time) CA-XCOM will wait on an interrupted, restartable transfer before it retries the operation. Delta time has the following format: **[dddd-] [hh:mm:ss.cc]** **dddd** The number of days. **hh** The number of hours. **mm** The number of minutes. **ss** The number of seconds. **cc** The number of hundredths of seconds. You can truncate delta time on the right. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks separating the fields are specified.	The default is 0 01:00:00.0

Submit a Job Screen

Use the Submit a Job screen shown below to enter the information for submitting a job from your computer to be run on a remote computer.

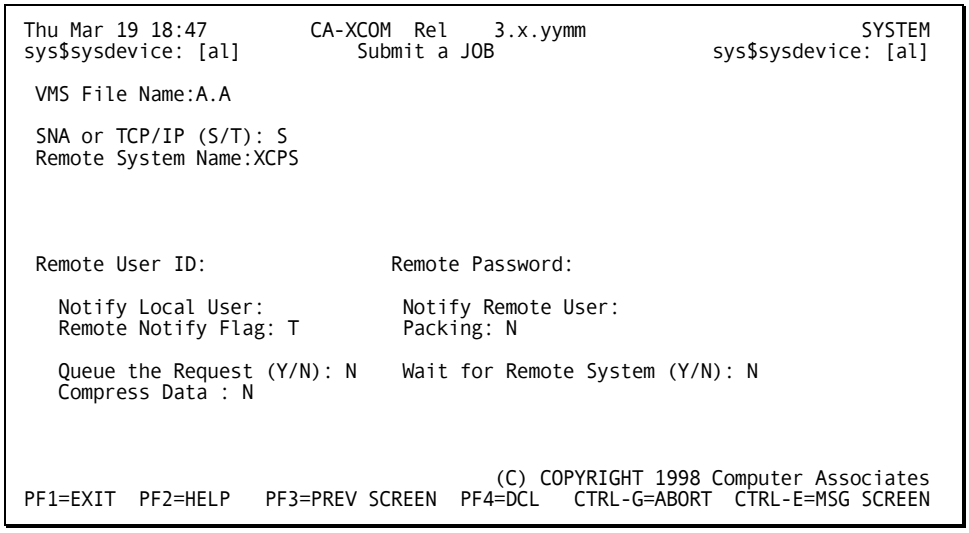


Figure 6-9: Submit a Job Screen

Screen Fields

VMS File Name	Enter the OpenVMS filename to be transferred. All VMS file naming conventions apply.	The default is none.
SNA or TCP/IP	Enter the transfer type. Valid options are: S SNA Transfer T TCP/IP Transfer	The default is S.
TCP/IP Port	Enter the TCP/IP port. This screen field is displayed only for TCP/IP transfers.	The default is 8044.
Remote System Name	Enter the symbolic name of the remote computer where the file is to be sent. Valid symbolic names are predefined in the CA-XCOM Configuration File. For more information on predefined symbolic names, see the chapter, "Configuring CA-XCOM.	The default is none.

Remote User ID	Enter the user ID (up to 12 characters) under whose system resource privileges this file transfer is to be processed on the remote system. This optional parameter is important if the remote computer has a security system since this is the user ID which accesses the necessary system resources (for example, where the remote file will be permitted or denied).	The default is none.
Remote Password	Enter the password (up to 31 characters) associated with the above user ID. For security reasons, the password will display as xxxxxxx.	The default is none.
Notify Local User	Specify which user on your system CA-XCOM will notify once it has completed this procedure. If users have VMS WORLD privileges, any local user can be designated.	The default is none.
Notify Remote User	Specify which user on the remote system CA-XCOM will notify once it has completed this procedure. Note that the CA-XCOM message log on the remote system is always written to when this procedure completes.	The default is none.
Remote Notify Flag	Enter the user-ID type of the remote user to be notified when the data transfer is complete. **N** No Notification **T** Notify TSO User **W** Write to log **C** Notify CICS User **L** Notify Logical Unit **R** Notify CA-Roscoe User **A** Notify OpenVMS User	The default is N.
Packing	To turn record packing on, enter Y. It is valid only for text files and is ignored for binary files. When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them. To turn record packing off, enter N	The default is N.

Queue the Request	To place this procedure in the system queue and execute it as an off-line batch job, enter Y. To execute this procedure immediately, enter N.	The default is N.
Wait for Remote System	If you want CA-XCOM to wait until a session is established with the remote system before attempting the transfer, enter Y. If the remote system is currently unavailable and you want to abort the procedure, enter Y.	The default is N.
Compress Data	Indicates that the transmitted data be compressed. Valid values for the compression method are: N = No — M = LZMEDIUM Y = Yes — L = LZLARGE R = RLE — C = COMPACT S = LZSMALL — T = LCOMPACT N indicates the transmitted data should NOT be compressed.	The default is N.

When You Are Done...

You can either revise any of the values you just defined, or initiate the procedure. For more information on initiating a file transfer, see Initiating the Transfer in this chapter.

Receive a File Screen

Use the Receive a File screen shown below to enter the information for transferring a file from a remote computer to your computer.

```
Thu Mar 19 18:47              CA-XCOM  Rel    3.x.yymm                   SYSTEM
sys$sysdevice: [al]           Receive a File               sys$sysdevice: [al]

 Remote File Name:

 SNA or TCP/IP (S/T): S              TCP/IP PORT:
 Remote System Name:XCPS


VMS File Name:

 Remote User ID:                Remote Password:

   Notify Local User:                Notify Remote User:
   Remote Notify Flag: T          Packing: N
   Unit Name:                     Volume Name:
   Queue the Request (Y/N): N     Wait for Remote System (Y/N): N
   Compress Data : N              File Type; Binary or Text (B/T): T
   Chkpnt/Resume/None (C/R/N): N  Create/Append/Replace Local File(C/A/R): C


                                  (C) COPYRIGHT 1998 Computer Associates
PF1=EXIT    PF2=HELP    PF3=PREV SCREEN    PF4=DCL    CTRL-G=ABORT    CTRL-E=MSG SCREEN
```

Figure 6-10: Receive a File Screen

Screen Fields

Remote File Name	Enter the name of the file on the remote system (up to 256 characters) that you are transferring to the local system.	The default is none.
SNA or TCP/IP	Enter the transfer type. Valid options are: **S** SNA Transfer **T** TCP/IP Transfer	The default is S.
TCP/IP Port	Enter the TCP/IP port. This screen field is displayed only for TCP/IP transfers.	The default is 8044.

Remote System Name	Enter the symbolic name of the remote computer where the file is located. Valid symbolic names are predefined in the CA-XCOM Configuration File. For more information about predefined symbolic names, see the chapter, "Configuring CA-XCOM."	The default is none.
VMS File Name	Enter the OpenVMS filename that will hold the transferred file. All VMS file naming conventions apply.	The default is none.
Remote User ID	Enter the user ID (up to 12 characters) under whose system resource privileges this file transfer is to be processed on the remote system. This optional parameter is important if the remote computer has a security system, since this is the user ID which accesses the necessary system resources (for example, where the remote file will be permitted or denied).	The default is none.
Remote Password	Enter the password (up to 31 characters) associated with the above user ID. For security reasons, the password will not display on the screen.	The default is none.
Notify Local User	Enter the user on your system CA-XCOM will notify once it has completed this procedure. If users have VMS WORLD privileges, any local user can be designated.	The default is none.
Notify Remote User	Enter the user on the remote system CA-XCOM will notify once it has completed this procedure. Note that the CA-XCOM message log on the remote system is always written to when this procedure completes.	The default is none.

Remote Notify Flag	Enter the user-ID type of the remote user to be notified when the data transfer is complete. The choices available are: **N** No notification **T** Notify TSO User **W** Write to log **C** Notify CICS user **L** Notify Logical Unit **R** Notify CA-Roscoe user **A** Notify OpenVMS user	The default is N.
Packing	To turn record packing on, enter Y. It is valid only for text files and is ignored for binary files. When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them. To turn record packing off, enter N.	The default is N.
Unit Name	The unit name under which the file is residing. **Note:** This field is ignored if the partner is not an MVS platform.	The default is none.
Volume Name	The volume name where the file is residing. **Note:** This field is ignored if the partner is not an MVS platform.	The default is none.
Queue the Request	Specify Y to place this procedure in the system queue and execute it as an off-line batch job. Specify N to execute this procedure immediately.	The default is N.
Wait for Remote System	If you want CA-XCOM to wait until a session is established with a remote system before attempting the transfer, enter Y. If the remote system is currently unavailable and you want to abort the procedure, enter N.	The default is N.

Compress Data	Indicates the transmitted data be compressed. Valid values for the compression method are: N = No Y = Yes R = RLE S = LZSMALL M = LZMEDIUM L = LZLARGE C = COMPACT T = LCOMPACT N indicates the transmitted data should NOT be compressed.	The default is N.
File Type; Binary or Text	Identifies the type of data that is being transferred. Its secondary function is to indicate whether the transferred data is to be translated from ASCII to EBCDIC. If the file being sent is a DATA file or a source code file, select T. CA-XCOM checks whether the Remote System Name designated during the installation procedure is an ASCII or an EBCDIC system. For more information on the installation procedure, see the chapter "Installing CA-XCOM." If it is an EBCDIC system, CA-XCOM performs the translation according to standard translation tables. If the file being transferred is an executable, such as a file with an .EXE extension, select B. CA-XCOM assumes that because this is a binary file, it should not be converted to EBCDIC.	The default is T.
Chkpnt/Resume/None	Chkpnt allows CA-XCOM users to continue an interrupted transfer from the point at which the transfer was stopped. In other words, the interrupted transfer will automatically resume at a specified delta time (t) from the point at which it was interrupted, without having to return to the beginning of the file. The wait time is in standard VMS delta time format. For more information about this field, see the section Checkpoint Screen. Resume specifies that the indicated transfer be restarted immediately. It is effective only when the transfer has been previously checkpointed.	The default is none.

Create/Append/Replace Local File	Determines how CA-XCOM handles the file that will be receiving the transferred data on the local system. **C** Create a new file on the local system. **A** Append this data to an existing file on the local system. **R** Replace an existing file on the local system.	The default is C.

When You Are Done...

You can either revise any of the values you just defined, or initiate the procedure. For more information on initiating a file transfer, see Initiating the Transfer in this chapter.

Chapter 7

The Command Line Interface (DCL)

CA-XCOM includes a set of Digital Command Language (DCL) commands and qualifiers that you can use to implement the CA-XCOM functions. These commands and qualifiers follow DCL syntax.

To facilitate the use of the CA-XCOM DCL Command Interface, certain VMS features, such as the ability to define command procedures, symbols, and logical names are available.

There are five CA-XCOM DCL Commands:

- XCOM/SENDFILE
- XCOM/GETFILE
- XCOM/PRINT
- XCOM/SUBMIT
- XCOM/MENU

This chapter discusses the first four file transfer commands, along with their required parameters, valid qualifiers, and defaults. (For information about the XCOM/MENU command, which invokes the Menu Interface, see the chapter "The Menu Interface.")

Most qualifiers are optional, and their use depends on which features you want to use or the particular remote system type involved in a procedure. In addition, many qualifiers have default values that CA-XCOM uses if the qualifier is omitted. These default values will be noted.

HELP Facility

If the CA-XCOM help text was installed in the system-wide help library, users can use the DCL HELP command to obtain information about CA-XCOM user commands and qualifiers. To obtain help information, at the DCL "$" prompt, type: HELP XCOM

For more information, see the chapter, "Installing CA-XCOM."

The XCOM/SENDFILE Command

Use the XCOM command and the /SENDFILE qualifier to send a copy of a file from the local system to a remote computer. The local file can either replace an existing file on the remote system, be appended to an existing file, or be created as a new file on the remote system. A shorter form of this command is XCOM/SEND.

Enter the command and qualifier in the following format:

```
$ XCOM/SENDFILE <local-file> <remote-file>
```

<local-file> An existing VMS file on the local system.

<remote-file> An existing remote system filename that the transferred file will either replace or be appended to.

OR

A remote system filename that will be created on the remote system to hold the transferred file.

Specifying Remote System Filenames

Remote system filenames must be specified according to the file naming conventions of the remote system. If the <remote-file> is not in a format that VMS can recognize then it must be put in quotation marks:

```
$ XCOM/SENDFILE <local-file> "<remote-file>"
```

The <remote-file> can also be specified using the following DECnet filename convention:

```
rmtsys "userid password"::filename.typ
```

rmtsys The symbolic name of the remote system defined in the XCOM configuration file.

Userid The remote system user whose resource access allows the file transfer.

Password The password associated with this user ID.

Filename.typ The remote system filename.

/SENDFILE Example

In this example, we are sending a copy of a local file STORIES.TXT to a file named VMS.STORIES, which will be created on an IBM mainframe with the symbolic name HARPO. There is a security system running on this mainframe.

When the file transfer completes the user RWEISS, whose access privileges we are using on the remote system, will be notified. The request is queued on the VMS batch queue SYS$BATCH. Because this transfer creates a new file on the mainframe, you must supply the file format and record length.

```
$ XCOM/SEND/RMTSYS=HARPO/QUEUE/USERID=RWEISS/PASSWORD=ENIGMA/
RNOTIFY=RWEISS/FORMAT=FIXED_BLOCKED/BLOCKL=800/RECL=80 STORIES.TXT  VMS.STORIES
```

Using the full DECnet filename convention for specifying the remote system name, the following command string will also work for this transfer :

```
$ XCOM/SEND/QUEUE/RNOTIFY=RWEISS/FORMAT= FIXED_BLOCKED/BLOCKL=800/RECL=80
STORIES.TXT HARPO"WEISS  ENIGMA"::VMS.STORIES
```

For an example of how to submit a CA-XCOM transfer as a batch job, see Submitting a CA-XCOM Transfer as a Batch Job in this chapter.

XCOM/SENDFILE Qualifiers

The table below describes the qualifiers that may be used with this command.

Qualifier	Explanation
/ALLOCTYPE=n	*Valid only for the /SENDFILE qualifier.* Used only when creating a file on a remote IBM mainframe. Specifies the MVS Allocation Type. **Range**: C, T, or B C = Cylinders T = Tracks B = Blocks **Default**: C
/APPEND	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Indicates that the data transferred be appended to the destination file. **Default:** If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.

Qualifier	Explanation
/BINARY	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Indicates that the file be treated as data; no translation will be performed. **Default:** If /BINARY or /TEXT is not supplied then /TEXT is the default value used.
/BLOCKL=nnnnn	*Valid only for the /SENDFILE qualifier.* Used only when creating a file on a remote IBM mainframe. It specifies how many records are contained inside a block. Note that "creating" means that the "/CREATE" qualifier is specified either explicitly or by default. **Fixed or Fixed Blocked files** - /BLOCKL must be a multiple of the value for the /RECL field. **Variable record files** - /BLOCKL must be at least four bytes larger than the /RECL field. **Undefined record files** - /BLOCKL must be at least as large as the largest record length. **Range:** 5 - 32760 **Default:** If the /BLOCKL qualifier is not specified and the transfer is to an IBM mainframe, CA-XCOM will generate an acceptable value.

Qualifier	Explanation
/CHECKPOINT [=[dddd-] hh:mm:ss.cc] /NOCHECKPOINT	*Valid for the /SENDFILE, /GETFILE, and /PRINT qualifiers.* /CHECKPOINT indicates if the transfer is interrupted, it will automatically restart, or resume at some delta time (t) in the future from the point where it left off, without having to return to the beginning of the file. The delta time is the wait time in standard VMS delta time format. /NOCHECKPOINT indicates the transfer is not restartable (i.e., if the transfer is interrupted, there is no automatic retry). A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd** number of days. **hh** number of hours. **mm** number of minutes. **ss** number of seconds. **cc** number of hundredths of seconds. The fields located on the righthand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified. A restart of the transfer will be attempted until either the transfer is successful or an aging time limit is reached, at which point it is aborted. **Default:** /NOCHECKPOINT *The default time used is 1 hour, (i.e., 0 01:00:00) if delta time is not specified.*
/CKPT	*Valid only for the /SENDFILE, /GETFILE, AND /PRINT qualifiers.* Specifies the number of records to be transferred between checkpoints. **Range:** 1-9999 **Default:** 1000

Qualifier	Explanation
/COMPRESS=compression method /NOCOMPRESS	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /COMPRESS indicates the transmitted data be compressed. Valid values for the compression method are: ■ NO ■ YES ■ RLE ■ LZSMALL ■ LZMEDIUM ■ LZLARGE ■ COMPACT ■ LCOMPACT /NOCOMPRESS indicates the transmitted data should NOT be compressed. **Range:** /COMPRESS or /NOCOMPRESS **Default:** /COMPRESS=NO or /NOCOMPRESS
/CREATE	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Indicates the destination file is to be created. **Default:** If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.
/FORMAT=rcd-format	*Valid only for the /SENDFILE qualifier.* Equivalent to the DCB RECFM parameter in JCL. The keyword choices are: **Fixed** - The records all have the same length, i.e., they are fixed, with multiple records contained in one block. **Fixed_Blocked** - Fixed record length of one record per block. **Variable_Blocked** - Variable record length with multiple records per block, each of which can have a different length. **Undefined** - Undefined record format of one variable length record per block, where the maximum record length is the blocksize. **Range:** Fixed, Fixed_Blocked, Variable_Blocked, Undefined **Default:** If the /FORMAT qualifier is not specified, the default value is Fixed_Blocked.

Qualifier	Explanation
/ID	*Valid only for /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Associates a descriptive name with this file transfer. This ID can be any combination of alphanumeric or national characters. The ID parameter complements the unique request number assigned to every locally initiated file transfer. Refer to your documentation to find out where ID parameter can be found. This mnemonic on MVS will appear before the message on the CA-XCOM Message Log and after the message when it is displayed on the MVS console. The ID is passed to remote systems running CA-XCOM Version 2 or higher. If the remote computer is running Version 1, then an ID of "REMOTE" will always be assigned to this transfer on the remote system. **Range:** 1-10 characters **Default:** none
/LOG[=filename] /NOLOG	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers* /LOG specifies the filename to receive time-stamped CA-XCOM status or log messages. If no filename is specified it will default to xom.log in the current directory. /NOLOG specifies that there is to be no message logging. **Range:** 1-64 characters **Default:** /LOG
/LNOTIFY=username	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Identifies the local OpenVMS user to be notified when the data transfer is complete. *You must have WORLD privilege to use this field to notify any user on the system other than yourself.* **Range:** 1-12 characters **Default:** none
/PACK /NOPACK	*Valid only for /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /PACK is a Boolean item code that specifies record packing. It is valid only for text files (not binary files). When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte

Qualifier	Explanation
	buffer before compressing and transmitting them. /NOPACK is a Boolean item code that specifies that packing will not be used. */PACK is ignored when /BINARY is specified.* **Default:** /NOPACK.
/PASSWORD=string	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the password for the user ID under whose resource access authorization CA-XCOM will execute on the remote system. It should be the password known to the remote security system. For example: **Mainframe** - RACF, CA-ACF2 and CA-Top Secret. **Other Systems** - The user's login password. **Range:** 1-31 characters **Note:** If the remote system has passwords defined in lower case, it is necessary to place the password value in double quotes, that is, "mypassword", to retain lower case.
/PORT=n	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies a port number other than the default of 8044 for TCP/IP transfers. **Note**: /PORT is valid only when /TCPIP is specified. **Range:** 1 - 99999 **Default:** 8044
/PRIMARY=nnnn	*Valid only for the /SENDFILE qualifier* Used only when creating a file on a remote IBM mainframe. Specifies the MVS Primary Allocation. **Range:** 0 - 99999 **Default:** 0 Note: if the value of 0 is specified, CA-XCOM for MVS will generate an acceptable value.

Qualifier	Explanation
/QUEUE=queue-name /NOQUEUE	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /QUEUE specifies the name of a standard VMS execution queue on which to place this CA-XCOM transfer request. Specifying the qualifier indicates that the CA-XCOM transfer request should be executed off-line as a batch job. /NOQUEUE specifies that the transfer request be executed in the current context. (i.e., it should not be executed off-line as a batch job.) **Range:** 1-31 characters **Default:** /NOQUEUE *If no value is specified for /QUEUE, then SYS$BATCH, the default VMS batch queue, will be used.*
/RECL=nnnnn	*Valid only for the /SENDFILE qualifier.* Used only when creating a file on a remote IBM mainframe to specify how many bytes are in a record. **Range:** 1-5 ASCII, decimal or numeric characters **Default:** If /RECL qualifier is not specified and the transfer is to an IBM mainframe, CA-XCOM will generate an acceptable value.
/REPLACE	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Indicates the destination file is to be replaced. **Default:** If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.
/RESUME	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Meaningful only if the transfer had previously been checkpointed, interrupted, and is awaiting restart. It specifies that the indicated transfer be restarted immediately.

Qualifier	Explanation
/RMTSYS=remote-system-name	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates the name associated with the remote computer. The remote system name is defined in the CA-XCOM configuration file. For information on defining remote system names, see the chapter, "Configuring CA-XCOM". **Range:** 1-254 characters **Default:** none **Note:** If the remote system name is specified as part of the remote file specification then this item does not have to be supplied.
/RNFLAG=keywordcode	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the user ID type of the remote user to be notified when the data transfer is complete. The keyword choices available are: **NONE** No notification **TSO** Notify TSO user **LOG** Write to log **CICS** Notify CICS User **LU** Notify Logical Unit **ROSCOE** Notify CA-Roscoe User **VMSUSER** Notify VMS User. **Range:** NONE, TSO, LOG, CICS, LU, ROSCOE, VMSUSER **Default:** NONE
/RNOTIFY=remote-user-name	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates the ID of the remote user to be notified when the data transfer is complete. **Range:** 1-12 characters **Default:** none

Qualifier	Explanation
/SECONDARY=nnnn	*Valid only for the /SENDFILE qualifier.* Used only when creating a file on a remote IBM mainframe. Specifies the MVS Secondary Allocation. **Range:** 0 - 99999 **Default**: 0 **Note:** If the value of 0 is specified, CA-XCOM for MVS will generate an acceptable value.
/SNA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies use of the SNA LU6.2 protocol for the transfer. **Note:** /SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.
/TCPIP	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies use of the TCP/IP protocol for the transfer. **Note:** /SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.
/TDUDATA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Transfer-dependent user data (up to 10 characters). This data is passed by CA-XCOM VMS to a user application. Its use is determined by the user application. **Range:** 1 - 10 characters **Default:** NONE
/TEXT	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Specifies that the file be treated as an ASCII text file. When sending information to, or receiving information from a remote system that uses a different character representation (e.g., EBCDIC), the file will automatically be translated. **Default:** If /BINARY or /TEXT is not supplied then /TEXT is the default value used.

Qualifier	Explanation
/TRACE	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Used primarily at the request of CA-Technical Support to collect information which will help diagnose a problem.
/TRUNCATE /NOTRUNCATE	*Valid only for the /SENDFILE qualifier.* /TRUNCATE indicates a record can be truncated from the remote system if it is too long. /NOTRUNCATE indicates that the LU 6.2 conversation abend or abort if a record is encountered which is greater than the maximum allowable record size. **Range:** /TRUNCATE or /NOTRUNCATE **Default:** /NOTRUNCATE
/UNIT=string	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Used when creating or retrieving a file on a remote IBM mainframe. Note that "creating" means the "/CREATE" qualifier is specified, explicitly or by default. The /UNIT qualifier specifies the generic unit name under which the file will be placed or where it resides. **Range:** 1-10 characters **Default:** If /UNIT is not entered, the CA-XCOM uses the default unit name defined in the CA-XCOM MVS Default Options Table.
/UDATA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates that system-wide user data included in the logging information for file transfers initiated by this system. This data can be used for correlating CA-XCOM activities in multi-CA-XCOM environments. **Range:** 1-10 characters **Default:** none

Qualifier	Explanation
/USERID=username	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the remote user ID under whose set of resource access authorization CA-XCOM is to execute on the remote system. It should be the user ID known to the remote security system. For example: **Mainframe systems** - RACF, ACF2, and TOPSECRET. **Other Systems** - The user's login username. **Range:** 1-12 characters **Default:** none **Notes:** If the user ID is specified as part of the remote file specification then this qualifier does not have to be supplied. If the remote system has user IDs defined in lower case, it is necessary to place the username value in double quotes, that is, "username", to retain lower case.
/VOLUME=volume-name	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Used when creating or retrieving a file on a remote IBM mainframe. Note that "creating" means that the "/CREATE" qualifier is specified, explicitly or by default. /VOLUME specifies the volume name under which the file is to be placed or where it resides. **Range:** 1-10 characters **Default:** If /VOLUME is not supplied, the CA-XCOM default volume name will be used as defined in the CA-XCOM MVS Default Options Table.

Qualifier	Explanation
/WAIT[=[dddd-] hh:mm:ss.cc] /NOWAIT	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.* /WAIT specifies that the transfer request should wait in the event that the remote system is unavailable. The buffer contains the wait time in standard VMS delta time format. /NOWAIT indicates that the transfer request abort if the remote system is unavailable. A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd** The number of days. **hh** The number of hours. **mm** The number of minutes. **ss** The number of seconds. **cc** The number of hundredths of seconds. The fields located on the righthand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified. **Default:** /NOWAIT *The default time used is 3 minutes, (i.e., 0 00:03:00) if no value is supplied with the /WAIT qualifier.*
/XTRACE	*Valid for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.* /XTRACE specifies if tracing is to be taken of an XCOM transfer. Any trace will be stored in the XCOM$IMAGE:XTRACE.TXT. Possible values are: 0 = No tracing 1- 9 = Provide tracing with different levels of detail **Range:** 0 - 9 **Default:** 0

The XCOM/GETFILE Command

Use the CA-XCOM command and the /GETFILE qualifier to retrieve a copy of a file from a remote IBM mainframe to either replace an existing file on the local system, append it to an existing file or create a new file on the local system. A shorter form of this command is XCOM/GET.

Format:

```
$ XCOM/GETFILE <remote-file> <local-file>
```

<remote-file> An existing remote system filename

<local-file> An existing OpenVMS file on the local system that the transferred file either replaces or is appended to, or a remote system filename that the system creates to hold the transferred file.

Specifying Remote System Filenames

Remote system filenames must be specified according to the file naming conventions of the remote system. If the <remote-file> is not in a format that OpenVMS can recognize then it must be put in quotation marks:

```
$ XCOM/GETFILE "<remote-file>" <local-file>
```

The <remote-file> can also be specified using the following DECnet filename convention:

```
rmtsys "userid password"::filename.typ
```

rmtsys The symbolic name of the remote system defined in the CA-XCOM configuration file.

userid The remote system user whose resource access allows the file transfer.

password The password associated with the user ID.

filename.typ The remote system filename.

GETFILE Example

In this example we are retrieving a copy of the file DWNLD.DAT from an IBM mainframe with the symbolic name MIDWAY and appending this data to an existing file named LEAVES.MVS. We want our system to wait until a session is established with MIDWAY before attempting the transfer. For other qualifiers, the default values will be used.

```
$ XCOM/GET/RMTSYS=MIDWAY/WAIT/APPEND LEAVES.MVS DWNLD.DAT
```

or request the same procedure with the following command string:

```
$ XCOM/GET/WAIT/APPEND LEAVES.MVS MIDWAY:: DWNLD.DAT
```

For an example of how to submit a CA-XCOM transfer as a batch job, see Submitting a CA-XCOM Transfer as a Batch Job in this chapter.

XCOM/GETFILE Qualifiers

The table below describes the qualifiers that may be used with this command.

Qualifier	Explanation
/APPEND	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Indicates that the data transferred be appended to the destination file. **Default:** If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.
/BINARY	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Indicates that the file be treated as data; no translation will be performed. **Default:** If /BINARY or /TEXT is not supplied then /TEXT is the default value used.

Qualifier	Explanation
/CHECKPOINT[=[dddd-] hh:mm:ss.cc] /NOCHECKPOINT	*Valid only for the /SENDFILE, /GETFILE, and /PRINT qualifiers.* /CHECKPOINT indicates that an interrupted transfer will automatically restart, or resume at some delta time (t) in the future, at the point where it left off, without having to return to the beginning of the file. The delta time is the wait time in standard VMS delta time format. /NOCHECKPOINT indicates the transfer is not restartable (i.e., if the transfer is interrupted, there is no automatic retry). A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd** number of days. **hh** number of hours. **mm** number of minutes. **ss** number of seconds. **cc** number of hundredths of seconds. The fields located on the righthand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified. A restart of the transfer will be attempted until either the transfer is successful or an aging time limit is reached, at which point it is aborted. **Range:** /CHECKPOINT or /NOCHECKPOINT **Default:** /NOCHECKPOINT *The default time used is 1 hour (i.e., 0 01:00:00) if delta time is not specified.*
/CKPT	*Valid only for the /SENDFILE, /GETFILE, and /PRINT qualifiers.* Specifies the number of records to be transferred between checkpoints. **Range:** 1-9999 **Default:** 1000

Qualifier	Explanation
/COMPRESS=compression method /NOCOMPRESS	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /COMPRESS indicates the transmitted data be compressed. Valid values for the compression method are: ■ NO ■ YES ■ RLE ■ LZSMALL ■ LZMEDIUM ■ LZLARGE ■ COMPACT ■ LCOMPACT /NOCOMPRESS indicates the transmitted data should NOT be compressed. **Range:** /COMPRESS or /NOCOMPRESS **Default:** /COMPRESS=NO or /NOCOMPRESS
/CREATE	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Indicates the destination file is to be created. **Default:** If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.
/ID	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers* Associates a descriptive name with this file transfer. This ID can be any combination of alphanumeric or national characters. The ID parameter complements the unique request number assigned to every locally initiated file transfer. Refer to your documentation to find out where ID parameter can be found. This mnemonic on MVS will appear before the message on the CA-XCOM Message Log and after the message when it is displayed on the MVS console. The ID is passed to remote systems running CA-XCOM Version 2 or higher. If the remote computer is running Version 1, then an ID of "REMOTE" will always be assigned to this transfer on the remote system. **Range:** 1-10 characters **Default:** none

Qualifier	Explanation
/LNOTIFY=username	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Identifies the local OpenVMS user to be notified when the data transfer is complete. *You must have WORLD privilege to use this field to notify any user on the system other than yourself.* **Range:** 1-12 characters **Default**: none
/LOG[=filename] /NOLOG	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /LOG specifies the filename to receive time-stamped CA-XCOM status, or log messages. If no filename is specified, it will default to xcom.log in the current directory. /NOLOG specifies that there is to be no message logging. **Range:** 1-64 characters **Default:** /LOG
/PASSWORD=string	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the password for the user ID under whose resource access authorization CA-XCOM will execute on the remote system. It should be the password known to the remote security system. For example: **Mainframe systems** - RACF, ACF2 and TOPSECRET. **Other Systems** - The user's login password. **Range:** 1-31 characters **Default:** none **Note:** If the remote system has passwords defined in lower case, it is necessary to place the password value in double quotes, that is, "mypassword", to retain lower case.

Qualifier	Explanation
/PACK /NOPACK	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /PACK is a Boolean item code that specifies record packing. It is valid only for text files (not binary files). When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them. /NOPACK is a Boolean item code that specifies that packing will not be used. */PACK is ignored when /BINARY is specified.* **Default:** /NOPACK.
/PORT	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies a port number besides the default (8044) for TCP/IP transfers. **Note:** /PORT is relevant only when /TCPIP is specified. **Range:** 1-99999 **Default:** 8044
/QUEUE=queue_name /NOQUEUE	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /QUEUE specifies the name of a standard VMS execution queue on which to place this CA-XCOM transfer request. Specifying the qualifier indicates that the CA-XCOM transfer request should be executed off-line as a batch job. /NOQUEUE specifies that the transfer request should not be executed off-line as a batch job). **Range:** 1-31 characters **Default:** /NOQUEUE *If no value is specified for /QUEUE then SYS$BATCH, the default VMS batch queue, will be used.*
/REPLACE	*Valid only for the /SENDFILE, and /GETFILE qualifiers.* Indicates the destination file is to be replaced. **Default:** If /APPEND, /CREATE, or /REPLACE are not specified then /CREATE is the default value used.
/RESUME	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Meaningful only if the transfer had previously been checkpointed, interrupted, and is awaiting restart. It specifies that the indicated

Qualifier	Explanation
	transfer be restarted immediately.
/RMTSYS =remote-system-name	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates the name associated with the remote computer. The remote system name is defined in the CA-XCOM configuration file. For information about defining remote system names, see the chapter, "Configuring CA-XCOM for OpenVMS Alpha". **Range:** 1-254 characters **Default:** none **Note:** If the remote system name is specified as part of the remote file specification then this item does not have to be supplied.
/RNFLAG=keywordcode	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the user ID type of the remote user to be notified when the data transfer is complete. The keyword choices available are: **NONE** No notification **TSO** Notify TSO user **LOG** Write to log **CICS** Notify CICS User **LU** Notify Logical Unit **ROSCOE** Notify CA-Roscoe User **VMSUSER** Notify VMS User. **Range:** NONE, TSO, LOG, CICS, LU, ROSCOE, VMSUSER **Default:** NONE
/RNOTIFY=remote-user-name	*Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers only.* Indicates the ID of the remote user to be notified when the data transfer is complete. **Range:** 1-12 characters **Default**: none
/SNA	*Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers only.* Specifies use of the SNA LU6.2 protocol for the file transfer. **Note:** /SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.

Qualifier	Explanation
/TCPIP	*Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers only.* Specifies use of the TCP/IP protocol for the file transfer. **Note:** /SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.
/TDUDATA	*Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers only.* Transfer-dependent user data (up to 10 characters) that CA-XCOM VMS passes to a user application. Its use is determined by the user application. **Range:** 1-10 characters **Default:** none
/TEXT	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Specifies that the file be treated as an ASCII text file. When sending information to, or receiving information from a remote system that uses a different character representation (e.g., EBCDIC) the file will automatically be translated. **Default:** If /BINARY or /TEXT is not supplied then /TEXT is the default value used.
/TRACE	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Used primarily at the request of CA-Technical Support to collect information which will help diagnose a problem.
/UDATA	*Valid for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers only.* Indicates that system-wide user data included in the logging information for file transfers initiated by this system. This data can be used to correlate CA-XCOM activities in multi-CA-XCOM environments. **Range:** 1-10 characters **Default**: none

Qualifier	Explanation
/UNIT=string	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Used when creating or retrieving a file on a remote IBM mainframe. Note that "creating" means that "/CREATE" qualifier is specified, explicitly or by default. The /UNIT qualifier specifies the generic unit name under which the file will be placed or where it resides. **Range:** 1-10 characters **Default:** If /UNIT is not entered, the CA-XCOM default unit name will be used as defined in the CA-XCOM MVS Default Options Table.
/USERID=username	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the remote user ID under whose set of resource access authorization CA-XCOM is to execute on the remote system. It should be the user ID known to the remote security system. For example: **Mainframe systems** - RACF, CA-ACF2, and CA-Top Secret **Other systems** - The user's login username. **Range:** 1-12 characters **Default:** none **Note:** If the user ID is specified as part of the remote file specification then this qualifier does not have to be supplied. Also, if the remote system has user IDs defined in lower case, it is necessary to place the username value in double quotes, that is, "username", to retain lower case.
/VOLUME=volume-name	*Valid only for the /SENDFILE and /GETFILE qualifiers.* Used when creating or retrieving a file on a remote IBM mainframe. Note that "creating" means that the "/CREATE" qualifier is specified, explicitly or by default. /VOLUME specifies the volume name under which the file is to be placed or where it resides. **Range:** 1-10 characters **Default:** If /VOLUME is not supplied, CA-XCOM uses the default volume name defined in the CA-XCOM MVS Default Options Table.

Qualifier	Explanation
/WAIT[=[dddd-] hh:mm:ss.cc]	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.* /WAIT specifies that the transfer request should wait if the remote system is unavailable. The buffer contains the wait time in standard VMS delta time format. /NOWAIT indicates that the transfer request abort if the remote system is unavailable. A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd** The number of days. **hh** The number of hours. **mm** The number of minutes. **ss** The number of seconds. **cc** The number of hundredths of seconds. The fields located on the righthand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified. **Default:** /NOWAIT *The default time used is 3 minutes, (i.e., 0 00:03:00) if no value is supplied with the /WAIT qualifier.*
/XTRACE	*Valid for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.* /XTRACE specifies if tracing is to be taken of an XCOM transfer. Any trace will be stored in the XCOM$IMAGE:XTRACE.TXT. Possible values are: 0 = No tracing 1- 9 = Provide tracing with different levels of detail **Range:** 0 - 9 **Default:** 0

The XCOM/PRINT Command

Use the CA-XCOM command and the /PRINT qualifier to send a copy of a file to a remote IBM mainframe for printing.

To enter the command and qualifier, use the following format:

```
$ XCOM/PRINT <local-file> <remote-system>::
```

<local-file> An existing local filename

<remote-system> The remote node name

You must enter the double colons at the end of the command.

Remote System Name Specification

The remote system name can be specified using the DECnet filename convention with the following format:

```
rmtsys"userid password"::
```

where "rmtsys" is the optional name of the remote computer to which you are sending.

If "rmtsys" is not specified, then the remote system name must be specified via the /RMTSYS qualifier. Similarly, "userid password" replaces the /USERID qualifier and the /PASSWORD qualifier. The password field cannot appear without the user ID field. The quotes are only necessary when specifying the user ID and the password.

/PRINT Examples

In this example we are sending a report file called AUGUST.RPT on our local system to another computer with the symbolic name ALTER. The report's title is "Personnel Changes" and we want the printer queue designated DIABLO2 to print six copies. For other qualifiers the default values will be used.

```
$ XCOM/PRINT/RMTSYS=ALTER/RNOTIFY=BOSS/TITLE="Personnel Changes"-
/COPIES=6/DESTINATION=DIABLO2 AUGUST.RPT
```

Or, request the same procedure with the following command string:

```
$ XCOM/PRINT/RNOTIFY=BOSS/TITLE="Personnel Changes"/COPIES=6 /DESTINATION=DIABLO2
AUGUST.RPT ALTER::
```

In the former case, the second parameter was used to specify the remote system.

For an example of how to submit a CA-XCOM transfer as a batch job, see the topic Submitting a CA-XCOM Transfer as a Batch Job later in this chapter.

XCOM/PRINT Qualifiers

The table below describes the qualifiers that may be used with this command.

Qualifier	Explanation
/ASA	*Valid only for the /PRINT function code.* /ASA indicates that CA-XCOM is to convert the file to ASA print format, also called FORTRAN carriage control. /ASA is a format supported by most IBM and DEC printers./NOASA indicates that there is to be no ASA conversion of the file. **Range:** /ASA or /NOASA **Default:** /NOASA
/CHECKPOINT[=[dddd-] hh:mm:ss.cc] /NO CHECKPOINT	*Valid only for the /SENDFILE, /GETFILE, and /PRINT qualifiers.* /CHECKPOINT indicates that an interrupted transfer will automatically restart, or resume at some delta time (t) in the future, at the point where it left off, without having to return to the beginning of the file. The delta time is the wait time in standard VMS delta time format. /NOCHECKPOINT indicates the transfer is not restartable (i.e., if the transfer is interrupted, there is no automatic retry). A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd** number of days **hh** number of hours **mm** number of minutes **ss** number of seconds **cc** number of hundredths of seconds. The fields located on the righthand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified. A restart of the transfer will be attempted until either the transfer is successful or an aging time limit is reached, at which point it is aborted. **Range:** /CHECKPOINT or /NOCHECKPOINT **Default:** /NOCHECKPOINT *The default time used is 1 hour, (i.e., 0 01:00:00) if delta time is not specified.*

Qualifier	Explanation
/CKPT	*Valid only for the /SENDFILE, /GETFILE, and /PRINT qualifiers.* Specifies the number of records to be transferred between checkpoints. **Range:** 1-9999 **Default:** 1000
/CLASS=class-id	*Valid only for the /PRINT function code.* Specifies the print class through which the print request is to be placed on the remote system. If the remote system is an IBM mainframe, then this field indicates the JES2 SYSOUT class. **Range:** 1 character string
/COMPRESS=compression method /NOCOMPRESS	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /COMPRESS indicates the transmitted data be compressed. Valid values for the compression method are: ▪ NO ▪ YES ▪ RLE ▪ LZSMALL ▪ LZMEDIUM ▪ LZLARGE ▪ COMPACT ▪ LCOMPACT /NOCOMPRESS indicates the transmitted data should NOT be compressed. **Range:** /COMPRESS or /NOCOMPRESS **Default:** /COMPRESS=NO or /NOCOMPRESS
/COPIES=nnn	*Valid only for the /PRINT function code.* Specifies the number of copies to be printed on the remote system. **Range:** 1-999 **Default:** 1

Qualifier	Explanation
/DELETE /NODELETE	*Valid only for the /PRINT function code.* /DELETE indicates that the file be deleted after printing on the remote system./NODELETE indicates that the file be kept or retained on the remote system after it is printed. **Range:** /DELETE or /NODELETE **Default:** /NODELETE *With respect to remotely initiated transfers, i.e., a user on a remote system initiates a report print on a VMS system, the default is to delete the file after it has printed on the OpenVMS.*
/DESTINATION=string	*Valid only for the /PRINT function code.* Specifies the print destination for the output on the remote system. **Range:** 1-21 characters **Default:** If this qualifier is not supplied, the remote system will send it to the system's default printer. The actual number of valid characters are dependent on the remote system.
/FCB=xxxx	*Valid only for the /PRINT function code.* Used only when printing a file on a remote IBM mainframe. It specifies the Forms Control Buffer (FCB) that JES will use to define the forms control parameter used when printing on the remote system. **Range:** 1-4 characters **Default:** If this qualifier is not supplied, there is no default value.
/FORM=string	*Valid only for the /PRINT function code.* Used to inform the remote operator of the type of form on which to print the request. **Range:** 1-10 characters **Default:** The actual number of valid characters is dependent on the remote system.

Qualifier	Explanation
/HOLD /NOHOLD	*Valid only for the /PRINT function code.* /HOLD specifies that the print request is to be placed on "HOLD" status on the remote system. /NOHOLD specifies that the print request is to be sent for immediate printing on the remote system. **Range:** /HOLD or /NOHOLD **Default:** /NOHOLD
/ID	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* The ID parameter complements the unique request number assigned to every locally initiated file transfer. Refer to your documentation to find out where ID parameter can be found. This mnemonic on MVS will appear before the message on the CA-XCOM Message Log and after the message when it is displayed on the MVS console. The ID is passed to remote systems running CA-XCOM Version 2 or higher. If the remote computer is running Version 1, then an ID of "REMOTE" will always be assigned to this transfer on the remote system. **Range:** 1-10 characters **Default:** none
/LNOTIFY=username	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Identifies the local OpenVMS user to be notified when the data transfer is complete. *You must have WORLD privilege to use this field to notify any user on the system other than yourself.* **Range:** 1-12 characters **Default:** none
/LOG[=filename] /NOLOG	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /LOG specifies the filename to receive time-stamped CA-XCOM status, or log messages. If no filename is specified, it will default to xcom.log in the current directory. /NOLOG specifies that there is to be no message logging. **Range:** 1-64 characters **Default:** /LOG

Qualifier	Explanation
/PACK /NOPACK	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /PACK is a Boolean item code that specifies record packing. It is valid only for text files (not binary files). When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them. /NOPACK is a Boolean item code that specifies that packing will not be used. **Default:** /NOPACK.
/PASSWORD=string	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the password for the user ID under whose resource access authorization CA-XCOM will execute on the remote system. It should be the password known to the remote security system. For example: **Mainframe systems** - RACF, ACF2 and TOPSECRET. **Other systems** - The user's login password. **Range:** 1-31 characters **Default:** none **Note:** If the remote system has passwords defined in lower case, it is necessary to place the password value in double quotes, that is, "mypassword", to retain lower case.
/PORT=n	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies a port number other than the default of 8044 for transfers over TCP/IP. **Note**: /PORT is valid only when /TCPIP is specified **Range:** 1-99999 **Default:** 8044

Qualifier	Explanation
/QUEUE=queue-name /NOQUEUE	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /QUEUE specifies the name of a standard VMS execution queue on which to place this CA-XCOM transfer request. Specifying the qualifier indicates that the CA-XCOM transfer request should be executed off-line as a batch job. /NOQUEUE specifies that the transfer request be executed in the current context (i.e., it should not be executed off-line as a batch job.) **Range:** 1-31 characters **Default:** /NOQUEUE *If no value is specified for /QUEUE then SYS$BATCH, the default VMS batch queue, will be used.*
/RMTSYS =remote-system-name	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates the name associated with the remote computer. The remote system name is defined in the CA-XCOM configuration file. See the chapter "Configuring CA-XCOM" for information on defining remote system names. **Range:** 1-254 characters **Default:** none **Note:** If the remote system name is specified as part of the remote file specification then this item does not have to be supplied.
/RNFLAG=keywordcode	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the user ID type of the remote user to be notified when the data transfer is complete. The keyword choices available are: **NONE** No notification **TSO** Notify TSO user **LOG** Write to log **CICS** Notify CICS User **LU** Notify Logical Unit **ROSCOE** Notify CA-Roscoe User **VMSUSER** Notify VMS User **Range:** NONE, TSO, LOG, CICS, LU, ROSCOE, VMSUSER **Default:** NONE

Qualifier	Explanation
/RNOTIFY=remote-user-name	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates the ID of the remote user to be notified when the data transfer is complete. **Range:** 1-12 characters **Default:** none
/SNA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies use of the SNA LU6.2 protocol for the transfer. **Note:** /SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.
/TCPIP	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies use of the TCP/IP protocol for the transfer. **Note:** /SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.
/TDUDATA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Transfer-dependent user data (up to 10 characters). This data is passed by CA-XCOM VMS to a user application. Its use is determined by the user application. **Range:** 1 - 10 characters **Default:** NONE
/TITLE=string	*Valid only for the /PRINT function code.* Specifies the report title used to describe the contents of a print request on a remote system. Although the title is generally used as a comment and will not be printed as part of the request, some operating systems (such as OpenVMS) allow a print title to be spooled with the print data. **Range:** 1-21 characters **Default:** none

Qualifier	Explanation
/TRACE	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Used primarily at the request of CA-Technical Support to collect information which will help diagnose a problem.
/UDATA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates that system-wide user data included in the logging information for file transfers initiated by this system. This data can be used for the correlation of CA-XCOM activities in multi-XCOM environments. **Range:** 1-10 characters **Default:** none
/USERID=username	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the remote user ID under whose set of resource access authorization CA-XCOM is to execute on the remote system. It should be the user ID known to the remote security system. For example: **Mainframe systems** - RACF, CA-ACF2, and CA-Top Secret. **Other systems** - The user's login username. **Range:** 1-12 characters **Default:** none **Note:** If the user ID is specified as part of the remote file specification, then this qualifier does not have to be supplied. If the remote system has user IDs defined in lower case, it is necessary to place the username value in double quotes, that is, "username", to retain lower case.

Qualifier	Explanation
/WAIT[=[dddd-] hh:mm:ss.cc]	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.* /WAIT specifies that the transfer request should wait in the event that the remote system is unavailable. The buffer contains the wait time in standard VMS delta time format. /NOWAIT indicates that the transfer request abort if the remote system is unavailable. A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd** number of days **hh** number of hours **mm** number of minutes **ss** number of seconds **cc** number of hundredths of seconds. The fields located on the righthand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified. **Default:** /NOWAIT *The default time used is 3 minutes, (i.e., 0 00:03:00) if no value is supplied with the /WAIT qualifier.*
/ WRITER	*Valid only for /PRINT qualifiers.* Specifies the WRITER name on the MVS system to receive a report. **Range:** 1-8 characters **Default:** none

Qualifier	Explanation
/XTRACE	*Valid for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.* /XTRACE specifies if tracing is to be taken of an XCOM transfer. Any trace will be stored in the XCOM$IMAGE:XTRACE.TXT. Possible values are: 0 = No tracing 1- 9 = Provide tracing with different levels of detail **Range:** 0 - 9 **Default:** 0

The XCOM/SUBMIT Command

Use the XCOM command and the /SUBMIT qualifier to send a job for execution on a remote system.

Enter the command and qualifier using the following format:

```
$ XCOM/SUBMIT <local-file> <remote-system>::
```

<local-file> An existing local filename.

<remote-system> The remote node name.

You must enter the double colons at the end of the command.

Remote System Name Specification

The remote system name can be specified using the DECnet filename convention with the following format:

```
rmtsys"userid password"::
```

where "rmtsys" is the optional name of the remote computer to which you are sending.

If "rmtsys" is not specified, then the remote system name must be specified via the /RMTSYS qualifier. Similarly, "userid password" replaces the /USERID qualifier and the /PASSWORD qualifier. The password field cannot appear without the user ID field. The quotes are only necessary when specifying the user ID and the password.

XCOM/SUBMIT Examples

In this example, we are sending a file called PAYROLL.JCL containing JCL and data to execute as a job on an IBM mainframe with the symbolic name is CHICO. There is a security system running on this mainframe, and we will be running this job under the access privileges assigned to the remote user GOULD whose password is DARWIN. For other qualifiers the default values will be used.

```
$ XCOM/SUBMIT/RMTSYS=CHICO/USERID=GOULD/PASSWORD=DARWIN PAYROLL.JCL
```

or request the same procedure with the following command string:

```
$ XCOM/SUBMIT PAYROLL.JCL CHICO"GOULD DARWIN"::
```

For an example of how to submit a CA-XCOM transfer as a batch job, see the topic Submitting a CA-XCOM Transfer as a Batch Job.

XCOM/SUBMIT Qualifiers

The table below describes the qualifiers that may be used with this command.

Qualifier	Explanation
/COMPRESS= compression method /NOCOMPRESS	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /COMPRESS indicates the transmitted data be compressed. Valid values for the compression method are: ▪ NO ▪ YES ▪ RLE ▪ LZSMALL ▪ LZMEDIUM ▪ LZLARGE ▪ COMPACT ▪ LCOMPACT /NOCOMPRESS indicates the transmitted data should NOT be compressed. **Range:** /COMPRESS or /NOCOMPRESS **Default:** /COMPRESS=NO or /NOCOMPRESS

Qualifier	Explanation
/ID	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* The ID parameter complements the unique request number assigned to every locally initiated file transfer. Refer to your documentation to find out where ID parameter can be found. This mnemonic on MVS will appear before the message on the CA-XCOM Message Log and after the message when it is displayed on the MVS console. The ID is passed to remote systems running CA-XCOM Version 2 or higher. If the remote computer is running Version 1, then an ID of "REMOTE" will always be assigned to this transfer on the remote system. **Range:** 1-10 characters **Default:** none
/LNOTIFY=username	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Identifies the local OpenVMS user to be notified when the data transfer is complete. *You must have WORLD privilege to use this field to notify any user on the system other than yourself.* **Range:** 1-12 characters **Default:** none
/LOG[=filename] /NOLOG	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /LOG specifies the filename to receive time-stamped CA-XCOM status, or log messages. If no filename is specified, it will default to xcom.log in the current directory. /NOLOG specifies that there is to be no message logging. **Range:** 1-64 characters **Default:** /LOG
/PACK /NOPACK	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /PACK is a Boolean item code that specifies record packing. It is valid only for text files (not binary files). When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them. /NOPACK is a Boolean item code that specifies that packing will not be used. **Default:** /NOPACK.

Qualifier	Explanation
/PORT=n	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies a port number for transfers over TCP/IP. **Note**: /PORT is relevant only when /TCPIP is specified. **Range:** 1-99999 **Default:** 8044
/PASSWORD=string	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the password associated with the user ID under whose set of resource access authorization CA-XCOM is to execute on the remote system. It should be the password known to the remote security system. For example: **Mainframe systems** - RACF, CA-ACF2 and CA-Top Secret. **Other systems** - The user's login password. **Range:** 1-31 characters **Default:** none **Note:** If the remote system has passwords defined in lower case, it is necessary to place the password value in double quotes, that is, "mypassword", to retain lower case.
/QUEUE=queue-name /NOQUEUE	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* /QUEUE specifies the name of a standard VMS execution queue on which to place this CA-XCOM transfer request. Specifying the qualifier indicates that the CA-XCOM transfer request should be executed off-line as a batch job. /NOQUEUE specifies that the transfer request be executed in the current context (i.e., it should not be executed offline as a batch job). **Range:** 1-31 characters **Default:** /NOQUEUE *If no value is specified with /QUEUE then SYS$BATCH, the default VMS batch queue, will be used.*

Qualifier	Explanation
/RMTSYS=remote-system-name	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates the name associated with the remote computer. The remote system name is defined in the CA-XCOM configuration file. For more information on defining remote system names, see the chapter "Configuring CA-XCOM for OpenVMS Alpha". **Range:** 1-254 characters **Default:** none **Note:** If the remote system name is specified as part of the remote file specification then this item does not have to be supplied.
/RNFLAG=keywordcode	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the user ID type of the remote user to be notified when the data transfer is complete. The keyword choices available are: **NONE** No notification **TSO** Notify TSO user **LOG** Write to log **CICS** Notify CICS User **LU** Notify Logical Unit **ROSCOE** Notify CA-Roscoe User **VMSUSER** Notify OpenVMS User. **Range:** NONE, TSO, LOG, CICS, LU, ROSCOE, VMSUSER **Default:** NONE
/RNOTIFY=remote-user-name	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates the ID of the remote user to be notified when the data transfer is complete. **Range:** 1-12 characters **Default:** none
/SNA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies use of the SNA LU6.2 protocol for the transfer. **Note:** /SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.

Qualifier	Explanation
/TCPIP	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies use of the TCP/IP protocol for the transfer. **Note:** /SNA and /TCPIP are mutually exclusive. If neither is specified, SNA is assumed.
/TDUDATA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Transfer-dependent user data (up to 10 characters). This data is passed by CA-XCOM VMS to a user application. Its use is determined by the user application. **Range:** 1 - 10 characters **Default:** none
/TRACE	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Used primarily at the request of CA-Technical Support to collect information which will help diagnose a problem.
/UDATA	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Indicates that system-wide user data is included in the logging information for file transfers initiated by this system. This data can be used to correlate CA-XCOM activities in multi-CA-XCOM environments. **Range:** 1-10 characters **Default:** none

Qualifier	Explanation
/USERID=username	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT, and /PRINT qualifiers.* Specifies the remote user ID under whose set of resource access authorization CA-XCOM is to execute on the remote system. It should be the user ID known to the remote security system. For example: **Mainframe systems** - RACF, CA-ACF2 and CA-Top Secret. **Other systems** - The user's login username. **Range:** 1-12 characters **Default:** none **Note:** If the user ID is specified as part of the remote file specification, then this qualifier does not have to be supplied. If the remote system has user IDs defined in lower case, it is necessary to place the username value in double quotes, that is, "username", to retain lower case.
/WAIT[=[dddd-] hh:mm:ss.cc]	*Valid only for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.* /WAIT specifies that the transfer request should wait in the event that the remote system is unavailable. The buffer contains the wait time in standard VMS delta time format. /NOWAIT indicates that the transfer request abort if the remote system is unavailable. A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd -** number of days **hh -** number of hours **mm -** number of minutes **ss -** number of seconds **cc -** number of hundredths of seconds The fields located on the righthand side of the delta time format can be truncated where time is to be specified. Any field can be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified. **Default:** /NOWAIT *The default time is 3 minutes (i.e., 0 00:03:00) if no value is supplied with the /WAIT qualifier.*

Qualifier	Explanation
/XTRACE	*Valid for the /SENDFILE, /GETFILE, /SUBMIT and /PRINT qualifiers.* /XTRACE specifies if tracing is to be taken of an XCOM transfer. Any trace will be stored in the XCOM$IMAGE:XTRACE.TXT. Possible values are: 0 = No tracing 1- 9 = Provide tracing with different levels of detail **Range:** 0 - 9 **Default:** 0

Submitting a CA-XCOM Transfer as a Batch Job

The XCOM/SENDFILE, XCOM/GETFILE, XCOM/PRINT and XCOM/SUBMIT commands can all be used to submit a CA-XCOM file transfer as a batch job. There are two ways in which to cause a CA-XCOM transfer request to be executed as a batch job, i.e., to be submitted as a batch job.

1. Add the "/QUEUE" qualifier to a CA-XCOM command line. The example below uses the XCOM/SENDFILE command:

   ```
   $ XCOM/SEND/RMTSYS=HARPO/QUEUE/USERID=RWEISS/PASSWORD=ENIGMA/
   RNOTIFY=RWEISS/MVSFORMAT=FIXED_BLOCKED/MVSBLOCKL=800/MVSRECL=80 -STORIES.TXT
   VMS.STORIES
   ```

   The "/QUEUE" qualifier causes CA-XCOM to generate a temporary command procedure file named XCOM_REQUEST.COM in the user's default directory and then submits the file to the specified batch queue. The batch queue is specified as a parameter to the "/QUEUE" qualifier, (e.g., "/QUEUE=SPVMS$BATCH") if none is supplied to the qualifier. The temporary command procedure file is deleted after the transfer command is completed.

2. Create a command procedure file and then place a CA-XCOM transfer command line in the file. You can then subsequently submit this command file to the batch queue of your choice.

Chapter 8

The Application Programming Interface (API)

This section describes how to invoke CA-XCOM from an application program. The Application Programming Interface (API) is intended to assist Alpha/OpenVMS application programmers in the development of customized applications that use CA-XCOM. Users can invoke the Application Programming Interface, known as XCOM$API, from any high-level or assembly language which operates under Alpha/OpenVMS.

The same four transfer functions available through the Menu and DCL interfaces are also available with the XCOM$API interface facility.

XCOM$API provides the following transfer functions:

- **XCOM$_SENDFILE** Transmits an Alpha/OpenVMS file to a remote system.
- **XCOM$_GETFILE** Retrieves a file from a remote system into the Alpha/OpenVMS.
- **XCOM$_SUBMIT** Transmits an Alpha/OpenVMS file for execution as a job on a remote system.
- **XCOM$_PRINT** Transmits an Alpha/OpenVMS file to print on a remote system's printer.

The parameters required by the various functions are similar to those used by the DCL command interface.

Returning Status Information

The CA-XCOM API uses the following two mechanisms to return completion status codes to the requesting program:

- Function return values.
- An output message vector.

A description of all the status codes returned by Alpha/OpenVMS CA-XCOM API is detailed in the chapter, "Messages".

Function Return Values

All CA-XCOM API function requests return by immediate value a condition value in R0. After each call to XCOM$API you must check this status value.

High-level languages provide some mechanism for testing the return status value in R0. Consult your specific high-level language documentation for the exact mechanism.

The Output Message Vector

The CA-XCOM API also returns completion status to the calling program by means of a message vector that provides the program complete information about error conditions. The message vector contains a top-level completion code that is the same as the function value and, in certain cases, supplies additional qualifying codes.

The format of the message vector is identical to that of the VMS system service SYS$PUTMSG (see Figures 8-1, 8-2, and 8-3). The calling program can display the return status by means of a call to this VMS system service. SYS$PUTMSG translates the message codes within the message vector into text and sends it to a terminal or file.

XCOM$API - Perform a CA-XCOM Transfer Function

For more information about formats similar to the XCOM$API routine argument descriptions, see the *VMS Introduction to System Services Reference Manual*.

The items bolded in the routine argument descriptions are for emphasis only.

Format:

```
status = XCOM$API(func, itmlst, msgvec)
```

Returns:

status

VMS usage:	**cond_value**
type:	**longword**(unsigned)
access:	**write only**
mechanism:	**by value**

Return is a longword condition value. It is by immediate value.

"func" Argument

For more information about the func argument, see the *VMS Introduction to System Services Reference Manual*.

func

VMS usage:	**function_code**
type:	**word**(unsigned)
access:	**read only**
mechanism:	**by value**

Function_code

Specifies the operation that XCOM$API is to perform. The **func** argument is a word containing this function code.

The XCOM62API.xx included file defines the name of each function code. "xx" refers to the appropriate file type for the particular language in use; e.g., for C Language, xx=h.

You may specify only one function code in a single call to XCOM$API. All function codes require additional information to be passed in the call. Pass this information with the **itmlst** argument, which specifies a list of one or more item descriptors. Each item descriptor in turn specifies an item code which modifies, restricts, or otherwise affects the action designated by the function code.

The following lists and describes each function code. Listed are the item code(s) which you must and may specify for each function code. Descriptions of the item codes appear in the description of the **itmlst** argument.

XCOM$API Function Item Codes

The following sections describe the valid item codes for the various XCOM$API function codes.

XCOM$_SENDFILE

This function is used to send a copy of a specified file from your system to a specified file on a remote computer. If the file exists on the remote computer, the transferred data can be added to the remote file or used to replace the current data. If the remote file does not exist, CA-XCOM can create a file to hold this data.

The following input item codes must be specified:

XCOM$_PASSWORD

XCOM$_RMTFILE

XCOM$_RMTSYS

XCOM$_USERID

XCOM$_VAXFILE

The following input or Boolean item codes may also be specified:

XCOM$_ALLOCTYPE_B
XCOM$_ALLOCTYPE_C
XCOM$_ALLOCTYPE_D
XCOM$_ALLOCTYPE_T

XCOM$_PRIMARY

XCOM$_SECONDARY

XCOM$_NO_CHECKPOINT
XCOM$_CHECKPOINT
XCOM$_CKPT

XCOM$_NO_COMPRESS
XCOM$_COMPRESS

XCOM$_DATAOPT_APPEND
XCOM$_DATAOPT_CREATE
XCOM$_DATA OPT_REPLACE

XCOM$_FILETYPE_BINARY
XCOM$_FILETYPE_TEXT

XCOM$_LNOTIFY

XCOM$_LOG
XCOM$_NO_LOG

XCOM$_MVSBLOCKL

XCOM$_MVSFORMAT_F
XCOM$_MVSFORMAT_FB
XCOM$_MVSFORMAT_VB
XCOM$_MVSFORMAT_U

XCOM$_PACK
XCOM$_NOPACK

XCOM$_PORT

XCOM$_MVSRECL

XCOM$_TCPIP

XCOM$_QUEUE
XCOM$_NO_QUEUE

XCOM$_RESUME

XCOM$_RNOTIFY

XCOM$_TRUNCATE
XCOM$_NO_TRUNCATE

XCOM$_UNIT

XCOM$_VOLUME

XCOM$_WAIT
XCOM$_NO_WAIT

XCOM$_GETFILE

This function is used to retrieve a data file from a remote system and copy it into a specified file on your system. If the local file exists, then the transferred data can append to this file or overwrite it. If the local file does not exist, CA-XCOM will create a file to hold this data.

The following input item codes must be specified:

XCOM$_PASSWORD

XCOM$_RMTFILE

XCOM$_RMTSYS

XCOM$_USERID

XCOM$_VAXFILE

The following input or Boolean item codes may also be specified:

XCOM$_CHECKPOINT
XCOM$_NO_CHECKPOINT
XCOM$_CKPT

XCOM$_COMPRESS
XCOM$_NO_COMPRESS

XCOM$_DATAOPT_APPEND
XCOM$_DATAOPT_CREATE
XCOM$_DATA OPT_REPLACE

XCOM$_FILETYPE_BINARY
XCOM$_FILETYPE_TEXT

XCOM$_LNOTIFY

XCOM$_LOG
XCOM$_NO_LOG

XCOM$_PACK
XCOM$_NOPACK

XCOM$_PORT

XCOM$_QUEUE
XCOM$_NO_QUEUE

XCOM$_RESUME

XCOM$_RNOTIFY

XCOM$_TCPIP

XCOM$_TRUNCATE
XCOM$_NO_TRUNCATE

XCOM$_UNIT
XCOM$_VOLUME

XCOM$_WAIT
XCOM$_NO_WAIT

XCOM$_SUBMIT

This function is used to send a file as a job for execution on a remote system.

The following input item codes must be specified:

XCOM$_PASSWORD

XCOM$_RMTSYS

XCOM$_USERID

XCOM$_VAXFILE

The following input or Boolean item codes may also be specified:

XCOM$_COMPRESS
XCOM$_NO_COMPRESS

XCOM$_LNOTIFY

XCOM$_LOG
XCOM$_NO_LOG

XCOM$_PACK
XCOM$_NOPACK

XCOM$_PORT

XCOM$_QUEUE
XCOM$_NO_QUEUE

XCOM$_RNOTIFY

XCOM$_TCPIP

XCOM$_WAIT
XCOM$_NO_WAIT

XCOM$_PRINT

This function is used to send a file from your system to be printed on a remote system.

The following input item codes must be specified:

XCOM$_PASSWORD

XCOM$_RMTSYS

XCOM$_USERID

XCOM$_VAXFILE

The following input or Boolean item codes may also be specified:

XCOM$_ASA
XCOM$_NO_ASA

XCOM$_CHECKPOINT
XCOM$_NO_CHECKPOINT
XCOM$_CKPT

XCOM$_CLASS

XCOM$_COMPRESS

XCOM$_NO_COMPRESS

XCOM$_COPIES

XCOM$_DELETE
XCOM$_NO_DELETE

XCOM$_DESTINATION

XCOM$_FCB

XCOM$_FORMTYPE

XCOM$_HOLD
XCOM$_NO_HOLD

XCOM$_LNOTIFY

XCOM$_LOG
XCOM$_NO_LOG

XCOM$_PACK
XCOM$_NOPACK

XCOM$_PORT

XCOM$_QUEUE
XCOM$_NO_QUEUE

XCOM$_TCPIP

XCOM$_RNOTIFY

XCOM$_TITLE

XCOM$_WAIT
XCOM$_NO_WAIT

"itmlst" Argument

Itmlst

VMS usage:	Item_list_3
type:	**longword**(unsigned)
access:	**read only**
mechanism:T	**by reference**

item_list_3

Supplies the information used to perform the function specified by the **func** argument.

The **itmlst** argument is the address of the item list. It consists of one or more item descriptors, each of which specifies an item code. An item code, or a longword, of 0 terminates the item list.

The structure of a single item descriptor is shown below:

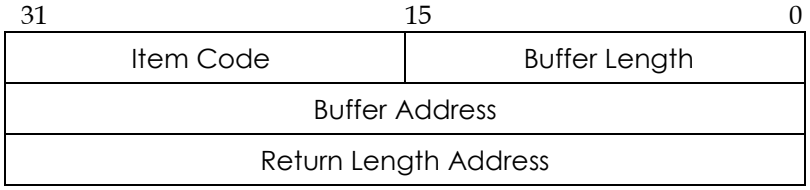


Figure 8-1: Structure of Single Item Descriptor

Item Descriptor Fields

Buffer length

A word specifying the length of the buffer, supplying either information to be used by XCOM$API or information to be received from XCOM$API. The required length of the buffer varies depending on the item code specified and is given in the description of each item code.

item code

A word containing an item code which identifies the nature of the information supplied for use by XCOM$API or received from XCOM$API. Each item code has a symbolic name. The CA-XCOM installation procedure supplies include files, e.g., xcomapidef.h, which defines these symbolic names with the following format:

```
XCOM$_code
```

There are three types of item code:

- Boolean item code.

  Specifies a true or false value. The form XCOM$_code specifies a true value; XCOM$_NO_code specifies a false value. For Boolean item codes, the **buffer length**, **buffer address**, and **return length** fields of the item descriptor must be zero.

- Input value item code.

  Specifies an input value to be used by XCOM$API. For input value item codes, the **buffer length** and **buffer address** fields of the item descriptor must be nonzero; the **return length** field must be zero. Specific buffer length requirements are given in the description of each item code.

- Output value item code.

  Specifies an output value for information returned by XCOM$API. For output value item codes, the **buffer length** and **buffer address** fields of the item descriptor must be nonzero; the **return length** field may be zero or nonzero. Specific buffer length requirements are given in the description of each item code.

Buffer address Address of the buffer that specifies or receives the information.

Return length address Address of a word to receive the length in bytes of information returned by XCOM$API. If you specify this address as 0, no length is returned.

XCOM$API Function Qualifier Item Codes

The following describes each of the XCOM$API Function Qualifier Item Codes.

Item Codes	Default	Explanation
XCOM$_ALLOCTYPE_B **XCOM$_ALLOCTYPE_C** **XCOM$_ALLOCTYPE_D** **XCOM$_ALLOCTYPE_T**		*Valid only for the XCOM$_SENDFILE function code.* XCOM$_ALLOCTYPE_B – Specifies MVS Allocation Type Blocks. XCOM$_ALLOCTYPE_C – Specifies MVS Allocation Type Cylinders. XCOM$_ALLOCTYPE_D – Specifies MVS Allocation Type Default. XCOM$_ALLOCTYPE_T – Specifies MVS Allocation Type Tracks.
XCOM$_ASA **XCOM$_NO_ASA**	XCOM$_NO_ASA	*Valid only for the XCOM$_PRINT function code.* **XCOM$_ASA** - A Boolean item code specifying that CA-XCOM is to convert the file to ASA print format (FORTRAN carriage control) supported by most IBM and DEC printers. **XCOM$_NO_ASA** - A Boolean item code indicating that no ASA conversion of the file is to be performed.

Item Codes	Default	Explanation
XCOM$_CHECKPOINT **XCOM$_NO_CHECKPOINT**	XCOM$_NO_CHECKPOINT	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, and XCOM$_PRINT function codes.* **XCOM$_CHECKPOINT** - An input value item code indicating that once a transfer is interrupted it will automatically restart or resume at some delta time (t) in the future from the point where it left off without having to return to the beginning of the file. The buffer contains the wait time in standard VMS delta time format. *If the buffer length is less than or equal to zero, the default time used is 1 hour (i.e., 0 01:00:00).* **XCOM$_NO_CHECKPOINT** - A Boolean item code indicating the transfer is not to restart (i.e., if the transfer is interrupted, there is no automatic retry). A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd** The number of days. **hh** The number of hours. **mm** The number of minutes. **ss** The number of seconds. **cc** The number of hundredths of seconds. The fields located on the right hand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks which separate the fields are specified. A restart of the transfer will be attempted until either the transfer is successful or an aging time limit is reached, at which point it is aborted. For further information on the delta time format refer to the *VMS Using DCL Reference Manual* or at the DCL $ prompt enter: **Help Specify Date_Time**
XCOM$_CKPT	1000	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT, and XCOM$_PRINT function codes.* Specifies the number of records to be transferred between checkpoints. The buffer must contain a maximum of four (4) ASCII, decimal, numeric characters within the range of 1-9999

Item Codes	Default	Explanation
XCOM$_CLASS		*Valid only for the XCOM$_PRINT function code.* An input value item code used to specify the print class (a one character string) placed on the remote system by the print request. If the remote system is an IBM mainframe, then this field indicates the JES2 SYSOUT class. *The buffer must contain the one character string.*
XCOM$_COMPRESS **XCOM$_NO_COMPRESS**	XCOM$_COMPRESS	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* **XCOM$_COMPRESS -** An input value item code used to specify the type of compression wanted. Possible values are: NO, YES, COMPACT, LCOMPACT, LZSMALL, LZMEDIUM, LZLARGE, and RLE. **XCOM$_NO_COMPRESS -** A Boolean item code indicating the data transmitted *should not* be compressed.
XCOM$_COPIES	1	*Valid only for the XCOM$_PRINT function code.* An input value item code used to specify the number of copies to be printed on the remote system. *The buffer must contain a maximum of three (3) ASCII, decimal, numeric characters within the range of 1-999.*
XCOM$_DATAOPT_APPEND **XCOM$_DATAOPT_CREATE** **XCOM$_DATAOPT_REPLACE**	XCOM$_DATAOPT_CREATE	*Valid only for the XCOM$_SENDFILE and XCOM$_GETFILE function codes.* **XCOM$_DATAOPT_APPEND -** A Boolean item code indicating the data transferred is to be appended to a destination file. **XCOM$_DATAOPT_CREATE -**A Boolean item code indicating the creation of a destination file. **XCOM$_DATAOPT_REPLACE -** A Boolean item code indicating the replacement of a destination file.

Item Codes	Default	Explanation
XCOM$_DELETE **XCOM$_NO_DELETE**	XCOM$_NO_DELETE	*Valid only for the XCOM$_PRINT function code.* **XCOM$_DELETE** - A Boolean item code indicating that the file be deleted after printing on the remote system. **XCOM$_NO_DELETE** - A Boolean item code indicating the file be kept or retained on the remote system after it is printed. **NOTE:** With respect to remotely initiated transfers, the default is to delete the file after it has printed on the VMS system.
XCOM$_DESTINATION	* * *	*Valid only for the XCOM$_PRINT function code.* A 1 - 21 character input value item code indicating the print destination for output on the remote system. *The actual number of valid characters are dependent on the remote system. The buffer must contain this string.* ** * * If this item code is not supplied, the remote system will send it to the system's default printer.*
XCOM$_FCB	* * *	*Valid only for the XCOM$_PRINT function code.* An input value item code used only when printing a file on a remote IBM mainframe. It specifies the 1-4 character Forms Control Buffer (FCB) that JES is to use to define the forms control parameter to be used when printing on the remote system. *The buffer must contain this string.* ** * * If this item code is not supplied, there is no default value.*
XCOM$_FILETYPE_BINARY **XCOM$_FILETYPE_TEXT**	XCOM$_FILETYPE_TEXT	*Valid only for the XCOM$_SENDFILE and XCOM$_GETFILE function codes.* **XCOM$_FILETYPE_BINARY** - A Boolean item code indicating the file be treated as data; no translation will be attempted. **XCOM$_FILETYPE_TEXT** - A Boolean item code indicating the file be treated as ASCII text. When sending to a remote system that uses a different character representation (e.g., EBCDIC) the file is then automatically translated.

Item Codes	Default	Explanation
XCOM$_FORMTYPE		*Valid only for the XCOM$_PRINT function code.* A 1-10 character input value item code used to inform the remote operator of the type of form the print request is to be printed on. *The actual number of valid characters is dependent on the remote system. The buffer must contain this string.*
XCOM$_HOLD **XCOM$_NO_HOLD**	XCOM$_NO_HOLD	*Valid only for the XCOM$_PRINT function code.* **XCOM$_HOLD** - A Boolean item code indicating the print request is to be placed on "HOLD" status on the remote system. **XCOM$_NO_HOLD** - A Boolean item code indicating the print request is to be sent for immediate printing on the remote system.
XCOM$_LNOTIFY		*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* A 1-12 character input value item code indicating the ID of the local Alpha/OpenVMS user to be notified when the data transfer is completed. *You must have WORLD privilege to notify users other than yourself. The buffer must contain the local VMS user ID string.*
XCOM$_LOG **XCOM$_NO_LOG**	XCOM$_LOG	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* **XCOM$_LOG** - An 1-64 character input value item code indicating the file specification is to receive time-stamped CA-XCOM status or log messages. **XCOM$_NO_LOG** - A Boolean item code indicating that there is to be no message logging.

Item Codes	Default	Explanation
XCOM$_MVSBLOCKL	* * *	*Valid only for the XCOM$_SENDFILE function code.* An input value item code used only when creating a file on a remote IBM mainframe. It specifies how many records are contained inside a block. Note that "creating" means that the "XCOM$_DATAOPT_CREATE" item code is specified either explicitly or by default. **Fixed or fixed Blocked record files -** XCOM$_MVSBLOCKL must be a multiple of the value of the XCOM$_MVSRECL field. **Variable record files -** XCOM$_MVSBLOCKL must be at least four bytes larger than the value of the XCOM$_MVSRECL field. **Undefined format -** XCOM$_MVSBLOCKL must be at least as large as the largest record length. ** * * The buffer must contain a maximum of five (5) ASCII, decimal, numeric characters. If the XCOM$_MVSBLOCKL item code is not specified and the transfer is to an IBM mainframe, CA-XCOM will generate an acceptable value.*
XCOM$_MVSFORMAT_FB **XCOM$_MVSFORMAT_VB** **XCOM$_MVSFORMAT_F** **XCOM$_MVSFORMAT_U**	XCOM$_MVSFORMAT_FB	*Valid only for the XCOM$_SENDFILE function code. The FORMAT codes are Boolean item codes equivalent to the DCB RECFM parameter in JCL and required only when creating files on an IBM mainframe.* **XCOM$_MVSFORMAT_FB -** Specifies Fixed record length of one record per block. **XCOM$_MVSFORMAT_VB -** Specifies Variable record length, with multiple records per block, each of which can have a different length. **XCOM$_MVSFORMAT_F -**Specifies that the records all have the same length with multiple records contained in the one block. **XCOM$_MVSFORMAT_U -** Specifies undefined record format of one variable length record per block, where the maximum record length is the block size.

Item Codes	Default	Explanation
XCOM$_PACK **XCOM$_NOPACK**		*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* **XCOM$_PACK** - A Boolean item code used to specify record packing. It is valid only for text files (not binary files). When packing is on, CA-XCOM reads as many records as will fit into a 31744-byte buffer before compressing and transmitting them. **XCOM$_NOPACK** - A Boolean item code used to specify that packing will not be used.
XCOM$_PORT	8044	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* The TCP/IP port number used when transferring files via TCP/IP. It has no effect unless XCOM$_TCPIP is specified.
XCOM$_PRIMARY	0	*Valid only for the XCOM$_SENDFILE function code.* Specifies the MVS Primary Allocation.
XCOM$_MVSRECL	* * *	*Valid only for the XCOM$_SENDFILE function code.* An input value item code used only when creating a file on a remote IBM mainframe. It specifies how many bytes are in a record. **Undefined records** - Ignored. **Variable records** - XCOM$_MVSRECL must be equal to the maximum record size plus four (4). **Fixed and fixed blocked records** - XCOM$_MVSRECL specifies the record length. ** * * The buffer must contain a maximum of 5 ASCII, decimal, numeric characters. If the XCOM$_MVSRECL item code is not specified and the transfer is to an IBM mainframe, CA-XCOM will generate an acceptable value.*

Item Codes	Default	Explanation
XCOM$_RNOTIFY_FLAG	XCOM$S_RNOTIFY_WRITELOG	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* An input value item code indicating the user ID Type of the remote user to be notified when the data transfer is complete. The available choices are: **XCOM$S_RNOTIFY_NONE=**No notification **XCOM$S_RNOTIFY_WRITELOG**=Write to log **XCOM$S_RNOTIFY_CICS**=Notify CICS User **XCOM$S_RNOTIFY_LU**=Notify Logical Unit **XCOM$S_RNOTIFY_ROSCOE**=Notify Roscoe User **XCOM$S_RNOTIFY_VMSUSER**=Notify Alpha/OpenVMS User *The buffer must contain this one character constant.*
XCOM$_TCPIP		*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* Specifies that TCP/IP will be used as the transfer protocol, instead of SNA. See also XCOM$_PORT.
XCOM$_PASSWORD		*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* A 1-31 character input value item code indicating the password associated with the userid under whose set of resource access privileges CA-XCOM is to execute on the remote system. It should be the password known to the remote security system. For example, **Mainframe systems** - RACF, CA-ACF2 and CA-Top Secret **Other systems** - The user's login password. *The buffer must contain the local password string.*

Item Codes	Default	Explanation
XCOM$_QUEUE **XCOM$_NO_QUEUE**	XCOM$_NO_QUEUE	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* **XCOM$_QUEUE** - A 1-31 character input value item code specifying the name of a standard OpenVMS execution queue (the default VMS execution queue processor). Specification of this item code indicates that the CA-XCOM transfer request should be executed off-line as a batch job. The buffer must hold the queue name. **XCOM$_NO_QUEUE** - A Boolean item code specifying the transfer request should not be executed off-line as a batch job.
XCOM$_RESUME		*Valid only for the XCOM$_SENDFILE, and XCOM$_GETFILE function codes.* A Boolean item code meaningful only if the transfer had previously been checkpointed, interrupted, and is awaiting restart. It specifies that the indicated transfer be restarted.

Item Codes	Default	Explanation
XCOM$_RMTFILE	* * *	*Valid only for the XCOM$_SENDFILE and XCOM$_GETFILE function codes.* A 1-255 character input value item code indicating the file specification of the remote file. It is the name of the file on the remote system to be accessed. The filename must be fully qualified as to its location. The buffer must contain the file specification string. If the remote system is: **Mainframe systems** - Specify the qualified data set name. No TSO prefix will be appended to the entry. **IBM PC** - Specify the DOS or OS/2 filename and include path information. **System 38** -Specify the qualified filename. **VMS** - Specify the OpenVMS filename. The remote filename specification format is: `node"userid password"::["]filename.typ[[.typ]...][" ]` **Note:** The above syntax is shown across multiple lines due to page margins. It should be entered as one line. * * * If the password is specified as part of the remote file specification then this item code does not have to be supplied.
XCOM$_RMTSYS	* * *	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* A 1-254 character input value item code used to specify the name associated with the remote computer. The remote system name is defined in the CA-XCOM configuration file. For information on defining these names see the chapter, "Configuring CA-XCOM for OpenVMS Alpha".. ** * * The buffer must contain the remote system namestring. If the remote system name is specified as part of the remote file specification then this item code does not have to be supplied.*

Item Codes	Default	Explanation
XCOM$_RNOTIFY		*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* A 1-12 character input value item code specifying the ID of the remote user to be notified when the data transfer is complete. *The buffer must contain the remote user ID string.*
XCOM$_SECONDARY	0	*Valid only for the XCOM$_SENDFILE function code.* Specifies the MVS Secondary Allocation.
XCOM$_TITLE		*Valid only for the XCOM$_PRINT function code.* A 1-21 character input value item code specifying the Report Title used to describe the contents of a print request on a remote system. While the title is generally used as a comment and will not be printed as part of the request, some operating systems (such as VMS) allow a print title to be spooled with the print data. *The buffer must contain the title string.*
XCOM$_TRUNCATE **XCOM$_NO_TRUNCATE**	XCOM$_NO_TRUNCATE	*Valid only for the XCOM$_SENDFILE function code.* **XCOM$_TRUNCATE** - A Boolean item code indicating if a record is too long it can be truncated. **XCOM$_NO_TRUNCATE** - A Boolean item code indicating that the LU 6.2 conversation abend or abort if a record is encountered which is greater than the maximum allowable record size.
XCOM$_UNIT	* * *	*Valid only for the XCOM$_SENDFILE and XCOM$_GETFILE function code.* A 1-10 character input value item code used when creating or retrieving a file on a remote IBM mainframe. Note that "creating" means that "XCOM$_DATAOPT_CREATE" item code is specified either by default or explicitly. The XCOM$_UNIT item code specifies the generic unit name under which the file will be placed or where it resides. * * * *The item code buffer must specify this string. If this parameter is not entered, the CA-XCOM default unit name will be used as defined in the CA-XCOM MVS Default Options Table.*

Item Codes	Default	Explanation
XCOM$_USERID	* * *	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* A 1-12 character input value item code indicating the remote userid under whose set of resource access privileges CA-XCOM is to execute on the remote system. It should be the userid known to the remote security system. For example: **Mainframe systems** - RACF, ACF2, and TOPSECRET. **Other systems** - The user's login username. ** * * The item code buffer must specify this string. If the user ID is specified as part of the remote file specification, then this item code does not have to be supplied.*
XCOM$_VAXFILE		*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* A 1-255 character input value item code indicating the local VMS filename to receive the data being transmitted from, or holding the data to be transmitted to, a remote system. *The buffer must contain the file specification string.*
XCOM$_VOLUME	* * *	*Valid only for the XCOM$_SENDFILE and XCOM$_GETFILE function code.* A 1-10 character input value item code used when creating or retrieving a file on a remote IBM mainframe. Note that "creating" means that the "XCOM$_DATAOPT_CREATE" item code is specified either by default or explicitly. The XCOM$_VOLUME item code specifies the volume name under which the file will be placed or where it resides. ** * * If this parameter is not supplied, the CA-XCOM default volume name will be used as defined in the CA-XCOM MVS Default Options Table.*

Item Codes	Default	Explanation
XCOM$_WAIT **XCOM$_NO_WAIT**	XCOM$_NO_WAIT	*Valid only for the XCOM$_SENDFILE, XCOM$_GETFILE, XCOM$_SUBMIT and XCOM$_PRINT function codes.* **XCOM$_WAIT -** An input value item code which specifies that the transfer request should wait in the event that the remote system is unavailable. The buffer contains the wait time in standard VMS delta time format. If the buffer length is less than or equal to zero, the default time used is 3 minutes (i.e., 0 00:03:00). **XCOM$_NO_WAIT -** A Boolean item code used to specify that the transfer request abort in the event that the remote system is unavailable. A delta time has the following format: **[dddd-] [hh:mm:ss:cc]** **dddd** The number of days. **hh** The number of hours. **mm** The number of minutes. **ss** The number of seconds. **cc** The number of hundredths of seconds. The fields located on the right hand side of the delta time format can be truncated where time is to be specified. Any of the fields can also be omitted in the middle of the format as long as the punctuation marks that separate the fields are specified. For further information on the delta time format refer to the *OpenVMS Using DCL Reference Manual* or at the DCL $ prompt enter: **Help Specify Date_Time**

"msgvec" Argument

msgvec
OpenVMS usage: **ctrlblk**
type: **longword vector**
access: **write only**
mechanism: **by descriptor**

msgvec

Message argument vector into which the message code(s) and options that can be used by the VMS SYS$PUTMSG system service to write readable message text(s) is written.

The **msgvec** argument is the address of a descriptor pointing to a buffer memory area whose size must be at least XCOM$K_MIN_APIMSG_VECTOR bytes. This constant is defined by the C include files supplied in the installation procedure.

The format of the output message vector consists of one longword followed by one or more message descriptors, containing one descriptor per message. Figure 8-2 depicts the contents of the first longword (ctrlblk).

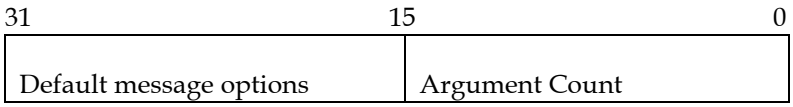


Figure 8-2: Contents of First Longword

argument count

Word-length field specifying the total number of longwords in the message vector, not including the first longword.

default message options

Word-length field specifying which message component(s) is to be written. The **default message options** field is a word-length bit vector wherein a bit, when set, specifies that the corresponding message component is to be written. For further information, see "$PUTMSG Put Message" in the *Alpha/OpenVMS System Services Reference Manual*. Following the first longword of the message vector are one or more message descriptors. Figure 8-3 illustrates the message descriptor format used by the CA-XCOM API.

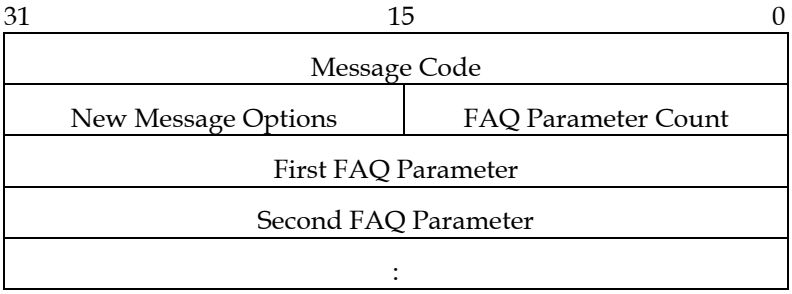


Figure 8-3: Message Descriptor Format

message code Longword value that uniquely identifies the message.

Messages can be identified by symbolic names defined for return codes (e.g., CA-XCOM status codes, VMS system return codes, etc.).

FAO parameter count Word-length value specifying the number of longword Formatted ASCII Output (FAO) parameters, if any, that follow in the message descriptor.

For further details, see *$FAO in the Alpha/OpenVMS System Services Reference Manual*.

new message options Word-length bit vector specifying the new message options for the current message.

The contents and format of this field are identical to that of the **default message options** field.

FAO parameter Longword value used by an FAO directive appearing in the message text.

Using the CA-XCOM API Facility

The best way to show how to use the CA-XCOM API facility is to perform the following:

1. Write an Alpha/OpenVMS-C program which uses the interface.
2. Link the program written in step 1 to the CA-XCOM API shareable image.

A Program Which Uses the CA-XCOM API Facility

To compile the following program (see Figure 8-4, OpenVMS-C Program), at the DCL prompt, type:

```
$ CC/LIST/OBJECT CALLXCOM
```

Linking a Program Which Uses the CA-XCOM API Facility

To link the code to the CA-XCOM API facility, type the following in response to the DCL prompt:

```
LINK CALLXCOM,CALLXCOM/OPT/NO TRACE
```

```
#ifdef   DOCUMENTATION

file:       callxcom.c

function:   Use the XCOM 6.2 API to:
        a) SEND a file to a remote system.
        b) GET a file from a remote system.

================================================================
#endif

#include <stdio>
#include <rms>
#include <xcomapidef.h>

int callxcom()
{
/*
* own storage:
*/

struct FAB myfab;
struct RAB myrab;

int     status,func;
struct  itemlist itmlst[12];
int     msgvec[XCOM$K_MIN_APIMSG_VECTOR];
char    vax_sfile[]="sys$login:login.com",
        vax_rfile[]="sys$login:junk.api",
        vax_xfile[]="sys$login:login.com",
        rmtfile[]="dc6.xcomtest(+1)",
        rmtsys[]="A",                       /* remote sys must be in caps */
        userid[]="DC6",
        pword[]="HELPME",
        ckpt[]="0",
        recl[]="80",
        blockl[]="6160",

        logfile[]="apix.log";


/*
* code:
*/

/* zero context */
lib$movc5(&0,&0,&0,&sizeof msgvec,msgvec);


/* setup item code(s) */
itmlst[0].bfrlen = sizeof vax_xfile;
itmlst[0].itmcde = XCOM$_VAXFILE;
```

```
itmlst[0].bfradr = vax_xfile;

itmlst[5].bfrlen = sizeof rmtfile;
itmlst[5].itmcde = XCOM$_RMTFILE;
itmlst[5].bfradr = rmtfile;

itmlst[2].bfrlen = sizeof rmtsys;
itmlst[2].itmcde = XCOM$_RMTSYS;
itmlst[2].bfradr = rmtsys;

itmlst[3].bfrlen = sizeof userid;
itmlst[3].itmcde = XCOM$_USERID;
itmlst[3].bfradr = userid;

itmlst[4].bfrlen = sizeof pword;
itmlst[4].itmcde = XCOM$_PASSWORD;
itmlst[4].bfradr = pword;

itmlst[1].bfrlen = sizeof logfile;
itmlst[1].itmcde = XCOM$_LOG;
itmlst[1].bfradr = logfile;

itmlst[6].bfrlen = sizeof ckpt;
itmlst[6].itmcde = XCOM$_CKPT;
itmlst[6].bfradr = ckpt;

itmlst[7].bfrlen = 0;
itmlst[7].itmcde = XCOM$_MVSFORMAT_FB;
itmlst[7].bfradr = 0;


itmlst[8].bfrlen = sizeof blockl;
itmlst[8].itmcde = XCOM$_MVSBLOCKL;
itmlst[8].bfradr = blockl;

itmlst[9].bfrlen = sizeof recl;
itmlst[9].itmcde = XCOM$_MVSRECL;
itmlst[9].bfradr = recl;

itmlst[10].bfrlen = 0;
itmlst[10].itmcde = 0;

/*
* SEND a file:
*
* The following API send operation is equivalent
* to the DCL command line:
*
*  $ XCOM/SEND X$TOP:XFILE.TST VM"DRWHO GALIFRE"::APIFILE.TXT
*/

func = XCOM$_SENDFILE;
status = xcom$api(func, itmlst, msgvec);
sys$putmsg(msgvec,0,0,0);

return status;

}/* end callxcom() */
```

Figure 8-4: OpenVMS-C Program

Chapter

9

Remote Spooling (XQUE)

The CA-XCOM XQUE facility allows transparent routing of OpenVMS spool files to remote CA-XCOM nodes. The remote node does not have to be running CA-XCOM, but can be running any CA-XCOM component. Users do not have to use the XCOM command syntax to transfer print files. Use standard OpenVMS print commands as though you are using the usual OpenVMS printer even when, for example, this output is being sent to a high speed printer attached to an IBM mainframe.

XQUE is installed during the CA-XCOM installation procedure.

Features and facilities of XQUE include;

- XQUE works with standard digital communications products, such as DECnet SNA/Gateway, VMS/SNA, and DECnet APPC.
- Generic printer queues can be designated so that the file is sent to the printer that currently has the shortest queue.

Startup

The CA-XCOM remote spooler (XQUE) is generated as a standard OpenVMS remote print queue. The queue's symbiont process image file is "XCOMPRTSMB.EXE" and is installed in SYS$COMMON:[SYSEXE] directory by the CA-XCOM installation process. The queue is started by issuing the DCL **INITIALIZE/QUEUE** and/or **START/QUEUE** command. A typical command that initializes but does not start a CA-XCOM remote spool queue is:

```
$INIT/QUEUE/PROCESS=XCOMPRTSMB/ON=BIGBLU IBM$QUEUE
```

Note: "BIGBLU" is an example of a symbolic name for a remote node that must be predefined during CA-XCOM configuration (see the chapter "Configuring the Network"). "IBM$QUEUE" is the queue-name parameter that is initialized.

To actually start this queue, type:

```
$ START/QUEUE IBM$QUEUE
```

Note: Both INIT/QUEUE and START/QUEUE require OPER privileges.

A command procedure is included in the CA-XCOM installation procedure to automate the setup and startup of the CA-XCOM remote print symbiont (XQUE). The command procedure deletes the named queue, if one exists, and proceeds to initialize and start the queue. The following is a description of this process.

File: xcom$image:initxg.com

Function: startup the CA-XCOM remote spooler

Input: p1=local OpenVMS queue name
p2=remote IBM host node identifier or name

Note: This node must be defined in the CA-XCOM configuration file.

Optional input: p3=[$ASA|$NOASA]
$ASA=Convert files to ASA format; $NOASA= No conversion to ASA format.

The default is $NOASA.

The following are examples of the initxq command procedure use:

```
$ @XCOM$IMAGE:INITXQ MVS$QUEUE BIGBLU $ASA
$ @XCOM$IMAGE:INITXQ VM$PRINTQ VMSYS $NOASA
```

The first example defines a print queue called mvs$queue to the CA-XCOM remote node bigblu where ASA conversion is performed on the transmitted files. The second example defines a print queue called vm$queue to the CA-XCOM remote node vmsys where no ASA conversion is performed.

Qualifiers Supported

Most INITIALIZE/QUEUE and STARTUP/QUEUE qualifiers are supported by XQUE. The summary descriptions of these qualifiers in the following table focus on functions that are pertinent to XQUE. For additional information, such as valid keywords and default values, refer to the OpenVMS DCL Dictionary. Qualifiers that are either not supported or meaningful to XQUE are identified later in this chapter.

Qualifier	Description
/BLOCK_LIMIT=([lowlim,]uplim) /NOBLOCK_LIMIT	Defines the lower and upper sizes (in blocks) of print requests to this queue. If no values are defined, XQUE uses the default value.
/CHARACTERISTICS=(characteristic[,...]) /NOCHARACTERISTICS	Defines characteristics for this queue. A job must match these characteristics before printing, otherwise it is held "pending". If no characteristics are defined, XQUE uses the default value.
/DEFAULT=(option[,...]) /NODEFAULT	Defines default options for the print command. Specify FLAG or FLAG=ALL to place flag pages before each printed file in the job. FLAG=ONE places a flag page before the first printed file in the job. If no options are set, XQUE uses the default options.
/ENABLE_GENERIC /NOENABLE_GENERIC	Enables generic print requests. If no generic print request is desired, XQUE uses the default value.
/FORM=type	Specifies the default form name for this queue.
/TRAILER /NOTRAILER	Specify TRAILER or TRAILER=ALL to place trailer pages after each printed file in the job. TRAILER=ONE places a trailer page after the last printed file in the job.
/GENERIC=(queue_name[,...]) /NOGENERIC	Specifies the queue as generic. Use the default value if the queue is not generic.
/LIBRARY=($ASA | $NOASA) /NOLIBRARY	Indicates whether to override the print queue's ASA conversion mode. $ASA converts files to ASA format; specify $NOASA for no ASA conversion.

Qualifier	Description
/NEXT	Restarts the queue with the next job.
/ON=nodename	**Required.** Specifies the CA-XCOM node name through which files are printed. This qualifier must be entered for XQUE to function properly.
/OWNER_ULC=ulc	Specifies the ULC for the queue.
/PROCESSOR=XCOMPRTSMB	**Required.** Designates the CA-XCOM symbiont. This qualifier must be entered for XQUE to function properly.
/PROTECTION=(codes)	Assigns default protection to the queue.
/RETAIN [=keyword] /NORETAIN	Indicates the job's retention in the queue after completion of the task. XQUE uses the default value if the job does not have retention.
/SCHEDULE=SIZE /SCHEDULE=NOSIZE	Specifies whether the job size influences scheduling the queue. Use the default value if the job size influences scheduling the queue.
/SEPARATE=(keyword[,…]) /NOSEPARATE	Specifies the job's separation defaults. Use the default values if the job does not have any separation defaults. **Note:** The /SEPARATE qualifier cannot be used with the /GENERIC qualifier.
/SETUP=($ASA | $NOASA)	Indicates whether to override the print queue's ASA conversion mode. $ASA converts files to ASA format; $NOASA does not perform ASA conversion.
/TOP_OF_FILE	Resumes printing at the current file.
/WSQUOTA=n	The working set quota for the symbiont process.

Qualifiers Not Supported

XQUE does not support or use the following qualifiers or keyword values:

/ALIGN
/BACKWARD
/DEFAULT=BURST
/FORWARD
/SEARCH
/SEPARATE=BURST and SEPARATE=RESET
/TERMINAL

Stopping the Print Queue

To stop the CA-XCOM print queue, use the STOP/QUEUE command. For more information on this command, refer to the *OpenVMS DCL* manual.

Examining the Print Queue

To examine the status of a CA-XCOM print queue or a job in the queue, use the DCL SHOW QUEUE command. For more information on this command, refer to the *OpenVMS DCL* manual.

If there is a communications problem, for example, the system is temporarily not available, an XQUE queue displays its current status. For example:

```
STALLED, DEVICE UNAVAILABLE
```

Problem details are always logged. For more information about reading the log, refer to the section Printing Errors and Recovery at the end of this chapter.

Printing Files

Files are sent to XQUE controlled queues for printing as a standard OpenVMS queue. There is no difference between application programs that send files to an OpenVMS queue and files sent through XQUE controlled queues except that application programs specify PRINT dispositions when closing files that are to be printed. Consult your particular programming language's reference manual for more information.

XQUE Command Line Syntax

To print using the OpenVMS print command to run XQUE, use the following command:

```
PRINT/QUEUE=/PARAMETERS=(p1,p2,p3)
```

The /PARAMETERS=(p1,p2,p3) qualifier specifies parameter values that override those set in the INITQX command procedure where:

p1= remote system name
p2= writer name
p3= destination name

For example, specifying /PARAMETER=(,PRT39) sends the print request to printer PRT39 on the default remote CA-XCOM node (as specified when the queue was initialized). Specifying /PARAMETER=(SUN2,LA129) sends the print request to printer "LA129" on CA-XCOM node 'SUN2".

Ignored Print Qualifiers

When using the DCL PRINT command to send a file to an XQUE controlled queue, most "PRINT" qualifiers are supported. However, the following qualifiers are ignored:

/BURST
/NOTE
/PAGES
/PASSALL

Printing Errors and Recovery

All XQUE events are logged to the following file:

```
XCOM$IMAGE:SYMBIONT_LOG_FOR_queue-name
```

LOG is the name of the XQUE queue.

Events include communications failures, successful or unsuccessful completions, and requests aborted by users.

When an error occurs while a print request is being processed, the request is requeued, placed on hold, and the event is logged. This assures the accountability of print requests, as well as preventing unnecessary retries.

Chapter 10

Remotely Initiated Requests and User Security

Just as your local OpenVMS computer can originate CA-XCOM file transfer requests between itself and remote CA-XCOM systems, so can one of these remote systems initiate a file transfer with your local OpenVMS. A CA-XCOM host can initiate the full set of file transfers to CA-XCOM by:

- Sending a File
- Sending a Job or Report
- Retrieving a File

For any kind of remote initiate, the host always generates the request for the conversation with CA-XCOM. This will be the case whether a CA-XCOM user has actually originated the file transfer request (for example, through the CA-XCOM TSO/ISPF menus), or it is acting as the intermediary system on behalf of another system (indirect file transfer).

For example, assume a CA-XCOM-PC user initiates a request to send a file to your OpenVMS. Although the PC and the OpenVMS are not directly connected to each other, both are connected to the mainframe. CA-XCOM-PC sends the file to the mainframe which temporarily stores it, while CA-XCOM on the mainframe sets up a conversation with the user's OpenVMS and forwards the file to the user's system. The entire store-and-forward process is performed automatically and remains transparent to the CA-XCOM-PC user.

CA-XCOM Ancillary Control Processes

A detached process handles all transfers initiated by a remote CA-XCOM partner to CA-XCOM for OpenVMS. For transfers using SNA, the detached process is called XCOMACP. For transfers using TCP/IP, it is called XCOMIP.

XCOMACP Processing

An XCOMACP process is run for each entry in the EXCOMACP.COM file. The XCOMACP process establishes and maintains a session with the remote system. Sessions are established by the DEC system issuing an INIT_SELF. The remote system then issues the BIND that is accepted by the DEC system.

Note: The TYPE=EXECUTE request will not work because it requires the remote system to accept an unsolicited BIND.

In the EXCOMACP.COM file, there is a separate entry for each LU that receives remote requests. The access name defined in your SNA configuration specifies the LU. A separate process running the image XCOMACP.EXE is created for each entry in the EXCOMACP.COM. Each process is named for the access name to which it is connected.

The command procedure file called XCOM$IMAGE:EXCOMACP.COM starts the XCOMACP process. This file defines a DCL command verb known as EXCOMACP, and then subsequently invokes it. The command line qualifiers for this DCL command convey all the required initial and default values for the XCOMACP process(es). The command which creates the XCOMACP process is the EXCOMACP command.

XCOMACP States

When the XCOMACP process is created, it obtains initialization parameter values from the processing of the EXCOMACP command, a phase known as the INIT state. Next, an attempt is made to obtain an SNA session.

When the initialization is successful, the process enters into the IDLE state and waits for a remote CA-XCOM partner to initiate a transfer. If the attempt to obtain an SNA session fails, the process enters the DISC state, which indicates that the physical SNA line and the logical circuit are inactive. As long as the system is in the DISC state, XCOMACP will make periodic attempts to obtain an SNA session based on the POLLing interval.

XCOMIP Processing and States

XCOMIP is started by the UCX Auxiliary Server. UCX is also known as DEC TCP/IP Services for OpenVMS. UCX listens for incoming CA-XCOM transfers as defined at installation time, and runs the command procedure XCOMIP.COM whenever a message is received on the CA-XCOM TCP/IP port – usually port 8044. XCOMIP, in turn, starts a process by running XCOMIP.EXE.

XCOMIP accepts the TCP/IP socket from the UCX Auxiliary Server and then receives the message that describes the incoming transfer. Because XCOMIP does not run all the time, it does not have an IDLE or DISC state.

The table below lists the XCOMACP and XCOMIP process states:

XCOMACP/XCOMIP Process States	Explanation
INIT	The XCOMACP process has just been created and is initializing itself.
DISC	No SNA session is activated. There may not be an SNA circuit e.g., no SDLC link activated. *Not applicable to XCOMIP.*
IDLE	Half of an SNA session is established, i.e., the session is activated but there is no transfer in progress. *Not applicable to XCOMIP.*
REQR	A transfer request has been received from a remote CA-XCOM user.
REQV	A received transfer request from a CA-XCOM remote user is being verified e.g., to determine if a remote user is permitted access to resources on this node.
RFIL	A remote request is verified and XCOMACP is receiving a TEXT or BINARY file from the remote node.
SFIL	A remote request is verified and XCOMACP is sending a TEXT or BINARY file to the remote node.
RRPT	A remote request is verified and XCOMACP is receiving a REPORT file from the remote node. Subsequently, this file will be submitted to an OpenVMS print queue.
RJOB	A remote request is verified and XCOMACP is receiving a JOB file from the remote node. This file will then be submitted to an OpenVMS batch queue.

The XCOMACP process name conveys the process states to the user in the following format:

```
<state>:<access name>
```

An activated but idle XCOMACP process name, with only one active process, would be shown like this:

```
IDLE:<access name>
```

The XCOMIP process name conveys the process states in the following format:

```
<state>:<ip address>
```

XCOMACP Process Creation

The creation of the XCOMACP process or processes is a multi-step procedure performed by the command procedure "XCOM$IMAGE:EXCOMACP.COM."

The first step is the definition of a DCL command verb, namely EXCOMACP. The second is the execution of this command one or more times. The command is executed "n" times if "n" XCOMACP processes are to be created; n is greater than or equal to one. The result of the EXCOMACP command execution is the creation of an XCOMACP process.

Each XCOMACP process assumes the name of the access name specified in the EXCOMACP entry. The qualifiers supplied to the EXCOMACP command provide both the process quotas that the XCOMACP process is to execute with, and the parameters that the process will use to control some of its activities. For example, the default username and password if none is supplied by a remote CA-XCOM user, or the polling interval between session polls.

The last action performed is the removal or undefining of the EXCOMACP DCL command verb. Following is an example of an EXCOMACP.COM command procedure file to create two XCOMACPs.

Note: Each XCOMACP process is dedicated only to one SNA session, and each has a unique /ACCESS name value.

```
$! Define EXCOMACP command
$  set command xcom$image:excomacp
$!
$! create XCOM ACP(s)
$!
$! rename old log files
$ set noon
$ log = f$search("xcom$image:xcomacp*.log")
$ if log .nes. "" then rename xcom$image:xcomacp*.log;* *.old;0
$ set on
$
$! execute acp startup routine
$ assign/user sys$command sys$input
$ excomacp -
    /defaccnt=DECNET-    ! use decnet account as the default
    /defpswrd=DECNET-    ! default password
    /node=GCGW02         -       ! gateway node name or VMS/SNA unit #
    /access=XCOM58       -       ! access name (defined in config file)
    /poll="0 00:05:00.00"        ! delta time between session polls
$!
$ excomacp -
    /defaccnt=DECNET-    ! use decnet account as the default
    /defpswrd=DECNET-    ! default password
    /node=GCGW02         -       ! gateway node name or VMS/SNA unit #
    /access=XCOM60       -       ! access name (defined in config file)
    /poll="0 00:05:00.00"        ! delta time between session polls
$!
$! remove this verb
$ set command/delete=excomacp
```

Figure 10-1: EXCOMACP.COM Command Procedure

XCOMIP Process Creation

As noted earlier, XCOMIP is started by the UCX Auxiliary Server. UCX is also known as DEC TCP/IP Services for OpenVMS. After CA-XCOM is installed, you must customize and then execute SETUP_XCOM_TCPIP.COM to tell UCX to listen for incoming CA-XCOM messages and activate XCOMIP as needed. You need to execute SETUP_XCOM_TCPIP.COM only once.

The command procedure in Figure 10-2 instructs UCX to listen on TCP/IP port 8044 for incoming CA-XCOM messages, and to execute the command procedure XCOMIP.COM whenever such messages are received.

```
<SETUP_XCOM_TCPIP.COM>
$ set noon
$ ucx disable service xcom
$ ucx set service xcom -
    /protocol=tcp-
    /port=8044-
    /user_name=SYSTEM-
    /process_name=XCOMIP_UCX_AUXS-
    /file=XCOM$IMAGE:xcomip.com-
    /flags=multithread
$!  /log_options=(file=some_log_file_name.log,all)-
$ ucx set config enable service xcom
$ ucx enable service xcom
```

Figure 10-2. UCX Command Procedure

The command procedure in Figure 10-3 defines the XCOMIP command to OpenVMS and then starts XCOMIP to handle incoming transfer requests.

```
<XCOMIP.COM>
$SET noon
$!uncomment the next line to make a log.
$!eerything after this will appear in the log file
$!define sys$output XCOM$IMAGE:xcomip_startup.log
$ define sys$error sys$output
$ set command XCOM$IMAGE:xcomip.cld
$ xcomip /default_owner
$ set command/delete-xcomip
```

Figure 10-3. XCOMIP.COM Command Procedure

XCOMACP/XCOMIP Running Privileges

To start the XCOMACP or XCOMIP, you must have the following privileges:

- EXQUOTA
- DETACH
- GRPNAM
- NETMBX

- PRMMBX
- WORLD
- SYSNAM
- CMKRNL
- TMPMBX
- OPER

Message Logging

The XCOM ACP logs all messages to the following file:

```
XCOM$IMAGE:XCOMACP_FOR_<access_name>_ON_<node>. log
```

<access_name> The access name defined in the EXCOMACP.COM file.
<node> The gateway node defined in the EXCOMACP.COM file.

The ACP logs and time-stamps all CA-XCOM events that include received requests and their associated status messages. All XCOMACP process activities resulting from a remotely initiated CA-XCOM procedure are logged on both the user's system and the partner system.

XCOMIP logs all messages to XCOM$IMAGE:XCOMIP.LOG.

Line Disconnects

If the line or link connecting a VMS system to the host during a remotely initiated file transfer goes down, either temporarily or for some time, the XCOMACP logs this and performs an automatic recovery process as soon as the line comes up again.

Although the ACP is immediately aware that the line is down, the POLL qualifier value specified in the XCOM$IMAGE:EXCOMACP.COM command procedure determines how long it takes the ACP to act upon a line transition from off to on. Therefore, examine the as-delivered default value to determine if it is appropriate for your site.

User Security and Accounting Considerations

The security environment at both the local and remote system must be taken into account for any CA-XCOM file transfer. Each must satisfy the access requirements of the security in place on their system when processing is performed.

For remotely initiated file transfers, any requests for resources on your local OpenVMS must also satisfy your local security requirements. Therefore, CA-XCOM will only be able to access those files and devices which are accessible to the username associated with the current file transfer. This username, along with its proper password should be specified by the remote user through the CA-XCOM "User ID" and "Password" parameters. The "Password" will be sent encrypted.

If a "User ID" is not specified, then the default username under whose privileges this file transfer will be processed and specified through the DEFACCNT and DEFPSWRD qualifiers (located in the XCOM$IMAGE:EXCOMACP.COM or XCOM$IMAGE:XCOMIP.COM command procedure) will be used. The default username provided will be DECNET and the default password provided will be DECNET. A security error will result if an invalid username/password pair is specified, or if an access request is made during processing of the file transfer which is not permitted for the associated username.

The username/password procedures under CA-XCOM are identical to those followed by DECnet, which is DEC's networking product. CA-XCOM is completely compatible and consistent with native OpenVMS security features.

Using DECnet-OpenVMS Proxy Identifiers

If you do not want to specify a password parameter in the user ID information passed from the IBM system to the XCOMACP/XCOMIP process, then a proxy ID can be used. A proxy ID enables a user logged in at a remote node to be automatically logged in to a specific account at the local node, without having to supply any access control information.

In order to establish proxy login to an account on the local OpenVMS node, without specifying any access control information, the remote user must have a default proxy account on the local node which maps to a local user account. The remote user assumes the same file access rights as the local account and receives the default privileges of the local account.

The proxy login capability increases security since it minimizes the need to specify explicit access control strings in node specifications passed over the network or stored in command procedures. More comprehensive information regarding DECnet-OpenVMS can be obtained in *The OpenVMS Networking Manual*.

The XCOMACP/XCOMIP process accesses local files on behalf of the supplied remote username. XCOMACP/XCOMIP uses DECnet-OpenVMS security capabilities to verify that the supplied user ID has access privileges to the local node and files. Therefore, to properly use proxy identifiers, see the following assumed process.

Let us assume that the XCOMACP/XCOMIP process is running with the "SYSTEM" local OpenVMS identifier and privileges. The following is an example of the User Authorization File (UAF) command to define a proxy account:

```
ADD/PROXY <local-node-name>::SYSTEM  IBMUSER
```

<local-node-name> The local node name.

IBMUSER IBMUSER is a locally defined username on the OpenVMS, which the remote IBM user will supply as the user ID to XCOMACP. (The password is not supplied.) You can also define a password for this username.

Once the XCOMACP/XCOMIP successfully completes security checking, all XCOMACP/XCOMIP accesses made on the local OpenVMS system will be with the access rights and privileges of the user IBMUSER.

Password Encryption

The PFILE program ensures that when you invoke transfers from the OpenVMS, the password will not be displayed in the command line, command file, or in the transfer itself. PFILE creates a file which stores an encrypted password and a VMS group code, and names the file after the userid associated with this password. The filename does not have an extension.

To create a password file, do the following:

1. At the DCL prompt $, type PFILE and press Enter.
   Result: The program prompts you for your userid.

2. Type your userid and press Enter.
   Result: The program prompts you for your password.

3. Type your password and press Enter
   Result: The program creates a password file using the same name as your userid. The file name does not have an extension.

To initiate a command line transfer, specify PASSWORD=X. CA-XCOM reads your password and VMS group code from the password file (which PFILE created) that has the same name as your userid. The VMS group code ensures that only authorized users can access the password.

Note: If a checkpointed transfer originally specified PASSWORD=X, then the XCOM_CHECKPOINT.COM file created to restart the transfer also specifies PASSWORD=X.

Resource Accounting

The username under whose access privileges the file transfer processing runs is also held accountable for all used resources. If this happens to be a default username, then the default account will be charged.

Note: For locally initiated procedures, resources used at the local end are charged to the account of the local username who made the file transfer request.

Default File Specifications

A complete OpenVMS file specification uses the following format:

```
device:[directory]filename.extension;version
```

Where	Indicates
device	The disk drive name.
directory	The directory name. A file is listed in a directory. A directory is a special kind of file containing the names and locations of a file(s).
filename	The name of the file extension.
version	The version number of the file.

When a local file is not completely specified by the remote user, the XCOMACP/XCOMIP uses the same defaults that the DECnet uses.

If the device or directory is not specified, the system uses the default value specified in the SYSUAF, which corresponds with the local username associated with this file transfer. (This is the CA-XCOM "User ID" parameter specified by the remote user under whose privileges and account this procedure will run on the local OpenVMS.)

If either the filename or extension is not specified, then null filenames or extensions are used.

If no version number is specified, then the next higher version number will be used for this file.

For example, a file specification of FRED.DAT in a file transfer associated with the username of MILLER will access file FRED.DAT in the default directory of MILLER. If a username was not specified by the remote user, the default username is used. This is usually DECNET.

In this case the file FRED.DAT, with no username specified, will access a file in the default directory associated with DECNET, which is typically SYS$SPECIFIC:[DECNET].

Receiving From a Remote System

As discussed earlier, local CA-XCOM users can send files, reports, and jobs to a remote system. Conversely, these remote systems may also send files, reports, and jobs to your local CA-XCOM site. Files are created according to the OpenVMS rules. VMS RMS attempts to determine file protection in the following order:

1. Using the protection assigned to an existing file of the same name.
2. Using the default file protection of the directory. This is set by setting an ACL on the directory.
3. Using the process-default protection.

Note: For CHECKPOINT/RESTART operations, XCOMACP/XCOMIP must have READ and WRITE access to the file.

Receiving Files From a Remote System

When a remote user initiates a Send File, the XCOMACP/XCOMIP receives the transferred file.

Note: When CA-XCOM is instructed to create a file, it creates variable length files for text data and fixed length files for binary data. When appropriate, text files are converted to ASCII.

Receiving Jobs From a Remote System

When a remote user initiates a Send Job, the XCOMACP/XCOMIP receives the transferred job (i.e., command file to be executed).

REMEMBER:

- Jobs are always submitted to SYS$BATCH. If the remote user specifies a destination parameter value then the job is submitted to this destination.

- Jobs will be put on HOLD if the remote user has specified this option.
- If a local user is logged in under the same username that was specified in the remote request, this user will be notified when the request is queued and upon the job's completion.
- The job's log is kept in the file XCMJOB_RQST.LOG in the username's default directory, but is not printed.
- The job (the command file) is kept in the username's default directory in the file XCMJOB_RQST.COM.
- The job name is always XCMJOB_RQST.
- Files are converted to ASCII when appropriate, i.e., when the remote computer is an EBCDIC system.

Receiving Print Requests From a Remote System

When a remote user initiates a Send Report, the XCOMACP/XCOMIP will receive the transferred print file.

REMEMBER:

- Files are submitted to SYS$PRINT unless otherwise specified. If the remote user specifies a destination parameter value then the job is submitted to this destination.
- The print file is put on HOLD if the remote user has specified this option.
- If a local user is logged in under the same username that was specified in the remote request, this user will be notified when the request is queued and when the print job completes.
- The remote user should specify only print characteristics (corresponding to the CA-XCOM "Class" parameter) and form names (corresponding to the CA-XCOM "Form Type" parameter) that have been defined on the local VMS system. To predefine valid values, use the DCL DEFINE/CHARACTERISTIC and DEFINE/FORM commands respectively.

Note: To ensure compatibility with IBM mainframe conventions, the system interprets a "CLASS=A" specification as the local default print characteristic, and a blank Form Type as the local default form name.

- To request multiple copies, use the CA-XCOM "Copies" parameter.
- If the remote user does not specify a job name through the CA-XCOM "Report Title" parameter, the job name defaults to XCMPRT_RQST.
- CA-XCOM stores print requests in the username's default directory as XCMPRT_RQST.LIS. When the procedure completes, the system deletes the print requests unless otherwise instructed.

Chapter

11

Operation and Control

CA-XCOM consists of a set of components, for example, XCOMACP, remote spooler, and so on. Most of these components have already been described in preceding chapters. This chapter discusses the following additional topics:

- General CA-XCOM product operation and management
- Creating Custom Character Sets for file conversion
- Restartable transfer processing and management
- User exits

General CA-XCOM Operation and Management

CA-XCOM consists of the following components:

XCOMCFG	The CA-XCOM configurator.
CA-XCOM Command Language Interface	Consists of: ■ Menu Interface ■ Command Line Interface
XCOMACP	The CA-XCOM remote request handler.
XCOMAPI	The application programming interface that allows you to call CA-XCOM from an application program to initiate a transfer.
CA-XCOM Remote Spooler	Establishes print queues for printing on remote printers attached to CA-XCOM SNA nodes.
CA-XCOM Checkpoint Server	Handles checkpoint/restart processing of restartable transfers.

The preceding chapters explained how to use most of these components for routine transfer activity. The rest of this chapter discusses the checkpoint/restart feature.

For the remote spooler and checkpoint server, you can use normal OpenVMS DCL queue commands. For more information about the remote spooler, see the chapter, "Remote Spooling XQUE".

Note: Because old versions of the EXCOMACP file and the checkpoint server queue's log file are retained in the XCOM$IMAGE directories, you should periodically purge these files.

Creating Custom Character Sets for File Conversion

This section contains information on using custom character sets for conversion processing and procedures for creating and specifying custom character sets. It describes ASCII-to-EBCDIC and EBCDIC-to-ASCII conversions and building a custom character conversion set.

There are two files, etoa.tab and atoe.tab , used for EBCIDIC/ASCII translations. When CA-XCOM needs to do a translation, it looks for the appropriate file. If the file does not exist, an internal table is used. For example, when transferring to MVS, CA-XCOM will look for the file, XCOM$IMAGE:ATOE.TAB to do the ASCII to EBCDIC translation. If that file does not exist, an internal table is used.

When to Use

Use conversion processing when the following situations occur:

- When a non-USA character set is being used.
- When the transferred file is to be converted to all uppercase or lowercase characters.
- When the CA-XCOM default character conversion sets would not be appropriate.

About Custom Character Sets

The custom character sets are stored in standard ASCII files as conversion tables. Each original character and the character to which it is translated are defined by a single line in the file. The line number of the file itself indicates the decimal code value of the original character.

The character conversion table must be the only contents of the conversion file. Do not insert any comments or additional numbers. Each conversion file must contain 256 lines. If your text editor provides a line counter, you can use it to help you keep track of the line numbers.

Procedure

Use the following procedure to create a custom character translation table.

Step	Action
1	Use an editor that can generate ASCII text to create and open a file.
2	Define each character on a separate line. **Note:** The line number represents the decimal code value.

Example 1

In the following example, to translate the standard USA ASCII character for the question mark (?) to the equivalent EBCDIC code, line 63 of the conversion file would contain only the information below:

```
0x6f
```

The decimal code for the question mark is 63, the line number is 63 and the hexadecimal code for the EBCDIC character is 6F.

Example 2

In the following example, to translate the EBCDIC character "A" to the equivalent ASCII code, line 193 of the conversion file would contain only the information below:

```
0x41
```

The decimal code for the EBCDIC character "A" is 193, the line number is 193 and the hexadecimal code for the ASCII character is 41.

Procedure

Use the following procedure to translate all lower case ASCII characters to upper case EBCDIC characters.

Step	Action
1	Use an editor that generates ASCII text to open the file, XCOM$IMAGE:ATOE.TAB, and copy the values from lines 65-90 to lines 97-122. **Note:** The decimal ASCII code for "a" is 97 and the decimal ASCII code for "z" is 122. Result—The values in lines 97-122 are changed to represent uppercase EBCDIC characters.
2	Save the file as an ASCII text file and exit the editor.

CA-XCOM Checkpoint/Restart Transfer Processing

When large file transfers are interrupted, it is crucial that the transfer resume where it left off, without having to return to the beginning of the file. This capability is known as checkpoint/restart.

Most users will use checkpoint/restart for both large and small transfers. For example, if the line goes down during the ninth hour of transmission of a file that normally takes ten hours to transmit, you would want the transmission to restart with only the final hour's worth of data when the line is back up and not restart from the beginning.

Startup

As part of the CA-XCOM startup procedure, a server queue is started with a queue name of XCOM$RECOVER, with a queue processor image file of SYS$SYSTEM:XCOMCKPSVR.EXE. Specifically, the queue is started with the following DCL command:

```
$ INITIALIZE/QUEUE/PROCESSOR=XCOMCKPSVR/RETAIN=ALL/DEFAULT=NOFEED-R_$ /START
XCOM$RECOVER
```

Note that $ and _$ are DCL prompts.

Normally, the XCOM$RECOVER queue is initialized and started by the command procedure XCOM$IMAGE:STARTCKPSVR.COM. This procedure is called from the CA-XCOM startup command procedure. All errors or symbiont image problems are logged to the file:

```
XCOM$IMAGE:XCOM$CHECKPOINT.LOG
```

Prior to queue initialization and startup, this procedure renames any existing XCOM$IMAGE:XCOM$CHECKPOINT.LOG file to XCOM$IMAGE:XCOM$CHECKPOINT.OLD

Processing

To make a transfer restartable, add the qualifier /CHECKPOINT=delta-time to the CA-XCOM command line during a CA-XCOM transfer request. Here delta-time is the time the system is to wait before an attempt is made to automatically resume an interrupted transfer.

When a CA-XCOM user requests a restartable transfer, the system creates a checkpoint file in the directory where the OpenVMS file involved in the transfer is located. The current transfer context is written to it, and an entry is submitted to the checkpoint server queue XCOM$RECOVER, which describes this transfer. The context is updated periodically in the checkpoint file while the transfer is in progress.

For remotely initiated transfers the checkpoint file is always created in the target directory specified for the transfer. In addition, the AFTER time specified for an XCOMACP generated entry is in the far future since it is incumbent on the remote user to restart the transfer.

Note: The aging limit is the same as that for locally (i.e., OpenVMS) initiated transfers with a default of 30 days.

When the transfer is successful, the checkpoint file is deleted and the XCOM$RECOVER entry is removed. If the transfer is interrupted, then after a "delta-time" wait time CA-XCOM will try to resume and complete the transfer.

The server queue symbiont resumes a checkpointed transfer by generating a command file named XCOM_CHECKPOINT.COM in the user's XCOM$IMAGE directory and then submits this file to the SYS$BATCH queue. Audit trail reports are written to SYS$LOGIN:XCOM.LOG, and the server queue log file is written to SYS$LOGIN:XCOM_CHECKPOINT.LOG.

Checkpoint Filename Format

Use the following format for the checkpoint file:

```
disk:[dir]transfer-file-name_node.ckp
```

Where	Indicates
Disk:[dir]	Disk and directory default at the time of the CA-XCOM checkpointed transfer command initiation, e.g., dua0:[xcomuser].
Transfer-file-name	Filename of the file involved in the transfer, e.g., testfile.txt;10.
Node	The CA-XCOM remote system name to which the transfer was directed, e.g., bigblu. For the XCOMACP process this value is a concatenation of the CA-XCOM transfer request number and the group name, e.g., 002086XCOM MVS2XN. Here "002086" is the request number, and "XCOMMVS2XN" is the group name.

Checkpoint Filename Examples

VMS-initiated Transfer If the filename is dua0:[xcomuser]testfile.txt;10 and the transfer is directed to a CA-XCOM remote node bigblu, the respective checkpoint filename is dua0:[xcomuser]testfile_txt_10_bigblu.ckp.

Remotely initiated Transfer
If the remote user requested a transfer of a file named dua0:[vicki]peter1.txt;1, with a transfer request number 00314 and a group name XCOMMVS2XN, the respective checkpoint filename is dua0:[vicki]peter1_txt_1_00314xcommvs2xn.ckp.

XCOM$RECOVER Queue Management

As a rule, the checkpoint queue XCOM$RECOVER manages itself by aging the entries in the queue and automatically deleting or removing an entry that has reached its age limit (default = 30 days). In addition, the checkpoint file is deleted.

Situations could arise, however, when a user would like to perform specific operations to the queue. The following actions can be done to the queue, or its elements:

- Display the queue
- Change an entry's default age limit
- Manually resume a checkpointed transfer
- Delete an entry from the queue

Show Queue

To fully display the XCOM$RECOVER queue entries and their parameters, issue the following DCL command:

```
$ SHOW QUEUE/ALL/FULL XCOM$RECOVER
```

For each displayed entry, the values shown for the /PARAMETER qualifier mean the following:

- The first value is the CA-XCOM remote node name.
- The second value is the fully qualified checkpoint filename in the format described in "Checkpoint Filename Format" on page 11-6.
- The third value is the default age limit for the entry, in VMS delta-time format.

An example of SHOW/FULL/QUEUE XCOM$RECOVER command output appears next.

```
 $ sh queue/full/all xcom$recover

Server queue XCOM$RECOVER, on YEW::, mounted form DEFAULT
  /BASE_PRIORITY=4 /DEFAULT=(FORM=DEFAULT) /OWNER=[SYSTEM]
  /PROCESSOR=XCOMCKPSVR /PROTECTION=(S:RSMD,O:RSMD,G:RSMD,W:RSMD) /RETAIN

  Entry  Jobname         Username     Blocks  Status
  -----  -------         --------     ------  ------
     42  XCOM CHECKPOINT XCOMUSER          0  Holding until  24-MAR-1998 12:32:58
         Submitted 19-MAR-1998 12:32:58.43 /FORM=DEFAULT
         /PARAM=("000114IP251ECA8D",
         "DKA200:[XCOMUSER]XCMJOB_RQST_COM_4_000114IP251ECA8D.CKP;1",
         "30 00:00:00") /PRIORITY=100
         File: _YEW$DKA200:[XCOMUSER]XCMJOB_RQST.COM;4

     43  XCOM CHECKPOINT XCOMUSER          0  Holding until  24-MAR-1998 12:33:34
         Submitted 19-MAR-1998 12:33:34.17 /FORM=DEFAULT
         /PARAM=("000115IP251ECA8D",
         "DKA200:[XCOMUSER]XCMJOB_RQST_COM_6_000115IP251ECA8D.CKP;1",
         "30 00:00:00") /PRIORITY=100
         File: _YEW$DKA200:[XCOMUSER]XCMJOB_RQST.COM;6

     44  XCOM CHECKPOINT XCOMUSER          0  Holding until  24-MAR-1998 12:33:48
         Submitted 19-MAR-1998 12:33:48.10 /FORM=DEFAULT
         /PARAM=("000115IP251ECA8D",
         "DKA200:[XCOMUSER]XCMJOB_RQST_COM_7_000115IP251ECA8D.CKP;1",
         "30 00:00:00") /PRIORITY=100
         File: _YEW$DKA200:[XCOMUSER]XCMJOB_RQST.COM;7
```

Figure 11-1: Show Queue Sample Output

Change an Entry's Default Age Limit

To change the age limit of an entry in the XCOM$RECOVER server queue, follow the steps below.

1. At the DCL "$" prompt, type the following:

   ```
   SHOW QUEUE/ALL/FULL XCOM$RECOVER
   ```

2. Determine, from the output of the above command, the desired entry's display. In particular note the P1, P2, and P3 values for the "/PARAMETER" qualifier.

3. To change the age limit, type the following at the DCL "$" prompt:

   ```
   SET ENTRY <entry- number>/PARAMETER=(P1,P2,P3)
   ```

<entry-number>	The entry number.
<P1>	Exactly the same as the values noted in (2) above.
<P2 >	Exactly the same as the values noted in (2) above.
<P3>	The new age limit.

For an example of changing the age limit for an entry, see Modify Age Limit Example Output in Figure 11-2. The modified entries were initially displayed in Show Queue Sample Output in Figure 11-1.

WARNING: Because an incorrectly specified command could prevent the proper processing of an affected queue entry, be extremely careful when you change an entry's default age limit.

```
 $
 $SET ENTRY 42 -
 _$/PARAMETER=-
 _$(000114IP251ECA8D,DKA200:[XCOMUSER]XCMJOB_RQST_COM_4_000114IP251ECA8D.CKP;1,"0
00:15:00")
 $
 $
 $ sh queue/full/all xcom$recover

Server queue XCOM$RECOVER, on YEW::, mounted form DEFAULT
  /BASE_PRIORITY=4 /DEFAULT=(FORM=DEFAULT) /OWNER=[SYSTEM]
  /PROCESSOR=XCOMCKPSVR /PROTECTION=(S:RSMD,O:RSMD,G:RSMD,W:RSMD) /RETAIN

  Entry  Jobname         Username     Blocks  Status
  -----  -------         --------     ------  ------
     42  XCOM CHECKPOINT XCOMUSER          0  Holding until  24-MAR-1998 12:32:58
         Submitted 19-MAR-1998 12:32:58.43 /FORM=DEFAULT
         /PARAM=("000114IP251ECA8D",
         "DKA200:[XCOMUSER]XCMJOB_RQST_COM_4_000114IP251ECA8D.CKP;1",
         "0 00:15:00") /PRIORITY=100
         File: _YEW$DKA200:[XCOMUSER]XCMJOB_RQST.COM;4

     43  XCOM CHECKPOINT XCOMUSER          0  Holding until  24-MAR-1998 12:33:34
         Submitted 19-MAR-1998 12:33:34.17 /FORM=DEFAULT
         /PARAM=("000115IP251ECA8D",
         "DKA200:[XCOMUSER]XCMJOB_RQST_COM_6_000115IP251ECA8D.CKP;1",
         "30 00:00:00") /PRIORITY=100
         File: _YEW$DKA200:[XCOMUSER]XCMJOB_RQST.COM;6

     44  XCOM CHECKPOINT XCOMUSER          0  Holding until  24-MAR-1998 12:33:48
         Submitted 19-MAR-1998 12:33:48.10 /FORM=DEFAULT
         /PARAM=("000115IP251ECA8D",
         "DKA200:[XCOMUSER]XCMJOB_RQST_COM_7_000115IP251ECA8D.CKP;1",
         "30 00:00:00") /PRIORITY=100
         File: _YEW$DKA200:[XCOMUSER]XCMJOB_RQST.COM;7
```

Figure 11-2: Modify Age Limit Example Output

Manually Resuming a Checkpointed Transfer

If the transfer was a locally initiated transfer from the OpenVMS, you can restart a waiting checkpointed transfer manually in either of two ways:

Method 1

Enter *one* of the following DCL queue commands at the "$" prompt. Either:

```
SET ENTRY <entry-number>/release
```

or

SET ENTRY <entry-number>/noafter

Issuing either command immediately restarts or resumes the waiting checkpointed transfer identified by <entry- number>.

Method 2

Reissue the original CA-XCOM transfer command and replace the "/CHECKPOINTED" qualifier with the "/RESUME" qualifier.

For example, let's assume that the following CA-XCOM transfer command was previously issued at the "$" prompt to initiate a checkpointed transfer, which then failed in the midst of a transfer because of a line failure:

```
XCOM62/SENDFILE/CHECKPOINT somefile.txt bigblu::"xcom01.jcllib.don"
```

To manually resume this transfer after the line is restored, you would issue the following command at the "$" prompt:

```
XCOM62/SENDFILE/RESUME somefile.txt bigblu::"xcom01.jcllib.don"
```

This command would restart the transfer from the last checkpoint prior to the line failure and complete it, assuming there are no further problems.

Deleting An Entry

At the $ prompt, enter the DCL commands shown below to delete an entry in the XCOM$RECOVER server queue. Then delete the associated checkpoint file.

Step	Enter DCL Command	Comment
1.	`SHOW QUEUE/ALL/FULL XCOM$RECOVER`	
2.		Determine from the output of the above command which entry belongs or relates to your interrupted transfer. The checkpoint file is the second value (P2) specified for the "/PARAMETER" qualifier. The checkpoint filename format is: `disk:[dir]transfer-file-name_node.ckp` **disk:[dir]=**Disk and directory default at the time of the CA-XCOM checkpointed transfer command initiation, e.g., dua0:[xcomuser]. **transfer-file-name=** Filename of the file involved in the transfer, e.g., testfile.txt;10 **node=**The CA-XCOM remote system name to which the transfer was directed, e.g., bigblu. For the XCOMACP process this value is a concatenation of the CA-XCOM transfer request number and the group name, e.g., 002086XCOMMVS2XN. Here 002086" is the request number, and "XCOMMVS2XN is the group name. **file:=**The file that was being transferred.
3.	`DELETE/ENTRY=(entry-number[,...]) XCOM$RECOVER`	This will remove the desired XCOM$RECOVER queue entry. **(entry-number[,...])**=The entry number or list of entry numbers of jobs to be deleted.
4.	`DELETE/LOG DUA0:[XCOMUSER]TESTFILE_TXT_10_BIGBLU.CKP`	This entry deletes the related checkpoint file. The actual checkpoint file itself can be deleted at the $ prompt by the DCL DELETE file command.

Deleting and Restarting the XCOM$RECOVER Queue

Under Normal Conditions

To delete the XCOM$RECOVER queue under normal circumstances, at the $ prompt execute the following three DCL commands:

```
STOP/QUEUE/NEXT XCOM$RECOVER
STOP/QUEUE XCOM$RECOVER
DELETE/QUEUE XCOM$RECOVER
```

To restart the queue, at the $ prompt type the following:

```
@XCOM$IMAGE:STARTCKPSVR.COM
```

Under Abnormal Conditions

Under certain conditions, an entry in the XCOM$RECOVER server queue may be in the abort state or status. It may be seen after the specification of a 'show/queue xcom$recover' DCL command. If the abort does not clear up within about 10 minutes , it prevents checkpointed transfers awaiting automatic restart at a particular time from being executed. This permanently aborting task literally plugs up the queue.

To unplug the queue, enter the following DCL commands at the $ prompt to solve the aborting state.

Step	Enter DCL Command	Comment
1.	**SHOW SYSTEM**	
2.		On a piece of paper, note the process ID of all processes having the following format: **SYMBIONT_nnnn** nnnn = An integer
3.	**SHOW PROC/CONTINUOUS/ID=<SYMBIONT_PROCESS-ID>**	**symbiont_process-id** = One of the Ids obtained from the previous step. When you observe a symbiont with the image filename of "XCOMCKPSVR.EXE", stop. Note the process ID of this particular process.
4.	**STOP/ID=<xcomckpsvr-symbiont-process-id>F255D**	**xcomckpsvr-symbiont-process-id =** The process ID noted in the previous step. This symbiont process deletion stops the queue since the aborting task prevents the DCL command s**top/queue xcom$recover** from being effective. The aborting task's status changes from "aborting" to "pending."

Step	Enter DCL Command	Comment
5.	`DELETE/ENTRY=entry-number XCOM$RECOVER`	This will delete the now "pending" task. **entry-number=**The entry number of the job to be deleted.
6.	`@XCOM$IMAGE:STARTCKPSVR.COM`	This will restart the XCOM$RECOVER queue.

The CA-XCOM Exits

CA-XCOM has an EXIT option that you can use to define and call your own user exit when a transfer completes (either successfully or unsuccessfully). The user exit allows you to write any post-processing routines that you may require.

Note: Because the EXIT option runs as part of the CA-XCOM file transfer process, extensive post-processing will delay CA-XCOM in receiving the next file transfer. Therefore, you must decide the extent of your own file transfer post-processing.

Defining the Logical Name XCOM$EXIT01

To call the user exit after a file transfer completes (either successfully or unsuccessfully), you must define the logical name XCOM$EXIT01. A sample logical name definition appears below:

```
DEFINE/SYS XCOM$EXIT01 1
```

Installing XCOMEXIT01.EXE

Whether or not you want to use the EXIT option and any user exit processing, you must install the shared image file XCOMEXIT01.EXE that is included on the distribution tape. If you do decide to call a user exit, the exit will then be able to execute XCOMEXIT01.EXE.

To install this file, use the format below:

```
INSTALL REPLACE/OPEN/SHARE/WRITE SYS$SHARE:XCOMEXIT01
```

Customizing Your Exit Routine

To create your own exit routine, create a module (in any language) with an entry point called XCOM$EXIT01. After successfully compiling your module, you must link it with the following link command:

```
LINK /SHARE XCOMEXIT01, EXIT/OPT
```

Linking an Executable Image to a Shareable Image

The EXIT.OPT file contains the GSMATCH control parameter for the shareable image. This parameter indicates whether an executable image is allowed to link to a shareable image. The GSMATCH parameter setting for the linked executable image and the shareable image should match.

The EXIT.OPT file also calls the C library routines. If you are not using C, you must modify this file.

The Exit Routine Input (XCOM_HISTORY)

The XCOM_HISTORY record is the input to the exit routine. The CA-XCOM distribution tape includes a sample record XCOM_HISTORY.H, written in C, that you can use for your exit processing. To write exits in languages other than C, you can modify the XCOM_HISTORY.H sample file for use with the desired language.

A listing of XCOM_HISTORY.H parameters appears in the next section.

The XCOM_HISTORY.H File Parameters

Parameter	Data type	Length	Description
status	integer	N/A	The status of the transfer. A low order bit set means the transfer was successful.
initiation_type,	character	1	The origin of the transfer. **L -** the transfer was locally initiated **R -** the transfer was remotely initiated
request_type	character	1	The type of request initiated. **S -** a SEND request (OpenVMS sent a file) **R** - a RECEIVE request (OpenVMS received a file) **P** - a request to send or receive a report **J** - a request to send or receive a job
notify	character	12	The name of the local notify for the OpenVMS.
remote_system	character	14	For locally initiated transfers - the name of the remote system for the transfer. For remotely initiated transfers - the ACCESS NAME for the LU on the OpenVMS receiving the transfer.
vax_file	character	256	The name of the OpenVMS file sent or received.
request_id	character	6	The request number used for the transfer.
record_count	integer	N/A	The number of records transferred.
byte_count	integer	N/A	The number of bytes transferred.
compress_byte_ count	integer	N/A	The number of bytes in the transferred file after decompression.
elapsed_time	float	N/A	How long it takes the transfer to complete.
elapsed_time_asc	character	31	How long it takes (in ASCII) for the transfer to complete.
user_id	character	12	For remote transfers, this is the user ID specified to receive the transfer.

Chapter

12 Communicating With Other Systems

One of the outstanding features of the CA-XCOM family of communication products is that any version of CA-XCOM, regardless of the system on which it runs, may transfer data with any other version of CA-XCOM that runs in the same or a connected network. These transfers may be done either directly or through a mainframe hub.

This chapter highlights important facts about some of the operating systems on which CA-XCOM runs. Specifically, it identifies any special configuration issues that you will need to be aware of if you are responsible for setting up your system, as well as the file types and naming conventions used on other machines. This chapter also contains information about pitfalls, restrictions, and additional features of each CA-XCOM component.

In this release, you will find information regarding communications with partner platforms running the following operating systems:

- IBM MVS
- IBM VM
- IBM VSE
- OpenVMS
- IBM AS/400
- PC-DOS (IBM or Microsoft DOS for PCs)
- OS/2 (IBM or Microsoft)
- Data General AOS/VS
- Novell Netware
- Stratus
- Tandem
- UNIX
- Windows
- Windows/NT

This material is intended as an overview only. If you require additional information about any operating system, please see the CA-XCOM manual for that system or the manufacturer's manuals.

IBM MVS

Naming Conventions

In MVS jargon, a file is typically referred to as a data set. Like most systems, these filenames may have multiple levels. Each level can be up to eight characters long and must start with either an alphabetic character or a national character, such as a dollar or percent sign. Each level is separated by a period. There is a limit of eight levels with a total of 44 characters, including the separating periods.

A file type unique to MVS is the Partitioned Data Set (PDS). The PDS is a library containing members that are each separate sequential files. The member name becomes appended to the end of the filename in parenthesis in the form A.B.C(MEMBER) and is limited to 8 alphanumeric or national characters.

The following are examples of valid MVS data set names:

```
SYS1.VTAMLST
C54684.UTILITY.CNTL(JOBCARD)
PROD.PAYROLL.SEPT90.TIMECARD.DATA
TESTDATA
A.$DDD.LOAD
```

In most MVS environments, a data set name is further restricted based upon security rules created by the company. You will need to contact the appropriate personnel within your organization for details, but typically, the high-level name (first-level name) must match your MVS user ID or some other predefined index.

Most sites catalog all files through the system master catalog. In short, this means that the system will be able to locate the file you specify by name only. Under the rare occurrence of an uncataloged file, you will also need to specify the volume and unit information for the device that holds the file.

Types of Files Supported

Sequential files are the most common forms of data transferred. Individual members of PDS files may also be sent as sequential files. Entire PDS libraries or multiple selected members may currently be transferred only between two MVS systems.

All three types of VSAM files (KSDS, ESDS, and RRDS) may be transferred between MVS systems, but they must be pre-allocated, or they may be sent to non-MVS systems as sequential files.

ISAM, BDAM (direct access), IMS, FDR, and DFDSS data sets are not directly supported, but may be put into a sequential format prior to transmitting, using native utilities.

DCB Information

MVS file characteristics must be pre-defined when creating a new file. Collectively, these characteristics are known as DCB parameters. The parameters are specified in the form of the block size, logical record length, and data set organization fields in the version of CA-XCOM that you are running. For more information regarding any of these fields, please refer to an IBM JCL reference manual.

Additional Features

CA-XCOM for MVS is rich with additional functions. Below are some of the more appropriate features that you may wish to use.

CICS Interface

You may turn this on by indicating that you wish to notify CICS in the appropriate "remote system notify" field in your version of CA-XCOM. To do this, provide the VTAM APPLID of the CICS system in the related ID field. This may be provided by your MVS/CICS application development team. Invoking this interface should start a CICS transaction program following the successful completion of a transfer, if one has been provided at the host.

Store-and-forward

You can perform transfers between two nodes connected to an intermediate MVS system by invoking the indirect transfer feature in your version of CA-XCOM. This will ask you for the final destination LU name and will send a transfer in two stages. The first stage will go to the MVS JES spool where it will wait for the final destination to be connected before the second stage occurs.

IBM VM

Naming Conventions

The names of files under CMS consist of three parts: the filename, the filetype, and the filemode.

The filename and filetype can be a maximum of 8 characters in length. They can consist of letters, numbers, and/or national characters ($, #, @, +, -, :, _). In general, lowercase letters are not allowed. In the CA-XCOM VM parameters FILE and LFILE, the filename and filetype are specified as one string with a period as a separator.

The third part of the CMS file identifier is the filemode. When one virtual machine needs access to the minidisk of another virtual machine, CP is the portion of VM which makes this possible. Therefore, when the CA-XCOM Service Virtual Machine performs a transfer, it must be able to identify the target minidisk to CP by the user ID of its virtual machine (LUSER=or USERID) and its virtual address (LUNIT or UNIT).

Types of Files Supported

The CA-XCOM Service Virtual Machine runs IBM's GCS (Group Control System) operating system. Due to the limitations of this environment, CA-XCOM-VM only supports the CMS extended file system format. This covers CMS files on minidisks formatted with 512, 1024K, 2048K, and 4096K block sizes. It does not support the CMS Shared File System, minidisks formatted with 800 byte blocks, or tape I/O.

DCB Information

CMS file characteristics must be predetermined when creating a new file. The parameters you must specify are as follows:

- The record format (RECFM), which can be either fixed (F) or variable (V)
- The logical record length (LRECL), which indicates the number of characters in the longest line of the file
- The Block size (BLKSIZE) - Since files under CMS are essentially unblocked, this is the same as the LRECL for fixed length files (RECFM=F), and for variable length files (RECFM=V), it would be equal to the LRECL + 4.

IBM VSE

Naming Conventions

When accessing a file on a VSE system, the "Remote file name" field indicates the file-id as would be specified on the DLBL, an indicator of whether the file is VSAM or SAM, and optionally, additional information needed for locating the file.

Format for VSAM files

The format for VSAM files is as follows:

```
file-id,V[,catalog-id]
```

Where	Indicates
file-id	The name given to the data set when it was defined using IDCAMS by including this line in the JCL: `DEFINE CLUSTER (NAME (file-id) ...`
V	This is a VSAM file.
catalog-id (*optional*)	The name of the user catalog that owns the VSAM data set, as defined using IDCAMS by including the line `DEFINE USERCATALOG (NAME (catalog-id) ...` in the JCL. Leave this field blank if the data set is owned by the master catalog.

SAM Naming Conventions

Format for SAM filenames

Use the following format to name a SAM file:

```
file-id,S,[unit],[location],[size],[override]
```

The following table describes the parts of a SAM filename:

Part	Description
file-id	The name which identifies this dataset in the VTOC of the specific DASD volume. This is the file-id you specify on the DLBL JCL statement. Range: 1 to 44 characters. **Note:** Do not enclose it in quotes.
S	Indicates that this is a SAM file.
unit	The physical device address as defined by the CUU parameter on the ASSGN JCL statement. It identifies the disk drive on which this file resides. This parameter can be omitted if the UNIT or VOL parameters are specified, or if a DASD manager is in use.
location	*Optional for output files.* The starting location of the file on the disk, as defined on the EXTENT JCL statement. If a DASD manager is in use, specify a value of 1.
size	*Optional for output files.* Indicates how much space this dataset will use, as defined on the EXTENT JCL statement. For CKD devices, this is the number of tracks. For FBA devices, this is the number of blocks.

Part	Description
override	*Optional for output files.* Indicates whether this file should be processed as if the FLLTAB option for DASDM were coded as indicated by the override parameter. The override applies only to the processing for the file whose dataset name is on the statement that the statement where the override appears. The following are the available override parameters and their equivalent DFLTAB option: 1. DMYES to force DASDM=YES for this file. 2. DMNO to force DASDM=NO for this file 3. DMEPIC to force DADSM=EPIC for this file. **Note:** If you are running with a DASD manager, the DASD manager's STRTTRK or Trigger value would be placed in the location field. DASD manager pools should be indicated by putting the poolname in the Volume parameter. For EPIC/VSE users, you may omit ■ The location if you want EPIC to default to its STRTTRK value. ■ The size if you want EPIC to default to its DEFEXT value. ■ The Volume information if you want EPIC to default to its DEFPOL value. For CA-Dynam users who want to access Dynam catalog controlled files (included GDG datasets), no extent information should be entered. (No cuu, location, size or override information and no Volume or Unit parameters for the files you are referencing.)

TAPE Naming Conventions

Format for TAPE filenames

Use the following format to name a TAPE file:

```
file-id,T,[unit],[unit],[unit],[override]
```

The following table describes the parts of a TAPE filename:

Part	Description
file-id	The name which identifies this dataset in the tape manager catalog or in the HDR1 label on the tape. This is the file-id you specify on the TLBL JCL statement. Range: 1 to 44 characters. **Note:** When the file-id contains imbedded spaces or commas, it should be enclosed in quotes. **Note:** IBM only supports a 17-character file-id in a tape header label. If you have a tape manager, 44-character tape file-ids may be supported. CA-XCOM does not validate your file-id, but takes whatever you put on the statement and passes it along to IBM's OPEN routine or to your tape manager as you have entered it.
T	Indicates that this is a TAPE file. **Note:** If you enter a transfer request from a platform that has not yet implemented the extended tape processing parameters or menu interface fields for controlling tape processing to an CA-XCOM/VSE server, you must use the T option. You are restricted to standard label tape processing.
unit	The physical device address as defined by the CUU parameter on the ASSGN JCL statement. If you are using TAPEM=YES|EPIC, CA-XCOM ignores any units coded and the tape manager does the tape AVR and assignment. If you are not using the tape manager, the primary assignment is made to the first unit CA-XCOM finds. Other units found are assigned as temporary alternates. This parameter can be omitted if you prefer to use the UNIT parameter to specify a unit or two units (primary and alternate). This parameter can be used in conjunction with the UNIT parameter to specify a primary unit and up to four alternate units which will be assigned by CA-XCOM prior to open. Units specified on the statement containing the file-id will be assigned before units specified on the UNIT parameter.The unit parameter is ignored because tape processing is only supported when you have a tape manager on your VSE system.

Part	Description
override	*Optional for output files.* Indicates whether this file should be processed as if the DFLTAB option for TAPEM were coded as indicated by the override parameter. The following are the available override parameters and their equivalent DFLTAB option: ■ TMYES to force TAPEM=YES for this file. ■ TMNO to force TAPEM=NO for this file. ■ TMEPIC to force TAPEM=EPIC for this file. **Note:** The override applies only to the processing for the file whose dataset name is on the statement that the override appears on. It is in effect for this transfer only.

VSAM Managed SAM Naming Conventions

Format for VSAM managed SAM filenames

Use the following format to name a VSAM managed SAM file:

```
file-id,M,prim#recs, sec#recs,catalog-id
```

The following table describes the parts of a VSAM managed SAM filename:

Part	Description
file-id	The name which identifies this dataset that will be implicitly defined to VSAM at open time. Range: 1 to 44 characters.
M	Indicates that this is a VSAM managed SAM file. **Note:** If you enter a transfer request from a platform that has not yet implemented the extended tape processing parameters or menu interface fields for controlling tape processing to a CA-XCOM/VSE server, you must use the T option. You are restricted to standard label tape processing.
prim#recs	Used for output files only. This indicates the number of blocks (of the size defined by the BLKSIZE parameter) for the primary dataset allocation
sec#recs	Used for output files only. This indicates the number of blocks for the secondary dataset allocation. If no secondary allocation is coded, VSAM defaults to 20% of the primary allocation. Zero may be specified if you do not want any secondary allocation.

Part	Description
catalog-id	*Optional for output files.* Defines the name of the user catalog that will own the dataset. You may leave this field blank if the master catalog owns the dataset. **Note:** The use of VSAM managed SAM files requires IBM's IDCAMS program to be dynamically loaded in the partition. This requires an additional 130K partition GETVIS storage.

DTF Information

VSE file characteristics must be predetermined when creating the files. If sending to or receiving from a VSE system you must specify the following:

- The record format (RECFM) which can be either fixed (F), fixed blocked (FB), variable (V) or variable blocked (VB).
- The logical record length (LRECL) indicates the number of characters in the longest record in the file.
- The block size (BLKSIZE) which can be either equal to the LRECL for fixed files, a multiple of the LRECL for fixed blocked files, the LRECL +4 for variable files or the BLKSIZE +4 for variable blocked files.

Types of Files Supported

IBM VSE supports VSAM (RRDS, KSDS, and ESDS) and SAM files.

Restrictions

The following restrictions apply to CA-XCOM for VSE:

- *No FILEOPT=ADD for receiving VSE* - CA-XCOM for VSE does not support FILEOPT=ADD if the VSE is receiving the file.
- *No Checkpoint/Restart for SAM* - CA-XCOM for VSE does not support checkpoint/restart for SAM jobs.

OpenVMS

File Support

The entire file specification can be a maximum of 255 characters. The file type can be a maximum of 39 characters. A complete OpenVMS Alpha file or an OpenVMS VAX file specification may be rendered as follows:

```
node::device:[directory]filename.type;version
```

Where	Indicates
Node	The VMS system where the file resides within a DECnet environment. This field is not required because the system name is identified through other fields in the CA-XCOM product.
Device	This is a disk drive name (up to 15 characters). If the device is not specified, then the system uses the default provided in the VMS SYSUAF (defined on the DEC system) for that user. The CA-XCOM remote USERID field determines the SYSUAF USERID. If a USERID is not provided, a CA-XCOM system-wide default may be used, which is usually "DECNET," but may be set by the system administrator that installed CA-XCOM on the VMS system.

Where	Indicates

Directory	Directory and subdirectory information should be placed here. If this information is not provided, then defaults will be selected as described under "device" above. Not all keyboards provide square brackets ([ ]). This is particularly true of older 3270 series terminals in the MVS and VM environments. To simplify usage for customers with such keyboards, CA-XCOM will accept angle brackets (< >) or braces ({ }) in VMS filenames which will be converted to square brackets on the VMS computer.
	
	For example:
	`PLAYERS1:<BRIDGE>CARD.DAT`
	
	or
	`PLAYERS1:{BRIDGE}CARD.DAT`
	
	would be treated as an equivalent to
	`PLAYERS1:[BRIDGE]CARD.DAT`

Filename and Type	Together, these identify the specific file within the directory. VMS "null" filenames will be used if these are not provided.
Version	The VMS operating system may keep multiple versions of a file each time that file is saved. It is normal to omit this number to indicate that you want the most recent version of a file, which is the highest version number.

For further information on VMS file specifications, refer to the *VMS Using DCL-DCL Concepts Manual.*

Restrictions

Non-queued Host Transfers

Due to restrictions in the DEC SNA software, the MVS TYPE=EXECUTE (non-queued) transfer feature will fail with an 8003 sense code. It is not supported by CA-XCOM to a VMS system.

Connectivity

The DEC VMS/SNA software is based on the Physical Unit 2.0 standard and not on the more flexible 2.1. This means that the VMS system must be connected to a VTAM (MVS or VM) system in an SNA network. CA-XCOM may still use the store-and-forward function (described previously as an additional MVS and VM feature) to transfer files with other CA-XCOM partners.

Multiple Session Configuration

VMS does not support parallel sessions with an MVS system, but if three file transfers are needed concurrently with a VMS system, it does allow you to define three APPC logical units. For this example, call the three logical units, LUD1, LUD2, and LUD3, and assign a group name of LAVMS. Code the GROUP and LU parameters for this #PSOTAB entry as follows:

```
GROUP=LAVMS, LU=(LUD1,LUD2,LUD3)
```

Type LAVMS as the Remote System Name to schedule transmissions to this VMS system through the Menu Interface. When using the Batch Interface, use the GROUP parameter instead of the LU parameter. Use the code:

```
GROUP = LAVMS
```

This can be used with all the CA-XCOM interfaces, including the Process SYSOUT Interface.

A group name can be 1-8 characters. The first character must be alphabetic, while the rest can be any combination of alphanumeric or national characters. Try to use mnemonic names. This feature is useful for assigning nicknames.

Initiating the Session Bind Request

Although separate VTAM LU names can be used for CA-XCOM sessions, you should not "LOGAPPL" these LUs to CA-XCOM when configuring on MVS or VM. This will fail with an 0801 or 8003 sense code, since the DEC software must initiate the session bind request.

IBM AS/400

Naming Conventions

Use the following guidelines to specify an AS/400 file:

```
libraryname/filename(membername)
```

Where	Indicates
Libraryname	The name of the library that holds the file.
Filename	The name of the file that you wish to access. Periods are allowed within the filename.
Membername	The name of the member in the file. If this component is omitted, it defaults to the filename.

Types of Files Supported

In addition to the standard file type discussed above, the Save File format is also supported. When you wish to send such a file to a System/38 or AS/400 from MVS, the file must exist on the target system prior to your transmission.

Additional Features

Xque

Xque is a feature of the System/38 and AS/400 implementations of CA-XCOM that allows the transfer of reports from output queues on these systems to other CA-XCOM nodes. The reports are transferred automatically, with **NO** user intervention or changes to the applications. Xque is capable of selecting specific classes of reports from output queues. The selection may be based on the user, job name, form, etc.

In addition to the selection capability, Xque allows user and/or workstation groups to be equated to printer destinations on remote CA-XCOM nodes. This may be used, for example, to get reports back to your host system that are generated on an AS/400 that you reach through IBM's HCF facility, or between multiple AS/400s connected within a pass-through environment.

Configuration Issues

If you are configuring the VTAM LU that represents the AS/400 on an MVS or VM system, you must ensure that the VTAM USS message 10 is not sent to that LU. IBM's APPC software cannot start a session when this message, commonly called the "welcome" message, is sent. To prevent this problem, the VTAM or NCP USSTAB definition must be set to a table that does not have a USSMSG10. The original table provided by IBM with VTAM is a good alternative, as message 10 is not included.

Case Sensitivity

Because the IBM AS/400 is case-sensitive, you must enter the user ID and password in uppercase.

PC-DOS

Naming Conventions

CA-XCOM for PC-DOS only supports the FAT file system, which has the following conventions:

```
d:[directory name]\..\filename.[ext]
```

Where	Indicates
d:	The drive letter specification (A...Z plus some special characters). The drive letter usually identifies a particular device. The C drive is the most common local hard drive, the A drive is the most common floppy, and the F drive is the most common network drive. PCs support a facility in which a section of memory (RAM) can also be used as a virtual disk drive. In high-speed link environments, the performance of CA-XCOM is directly related to the speed of the disk drive. In most environments, the fastest to the slowest devices are as follows: ■ RAM disks ■ Directly connected hard disks ■ Network disks ■ Floppy disks If you do not specify a drive, the default (current) drive will be used.
[directory name]	One or more optional directories which allow you to assign organization to the drive. Directory names are from 1 to 8 characters long with an optional extension (like a file). If you do not specify a directory, the default (current) directory will be used. If you specify a destination filename with a directory that does not exist, CA-XCOM for PC-DOS will create the directory for you. See the receiving PC's configuration file (XCOMCONF.DAT) to determine if this option (CreateDirectories) has been set.
filename	**Required**. The name of the data file. It can be from 1 to 8 characters (characters past position 8 will be ignored).

Where	Indicates
[ext]	The file extension. It is used to further identify the file. Executable programs must use the extension ".EXE" or ".COM." Executable batch files must use the extension ".BAT." If you do not specify an extension, then CA-XCOM will not supply a default.

Restrictions

Due to the vast number of vendor APPCs and link types supported by CA-XCOM, you should consult the APPC vendor's manual for restrictions on the services provided by that vendor. These restrictions may impact such features as MVS TYPE=EXECUTE transfers, environments that you can or cannot send to, etc.

CA-XCOM-PC for DOS Version 2 does not support library transfers to MVS or VM mainframes.

Configuration Issues

When communicating PC-DOS to PC-DOS using APPC, both systems must be capable of PU 2.1. Some of the APPCs only support PU 2.0, which can only communicate with a PU 4 or 5 (which is usually a MVS or VM mainframe). As of this writing, the APPCs which support PU 2.1 include the following:

- Network Software Associates Adapt (all link types except their gateway, async controllers, and coax connections)
- Novell (Token Ring only)
- IBM APPC/PC

You can communicate PC to PC, even on systems which only support PU 2.0, by using the indirect (store-and-forward) feature of CA-XCOM available when both PCs are attached to an MVS mainframe.

When communicating PC to PC using PU 2.1, you should set the following options (where available):

- Negotiated link stations
- Peer-to-peer connections

It is not necessary to set independent LUs (LU local address of 0), but it is acceptable, and it is necessary when you use an SNA backbone to connect PC to PC.

When using the Adapt product, PC to PC directly connected, in the Logical Unit menu, you will need to set the ACTION parameter of one of the PCs to ACCEPT and the other to INITIATE.

OS/2

Naming Conventions

OS/2 supports the High Performance Disk System (HPFS). This section will address that format. See PC-DOS, earlier in this chapter for information on the FAT file format naming conventions.

```
d:[directory name]\..\filename
```

Where	Indicates
d:	The drive letter specification (A...Z plus some special characters). The drive letter usually identifies a particular device. The C drive is the most common local hard drive, the A drive is the most common floppy, and the F drive is the most common network drive. PCs support a facility in which a section of memory (RAM) can also be used as a virtual disk drive. Note that in high-speed link environments, the performance of CA-XCOM is directly related to the speed of the disk drive. In most environments, the fastest to the slowest devices are as follows: ■ RAM disks ■ Directly connected hard disks ■ Network disks ■ Floppy disks (never support the HPFS system) If you do not specify a drive, the default (current) drive will be used.
[directory name]	One or more optional directories which allows you to assign organization to the drive. Directory names are from 1 to 254 characters long with an optional extension (like a file). If you do not specify a directory, the default (current) directory will be used. If you specify a destination filename in a directory that does not exist, CA-XCOM for OS/2 will create the directory for you. See the target system's configuration to determine if this option has been set.

Where	Indicates
filename	**Required**. The name of the data file. It can be from 1 to 254 characters. Usually, you separate components of the name with periods. Executable binary files end with a ".EXE" and executable batch files end with a ".CMD." HPFS also supports extended attributes. CA-XCOM does not transfer extended attributes. When using the FAT system in OS/2, there may be problems if you specify a file or path name which violates the OS/2 naming conventions.

Restrictions

The following restrictions apply to CA-XCOM for OS/2:

- *APPC limitations* - Due to the vast number of vendor APPCs and link types supported by CA-XCOM, consult the APPC vendor's manual for restrictions on the services provided by that vendor. These restrictions may impact such features as MVS TYPE=EXECUTE transfers, environments that you can or cannot send to, etc.
- *No library transfers* - CA-XCOM for OS/2 Version 2 does not support library transfers from MVS mainframes.
- *No extended attributes* - CA-XCOM for OS/2 does not support the transfer of extended attributes.
- *Packing options* - Versions of CA-XCOM for OS/2 prior to Version 3.0 do not support some of the various packing options available on other CA-XCOM systems. For example, they do not support the UNIX packing option carriage_flag=MPACK.

Novell NetWare

Naming Conventions

Use the following format to name a Netware file:

Note: CA-XCOM for LAN Workstation accesses files from any Novell file server in a NetWare network.

```
[server\]volume:directory\subdirectory\...\filename
```

Types of Files Supported

CA-XCOM for NetWare LAN supports standard NetWare file types.

Destination Printer Information

When sending a report to a NetWare system, specify the Destination parameter value or the Destination Printer field in the following form:

```
\\server name\printer queue name
```

CA-XCOM limits the length of this field as indicated below. The actual name on the destination system may be longer.

Type of transfer	Specify
Direct transfers using Version 2 protocols.	Up to 21 characters.
Indirect transfers or transfers using Version 1 protocols.	Up to 16 characters.

Restriction

CA-XCOM for NetWare LAN does not support library transfers to Novell NetWare systems.

Stratus/System 88

Naming Conventions

Use the following format to name Stratus files:

```
#top_directory>group_directory>home_directory>filename.suffix
```

All names must be unique to that level.

The following table describes the parts of a Stratus filename:

Part	Description
top_directory	The physical disk(s). Range: 1 to 32 characters.
group_directory	A group of user home directories. Range: 1 to 32 characters.
home_directory	The user's home directory. This directory resides in a group directory. Range: 1 to 32 characters.
filename	*Required.* The name of the Stratus file. Range: 1 to 32 characters.
suffix	A file classification. You can have multiple suffixes at the end of a filename. Each suffix starts with a period. The following table describes some common Stratus suffixes:

File type	Suffixes	Examples
Source	.pl1, .cobol, .c	payroll.c, application.cobol
Object	.obj	payroll.obj, application.obj
List	.list	payroll.list, application.list
Error	.error	payroll.error, application.error
program module	.pm	payroll.pm, application.pm
command macro	.cm	start_up.cm, compile_and_bind.cm
back up	.backup	payroll.c.backup

Types of Files Supported

Stratus supports the following filetypes for remotely initiated transfers:

- *Fixed* - This type of file contains records of the same size. Each record is stored in a disk or tape region holding a number of bytes that is the same for all the records in the file.
- *Sequential* - This type of file contains records of varying sizes in a disk or tape region holding approximately the same number of bytes as the record (for example, the record storage regions vary from record to record). Records can only be accessed on a record-by-record basis.

Additional Features

The following are additional features of CA-XCOM for Stratus of which you should be aware:

- *Security option* - CA-XCOM for Stratus can use its own account file to verify the user ID and password and to map the CA-XCOM user ID to a VOS user ID to check for file access. If this option is turned on and the remote user ID/password combination is invalid, CA-XCOM for Stratus rejects the request.
- *Restart/Recovery facility* - CA-XCOM for Stratus can attempt periodic data transmissions after the initial file transfer has failed. A certain number of retries can be specified through the xcom_ser.pm file.

Restrictions

The following restrictions apply to CA-XCOM for Stratus:

- *No checkpoint/restart* - CA-XCOM for Stratus Version 1 does not support checkpoint/restart.
- *No library transfers* - CA-XCOM for Stratus does not support the transfer of libraries from MVS.

Tandem

Naming Conventions

Use the following format to name a Tandem file:

```
\<system>.<volume>.<subvolume>.<filename>
```

All of these components are restricted to eight characters, except as indicated below.

The following table describes the parts of a Tandem filename:

Part	Description
system	The system name. Up to seven characters.
volume	The disk name
subvolume	Can be thought of as a directory name
filename	The name of your file

Example

The following example uses a volume of $CLX12, a subvolume of SCI, and a filename of FILE1:

```
$CLX12.SCI.FILE1
```

The Tandem file system is not a tree structure. Each volume.subvolume is independent, that is, it has no subvolumes above or below.

Types of Files Supported

CA-XCOM for Tandem supports the following file types through ENSCRIBE, Tandem's disk file architecture:

- Edit files
- Unstructured files
- Entry-sequenced files
- Relative files
- Key-sequenced files (for Replace only)

Unstructured files - Unstructured files are large-byte arrays. Data in these files is accessed by using the relative byte address and the READ-COUNT or WRITE-COUNT parameters in the system procedure calls. The application program determines the way in which they are used. An EDIT file is a type of unstructured file signified by the file code 101.

For more information on ENSCRIBE and unstructured files, refer to the *ENSCRIBE Programmer's Guide*.

Structured files - CA-XCOM supports entry-sequenced and relative structured files.

- *Entry-sequenced files* - Entry-sequenced files are sequential files. Records are stored in the order in which they are entered. These records are variable in length and cannot be added or deleted. They are accessed by their record address.
- *Relative files* - Relative files are ordered by relative record number. The space allocated for each record is specified when the file is created. Records in these files can be deleted and added again in place.
- *Key-sequenced files* - Key-sequenced files are supported only for the Replace operation. The file must already exist for CA-XCOM to perform an action on it.

File Type Specification

Locally Initiated Send Requests

When you send a file from the Tandem, the remote CA-XCOM determines the file type when it opens the file.

Receive Requests

For locally or remotely initiated receive requests, the file type must be specified by the GUARDIAN_FILE_TYPE parameter. Use one of the following values:

- EDIT
- UNSTRUCTURED
- ENTRYSEQ
- RELATIVE

Remotely-Initiated Send Requests

For remotely-initiated transfer requests (that is, send a file, job, or report), use the following:

Record Format	Guardian Filetype Created
F	Relative
FB	Entry Sequence
VB	Edit
U	Unstructured

Note: Key sequence files are supported only if the file exists. You can do a replace but not a create.

UNIX

Naming Conventions

Use the following format to name a UNIX file:

```
/directory/subdirectory/.../filename
```

Use up to 256 characters for the entire path of the file; there are no restrictions on size for the individual parts of the path.

The following table describes the parts of a UNIX path:

Part	Description
/ (slash)	The root directory when it is in the first position: otherwise, the slash separates directories and filenames in the path.
directory	The directory that contains the file. You can specify more than one directory in a path.
filename	The name of the UNIX file.

Types of Files Supported

CA-XCOM for UNIX supports standard UNIX file types.

Restriction

CA-XCOM does not support library transfers to UNIX systems.

Windows

Naming Conventions

CA-XCOM for Windows only supports the FAT file system. Use the following format to name Windows files:

```
d:\[directory name]\..\filename.[ext]
```

The following table describes the parts of a Windows filename:

Part	Description
d	A particular device. The C drive is the most common local hard drive, the A drive is the most common floppy, and the F drive is the most common network drive. PCs support a facility in which a section of memory (RAM) can also be used as a virtual disk drive. In high-speed link environments, the performance of CA-XCOM is directly related to the speed of the disk drive. In most environments, the fastest to the slowest devices are as follows: ■ RAM disks (D drive) ■ Directly connected hard disks (C drive) ■ Network disks (F drive) ■ Floppy disks (A or B drive) **Note:** If you do not specify a drive, the default (current) drive is used. This directory in Windows changes, depending on the last application accessed.
directory name	One or more optional directories which allow you to assign organization to the drive. Range: 1 to eight characters with an optional 3-character extension (like a file). If you specify a destination filename with a directory that does not exist, CA-XCOM for Windows creates the directory for you. **Note:** If you do not specify a directory, the default (current) directory is used.

Part	Description
filename	*Required.* The name of the data file. Range: 1 to 8 characters (characters past position eight generate an error).
ext	The file extension used to further identify the file. Executable programs must use the extension ".EXE" or ".COM." Range: 1 to 3 characters. **Note:** If you do not specify an extension, CA-XCOM does not supply a default.

Restriction

The following restriction applies to CA-XCOM for Windows:

- *APPC restrictions* - Due to the vast number of vendor APPCs and link types supported by CA-XCOM, consult the APPC vendor's manual for restrictions on the services provided by that vendor. These restrictions may impact such features as MVS TYPE=EXECUTE transfers, environments to which you can send, etc.

Windows NT

Naming Conventions

CA-XCOM for Windows NT supports the standard Windows NT file names and the Universal Naming Convention (UNC). The file naming conventions for Windows NT are similar to those for Windows, with some significant differences, some of which are outlined below.

Use the following format to name files when using standard Windows NT file names:

```
d:[\][directory name\..\]filename[.ext]
```

Use the following format to name files when using UNC file names:

```
\\server name\share name\directory\filename
```

The following table describes the parts of Windows NT filenames and UNC filenames:

Part	Description
d	*Required.* A particular device, indicated as a drive letter.
directory name	*Required.* One or more optional directories and subdirectories. Subdirectories can take the form of *name[.ext].* **Note:** The form of the directory name and filename depend on the operating system running on the server.
filename	*Required.* The name of the data file. For FAT file systems, *filename* is 1 to 8 characters. NTFS and HPFS file systems support long file names, up to 256 characters, including the extension. Names may or may not be case sensitive, depending on the file system on the server. For FAT, NTFS and HPFS, names are not case sensitive. You can use uppercase and lowercase when creating a name, and they will display as typed, but internally Windows NT makes no distinction for this. For example, Windows NT would consider MYFILE and MyFiLe as references to the same file. Windows NT also creates an MS-DOS-style name based on the long name for compatibility with environments where long file names are not always supported.
ext	The file extension used to further identify the file. For FAT file systems, the extension is up to 3 characters. For NTFS and HPFS, the extension is included in the long file name limit of 256 characters. **Note:** If you do not specify an extension, CA-XCOM does not supply a default.
server name	The name of the server.
share name	The share name is network provider dependent. For Microsoft Windows networks this is the name of the share. For NetWare networks this is the name of the volume.

Types of Files Supported

CA-XCOM supports standard Windows NT file types.

Additional Features

Additional features include the following:

File Systems

The standard Windows NT file systems are:

- File Allocation Table format (FAT)
- Windows NT File System format (NTFS)
- High-performance File System format (HPFS)

File Access

CA-XCOM accesses files locally or from any file server on the Microsoft Windows Network or the NetWare or Compatible Network, or any other network provider installed on the Windows NT system.

Security

User IDs and passwords are case sensitive.

Home Directory

A Windows NT user can have a default home directory assigned by the Windows NT administrator.

Destination Printer Information

When sending a report to a Windows NT system, specify the Destination parameter value or the Destination Printer field in the following form:

```
\\server name\printer queue name
```

CA-XCOM limits the length of this field as indicated below. The actual name on the destination system may be longer.

Type of transfer	Specify
Direct transfers using Version 2 protocols.	Up to 21 characters.
Indirect transfers or transfers using Version 1 protocols.	Up to 16 characters.

Restrictions

Access to directories and files on drives formatted for NTFS can be controlled with the security features of Windows NT.

Access to all files on a Windows NT system can be controlled by the permissions set on a directory or file. The access rights of the user ID on the remote system determine the actions permitted for the transfer. Users cannot use a directory or file unless they have been granted the appropriate permissions.

CA-XCOM for Windows NT does not support the transfer of files using wildcard characters.

Chapter

13 Messages

CA-XCOM includes a comprehensive message list to indicate which tasks can or cannot be performed because you ran into a problem when you initiated a transfer.

Log File

CA-XCOM messages are written to a log file, which can serve as an audit trail of CA-XCOM status and activity. Some messages are also displayed on the user's terminal, the VMS operator console, or sent to the session partner on the remote computer.

All locally initiated transfers are logged in the XCOM.LOG file.

Remotely initiated transfers are logged in the following file:

```
XCOM$IMAGE:XCOMACP_FOR_<access_name>_ON_<node>.log
```

<access_name> is the access name defined in the EXCOMACP.COM file, and <node> is the gateway node defined in the EXCOMACP.COM file.

CA-XCOM Messages

Most CA-XCOM messages have the following format:

```
%FACILITY-L-IDENT, TEXT
[-FACILITY-L-IDENT, TEXT]
```

Where	Indicates
(%)	The first message entered.
(-)	Each subsequent message.
FACILITY	A VMS facility or component name.
L	A severity level indicator with one of the following values: **S** = Success **I =** Information **W** = Warning **E** = Error **F** = Fatal or severe error
IDENT	An abbreviation of the message text.
TEXT	The explanation of the message.
[-FACILITY-L-IDENT,TEXT]	The next message.

An example of this type of message format is shown as follows where CA-XCOM is the facility name, I is the severity level, TIME is the IDENT, and XCOM time stamp at 14-MAY-2000 11:48:13.2 is the message text:

```
%XCOM-I-TIME, XCOM time stamp at 14-MAY-2000 11:48:13.2
```

SNA Messages

The majority of messages generated will be from CA-XCOM, DECnet/APPC LU 6.2, and/or DECnet/SNA or VMS/SNA.

CA-XCOM messages generally have the facility name XCOM. DECnet/APPC software messages generally have the facility code SNALU62. DECnet/SNA or VMS/SNA message have the facility code SNA.

Messages Without Idents

Some CA-XCOM messages in this version do not use the format described previously. These message types consist only of text, as shown below:

```
Failed SENDing 'TESTFILE.LIS' to 'BIGBLU" ROSE password"::TST.LIS'
```

Transmission Report

CA-XCOM automatically produces a log of all its processing activities called the Transmission Report. Each file transfer transaction and the messages generated during the conversation are time-stamped. This log can serve as an audit trail of all CA-XCOM status and activities. All messages will also appear on the user's terminal.

The message log is written by default to the file XCOM.LOG in the user's default directory. To suppress the report, specify XCOM/NOLOG. A sample Transmission Report is shown in Figure 13-1.

```
                        CA-XCOM VMS Rel. 3.0
                        TRANSMISSION REPORT


%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:06:51.92
SENT 'DKA200:[XCOMUSER]REC100.LEN;1' to 'USI226ME"xcomuser
password"::XCOMUSER.qa.aaopnpds(member2)'
Sent 10000 bytes, 101 records, in
-XCOM-E-LASTRCD_CNFMERR, Error confirming last data record #101.
XCOMM0269E MEMBER2  DUPLICATE MEMBER ON ADD FUNCTION    DSN=XCOMUSER.QA.AAOPNPDS

%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:07:15.38
SENT 'DKA200:[XCOMUSER]REC100.LEN;1' to 'USAUSU01"xcomuser
password"::/u/xcomuser/from2.vms'
Sent 10000 bytes, 101 records, in 2.47 secs, at 4049.6 bytes/sec

%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:07:31.24
RECEIVEd 'DKA200:[XCOMUSER]REC100.AUSTIN;3' from 'USAUSU01"xcomuser
password"::/u/xcomuser/rec100.len'
Received 10000 bytes, 101 records, in 2.44 secs, at 4182.1 bytes/sec

%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:10:04.94
RECEIVEd 'DKA200:[XCOMUSER]GETFROM.MVS;9' from 'USI226ME"xcomuser
password"::xcomuser.qa.aaopnpds(member2)'
Received 10100 bytes, 101 records, in 12.24 secs, at 834.6 bytes/sec

%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:23:39.04
SENT 'DKA200:[XCOMUSER]REC100.LEN;1' to 'USAUSU01"xcomuser
password"::/u/xcomuser/from2.vms'
Sent 10000 bytes, 101 records, in 3.48 secs, at 2874.6 bytes/sec

%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:25:28.34
SENT 'DKA200:[XCOMUSER]REC100.LEN;1' to 'USI226ME"xcomuser
password"::xcomuser.qa.aaopnpds(member1)'
Sent 10000 bytes, 101 records, in 3.49 secs, at 2866.3 bytes/sec

%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:26:36.06
SUBMITed 'DKA200:[XCOMUSER]AUSTIN.JOB' to 'USAUSU01"xcomuser password"::'
Sent 15585 bytes, 300 records, in 6.3 secs, at 2684.9 bytes/sec

%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:26:54.81
SUBMITed 'DKA200:[XCOMUSER]MVSTCP.JOB' to '141.202.201.26"xcomuser password"::'
Sent 1169 bytes, 48 records, in 6.13 secs, at 204.6 bytes/sec

%XCOM-I-TIMESTAMP, XCOM time stamp at 20-MAR-2000 15:27:19.24
PRINTed 'DKA200:[XCOMUSER]REC100.LEN;1' on '141.202.201.26"xcomuser password"::'
Sent 10000 bytes, 101 records, in 14.45 secs, at 706.9 bytes/sec
```

Figure 13-1: Transmission Report

XCOMACP Transmission Report

A sample ACP Transmission Report is shown below.

Remotely initiated transfers are logged in

```
XCOM$IMAGE:XCOMACP_FOR_<access_name>_ON_<node> .log
```

<access_name> is the access name defined in the EXCOMACP.COM file.
<node> is the gateway node defined in the EXCOMACP.COM file.

```
                          CA-XCOM VMS Rel. 3.0
                        XCOM ACP TRANSMISSION REPORT

%XCOM-I-TIMESTAMP, XCOM time stamp at 21-MAR-2000 09:11:20.54
-XCOM-I-ACPSTART, XCOM ACP Started!

%XCOM-I-TIMESTAMP, XCOM time stamp at 21-MAR-2000 09:11:31.02
-XCOM-I-SESSIONATMPT, Attempting to establish SNA session.

%XCOM-I-TIMESTAMP, XCOM time stamp at 21-MAR-2000 09:11:31.67
-XCOM-I-SESSIONUP, SNA session established.

%XCOM-I-TIMESTAMP, XCOM time stamp at 21-MAR-2000 09:12:25.28
RECEIVEd file 'DKA200:[XCOMUSER]TEST.TXT;2' for user '"XCOMUSER password"'
Received 33264 bytes, 216 records, in 10.15 secs, at 3278.2 bytes/sec
File was compressed by 55.28 percent
```

Figure 13-2: ACP Transmission Report

Message Formats Received From Remote CA-XCOM Nodes

A CA-XCOM message sent from a remote computer to the VMS computer which initiated the procedure will be recorded in the "local" computer's message log file. These messages are indented.

Standard CA-XCOM messages follow this format:

```
Msg #XCOMcnnnns - The first line of text.
```

Any additional text.

Where	Indicates
c	The CA-XCOM component that was the source of this message. For example: **M** MVS **C** PC DOS and OS/2 **S** AS/400 and System/38 **D** VMS (DEC) **V** VM **U** UNIX System **8** Stratus and System/88 **E** VSE **N** Windows/NT **T** Tandem **R** Netware
nnnn	The unique message number identifier.
S	The type of message. It can be: **I =** Informational message **E =**Error message

The following is an example of an informational message issued by CA-XCOM for PC DOS:

```
XCOMC0000I DATA TRANSFER SUCCESSFUL
```

Messages From Failed Transfers to Remote Systems

If a remote system sends a transfer to the VMS and the transfer does not complete, the VMS sends one of the following messages to the remote system:

XCOMD302E1E - Unable to open local file.

XCOMD404E1E - Confirm of transmit header failed.

XCOMD702E1E - VMS detected fatal error.

XCOMD405E1E - Receive of max record length failed.

In addition to the error code and header listed above, the message indicates if this is a VMS or CA-XCOM error and gives a more specific explanation about why the error occurred.

For more information about VMS and DEC/SNA errors, refer to the user manuals for these systems. For more information about the CA-XCOM messages, refer to the CA-XCOM error message listing that begins in the next section.

List of Messages

This section lists the CA-XCOM messages.

Note: The CA-XCOM messages below display message text only. There are no error numbers associated with these messages.

ABMISMATCH, Restart failed - Beta mismatch.

Reason: In a restart, or a resume of a checkpointed transfer, the received Alpha and Beta did not match those recorded in our checkpoint file. The transfer will be restarted from the beginning of the file.

Action: None.

ACCESS, Error with ACCESS access name value.

Reason: The value specified for the ACCESS command qualifier is not acceptable. "ACCESS" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

ACPFAIL, ACP failure, explanation follows.

Reason: The CA-XCOM component responsible for handling remotely initiated requests via SNA has failed for some reason. There should be additional error messages which describe the exact cause of failure.

Action: Evaluate the additional error messages. Make any necessary changes, and retry the remotely initiated transfer operation.

ACPSTART, XCOM ACP Started!.

Reason: Each time this message is generated, it indicates that the CA-XCOM remote SNA request handler (also known as XCOMACP) has started.

Action: None.

ALLOCATE_FAIL, "ALLOCATE" verb failed. Reason follows.

Reason: An attempt to initiate a conversation between the local CA-XCOM software and a remote IBM host CA-XCOM software failed. A conversation requires a SNA session to support it. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

BADHEADER, Header received in illegal format.

Reason: The CA-XCOM component responsible for handling remotely initiated requests (also known as XCOMACP) has received a transmit header from which it cannot determine the type of transfer (e.g., send-file, receive-report, etc.) desired by the remote user.

This problem can occur when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Request, if necessary, that both the XCOMACP and the remote CA-XCOM software be stopped and restarted. Then, retry the transfer.

If the problem persists, contact CA-XCOM Technical Support. You may be required to supply a SNA session level trace.

BATCHQ, Illegal batch queue name.

Reason: The value specified for the BATCHQ command qualifier is not acceptable. "BATCHQ" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

BOFRESTART, File transfer being done from beginning of file.

Reason: During a restart of a transfer either the checkpoint file was not accessible or the Beta start point values recorded in the checkpoint file did not match the values received from the remote node.

Action: None. This is an informational message to notify the user that a resumed transfer had to restart from the beginning of the transfer file. There should be additional messages describing why this was necessary.

CHKP_BFRLENERR, CHECKPOINT item code buffer length error.

Reason: The CHECKPOINT item code buffer length value supplied when a CA-XCOM API request was made is wrong. The value is larger than the maximum delta-time string size specification allowed, which is sixteen (16).

Action: Verify that the delta-time string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

CHKPBADFILE, Bad checkpoint file, read context error. Deleting.

Reason: An error was returned by VMS RMS when reading the checkpointed CA-XCOM transfer context from the checkpoint file. There should be a second message which describes the specific RMS error returned. The current checkpoint file is deleted. The problem may have been due to a write operation from a previously bad checkpoint record.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated) .

Action: Verify that the target disk is online and the directory is readable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPCONFIRM_ERR, Error receiving checkpoint confirm message.

Reason: At each checkpoint of a restartable CA-XCOM transfer, a SNA LU 6.2 confirm handshake is performed in order to force a synchronization point. During such a procedure an error was returned by the protocol interface. There should be a second message from the protocol interface which describes the specific error encountered.

Action: Evaluate the error returned by the protocol interface. Make any necessary changes, and retry the operation. If the problem persists try the operation without requesting that it be checkpointed.

If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support. You might be required to supply an SNA session level trace.

CHKPCTXWRTERR, Unable to write checkpoint file (context).

Reason: An error was returned by VMS RMS when writing the current CA-XCOM transfer context to the checkpoint file. There should be a second message which describes the specific RMS error returned.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated).

Action: Verify that the target disk and the directory are online, and writable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation. If the problem persists, try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPDATERR, Unable to read checkpoint date.

Reason: An error was returned by VMS RMS when reading the CA-XCOM transfer file's revision date and time (RDT) from the checkpoint file. There should be a second message which describes the specific RMS error returned. The current checkpoint file is deleted. The problem could have been due to write operation from a previously bad checkpoint record.

A checkpoint file is created when a user requests that a CA-XCOM transfer operation be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated).

Action: Verify that the target disk is online and the directory is readable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPDATEWRTER, Unable to write checkpoint file (date).

Reason: An error was returned by VMS RMS when writing the current CA-XCOM transfer file's revision date and time (RDT) field to the checkpoint file. There should be a second message which describes the specific RMS error returned.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated).

Action: Verify that the target disk is online and the directory is writable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPFILECHGD, Cannot resume. File was modified.

Reason: On a resume of a previously checkpointed transfer, it was discovered that the original VMS file involved in the transfer has changed. The checkpoint file is deleted.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated).

Action: Retry the transfer from the beginning.

CHKPINCMPLTE, Incomplete checkpoint information. Aborting.

Reason: An error was returned by VMS RMS when reading the checkpointed CA-XCOM Record File Address (RFA) from the checkpoint file. There should be a second message which describes the specific RMS error returned. The current checkpoint file is deleted. The problem could have been due to a write operation from a previously bad checkpoint record.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated) .

Action: Verify that the target disk is online and the directory is readable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPLASTRCD_ERR, Error confirming last data record #"integer" at a chkpnt.

Reason: At each checkpoint of a restartable CA-XCOM transfer, a SNA LU 6.2 confirm handshake is performed in order to force a synchronization point. During such a procedure an error was returned by the protocol interface. There should be a second message from the protocol interface which describes the specific error encountered. The "integer" value is the last record successfully transferred to/from the remote node.

Action: Evaluate the error returned by the protocol interface. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support. Note that you might be required to supply an SNA session level trace.

CHKPMODIFYERR, Unable to modify checkpoint file.

Reason: An error was returned by VMS RMS when updating the checkpointed CA-XCOM transfer context in the checkpoint file. There should be a second message which describes the specific RMS error returned. The current checkpoint file is deleted.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated).

Action: Verify that the target disk is online and the directory is writable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPNTAKE_ERR, Error taking checkpoint on record "rcd- number."

Reason: An error was returned by VMS RMS when writing a checkpoint record to the transfers checkpoint file. The "rcd- number" is the number of the last record successfully transferred to/from the remote node. There should be a second message which describes the specific RMS error returned.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated) .

Action: Verify that the target disk is online and the directory is writable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPOPENERR, Unable to open checkpoint file.

Reason: An error was encountered while performing a VMS RMS create, open, or connect operation to the checkpoint file. There should be a second message which describes the specific RMS error encountered. The error could be due to an invalid user default disk device name and/or directory.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated .

Action: Verify the disk and directory specification on the VMS system of the target file to be transferred; also make sure the disk is online. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPQJOBSTS, "text."

Reason: This message is given when a checkpointed transfer has failed and the command to retry the transfer at a later time has been queued to the CA-XCOM checkpoint recovery queue. "text" is the message text returned by the VMS queue routine.

Action: Typically none, but if the text of the message indicates that a problem occurred, then make any required changes, and retry the operation. In this case the required changes may mean that you have to use VMS DCL commands to delete the queue entry, and then to retry the transfer operation, perhaps without requesting that it be checkpointed.

CHKPQUEUE_ERR, Unable to queue checkpoint to XCOM$RECOVER.

Reason: Upon an attempt to queue a failed, checkpointed or restartable transfer for a later retry, an error was returned by the VMS system service SYS$SNDJBCW. There should be a second message which describes the specific reason why the queue submission was rejected.

Action: Evaluate the error returned by the SYS$SNDJBCW system service. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPRFAWRTERR, Unable to write checkpoint file (Record File Address).

Reason: An error was returned by VMS RMS when writing the current CA-XCOM transfer file's Record File Address (RFA) to the checkpoint file. There should be a second message which describes the specific RMS error returned.

A checkpoint file is created when a user requests a CA-XCOM transfer operation to be restartable. It is opened, and records within it used and then updated when a previously checkpointed transfer is resumed. The checkpoint file type is ".ckp," with the disk, directory, and filename being the same as that of the VMS target file to be transferred. Note that the target file's version number is also made a part of the filename (concatenated) .

Action: Verify that the target disk is online and the directory is writable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists try the operation without requesting that it be checkpointed. If the operation must be checkpointed and the problem persists, contact CA-XCOM Technical Support.

CHKPWHATRCV_ERR, What Rcv ("hex-value") error when expecting a chkpnt CONFIRM msg.

Reason: At each checkpoint of a restartable CA-XCOM transfer, a SNA LU 6.2 confirm handshake is performed in order to force a synchronization point. When such a point was reached the CA-XCOM software did not receive a value from the protocol interface that indicates that the remote host transaction program has issued a verb to force a synchronization point. The "hex-value" is the unexpected value received instead.

This problem typically occurs when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

CLASS_BFRLENERR, CLASS item code buffer length error.

Reason: The CLASS item code buffer length value supplied when a CA-XCOM API request was made is wrong. The value must be one (1).

Action: Verify that the CLASS string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

COPIES_BFRSZERR, COPIES item code buffer length error.

Reason: The COPIES item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 3 inclusive.

Action: Verify that the COPIES string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

COPIES_VALUERR, COPIES item code value error.

Reason: The integer number of copies requested when a CA-XCOM API print request was made is wrong. The integer range is between 1 and 999.

Action: Verify that the COPIES integer value supplied when the CA-XCOM API request was made is within the integer size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

CPUNSID_GETERR, Error getting CPU type and CPU SID value.

Reason: An attempt to get the VMS systems' CPU ID and SID resulted in an error return from the SYS$GETSYI system service. There should be an additional error message which describes the error returned by this VMS system service.

Action: Evaluate the additional error returned by the VMS system service SYS$GETSYI. Make any necessary changes and retry the operation.

DATAOPT_APNDERR, DATAOPT_CREATE and/or DATAOPT_REPLACE item codes specified when only XCOM$_DATAOPT_APPEND was expected.

Reason: Only one of the following item codes can be specified in a CA-XCOM API SENDFILE function request; more than one of these item codes was specified concurrently.

```
DATAOPT_APNDERR
DATAOPT_CREATE
DATAOPT_REPLACE
```

Action: Examine the item list supplied when the CA-XCOM API request was made. Make sure that only XCOM$_DATAOPT_APPEND of the above item codes is supplied. Make any necessary changes to the user program, recompile, relink, and retry the operation.

DATAOPT_CRTEERR, DATAOPT_REPLACE and/or DATAOPT_APPEND item codes specified when only XCOM$_DATAOPT_CREATE was expected.

Reason: Only one of the following item codes can be specified in a CA-XCOM API SENDFILE function request; more than one of these item codes was specified concurrently.

```
DATAOPT_APNDERR
DATAOPT_CREATE
DATAOPT_REPLACE
```

Action: Examine the item list supplied when the CA-XCOM API request was made. Make sure that only XCOM$_DATAOPT_CREATE of the above item codes is supplied. Make any necessary changes to the user program, recompile, relink, and retry the operation.

DATAOPT_RPLCERR, DATAOPT_CREATE and/or DATAOPT_APPEND item codes specified when only XCOM$_DATAOPT_REPLACE was expected.

Reason: Only one of the following item codes can be specified in a CA-XCOM API SENDFILE function request; more than one of these item codes was specified concurrently.

```
DATAOPT_APNDERR
DATAOPT_CREATE
DATAOPT_REPLACE
```

Action: Examine the item list supplied when the CA-XCOM API request was made. Make sure that only XCOM$_DATAOPT_REPLACE of the above item codes is supplied. Make any necessary changes to the user program, recompile, relink, and retry the operation.

DCMPERR, Error decompressing data record.

Reason: An error was encountered while decompressing a received data record. It maybe that the received data record was mangled in transit.

Action: This error should not occur. Retry the operation. If the problem persists, contact CA-XCOM Technical Support. You may be required to supply an SNA session level trace.

DEFACCNT, Illegal default account qualifier value.

Reason: The value specified for the DEFACCNT command qualifier is not acceptable. "DEFACCNT" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

DEFINERMT_FAIL, "DEFINE_REMOTE" verb failed. Reason follows.

Reason: An attempt to initialize local SNA LU 6.2 LU parameters which control the operation of the local LU in conjunction with the remote LU failed. There should be subsequent error messages which describe in more detail the LU 6.2 protocol interface errors returned.

This message may be indicative of a problem with the underlying SNA LU 6.2 software utilized by the CA-XCOM software. It may be that no SNA links or circuits have been activated between the VMS and the remote host.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

DEFPSWRD, Illegal default password qualifier value.

Reason: The value specified for the DEFPSWRD command qualifier is not acceptable. "DEFPSWRD" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

DEST_BFRLEN_ERR, DESTINATION item code buffer length error.

Reason: The DESTINATION item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 21 inclusive.

Action: Verify that the DESTINATION string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

FCB_BFRLEN_ERR, FCB item code buffer length error.

Reason: The FCB item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 4 inclusive.

Action: Verify that the FCB string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

FCB_FOR_MVSONLY, FCB ONLY used when printing on a mainframe, e.g. MVS system.

Reason: An FCB value was supplied when requesting a file transfer to a remote system which is not an IBM mainframe. An FCB can be specified only when communicating with an IBM mainframe system.

This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe system then remove FCB value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

FILEDESC_RCVERR, Error Receiving file descriptor record.

Reason: An attempt to receive a file descriptor record, prior to a data file transfer, resulted in an error from the protocol interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

FRMTYP_BFRSZERR, FORMTYPE item code buffer length error.

Reason: The FORMTYPE item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 10 inclusive.

Action: Verify that the FORMTYPE string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

FUNC_ITMLSTCDE, Function item code when expecting qualifier item code.

Reason: While parsing the qualifier item codes for a CA-XCOM Application Programming Interface (API) function, a unexpected function item code was encountered.

Action: Examine the user program containing the item list of item codes and remove the offending function item code from the list. Then recompile, link, and retry the operation.

GETFAIL, Failed GETting file from remote node.

Reason: An attempt to retrieve a file from a remote host node failed. There should be subsequent error messages which detail why the GET operation failed.

Action: Examine the subsequent error messages. Make any necessary operations, and retry the operation.

ILLITMCDEM1_ERR, Illegal item code(s) (Mask1 = 0x"hex- number") specified for a CA-XCOM function.

Reason: In a CA-XCOM API request made from a user program, a function qualifier item code was supplied which is invalid for the requested CA-XCOM function.

Action: See the chapter "The Application Programming Interface (API)" for the API function requested. Verify that each qualifier item code that you supplied is acceptable until you discover the one which is not allowed. Make any necessary changes to the user program that made the CA-XCOM API request, recompile, relink, and retry the operation. If all the qualifier item codes supplied are legal, then call the CA-XCOM Technical Support team and supply the mask1 value, and the "hex-number," displayed with the error message.

ILLITMCDEM2_ERR, Illegal item code(s) (Mask2 = 0x"hex- number") specified for a CA-XCOM function.

Reason: In a CA-XCOM API request made from a user program, a function qualifier item code was supplied which is invalid for the requested CA-XCOM function.

Action: See the chapter "The Application Programming Interface" for the API function requested. Verify that each qualifier item code that you supplied is acceptable until you discover the one which is not allowed. Make any necessary changes to the user program that made the CA-XCOM API request, recompile, relink, and retry the operation. If all the qualifier item codes supplied are legal, then call the CA-XCOM support team and supply the mask2 value, and the "hex-number," displayed with the error message.

INCMPLT_FMHDATA, Unexpected incomplete FMH data received.

Reason: An incomplete Function Management Header (FMH) record was received when expecting a (file) data record. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

This problem can occur when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

INCMPLTDATA, Unexpected incomplete record.

Reason: Less than a complete logical data record was received when expecting a full logical data record. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

INDHDR_SNDERR, Error sending indirect header.

Reason: An attempt to send an indirect header for an indirect CA-XCOM transfer resulted in an error from the SNA LU 6.2 protocol interface. There should be subsequent error messages which describe in more detail the LU 6.2 protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

INVCHKP_RTRYTME, Incorrect CHECKPOINTed period specified.

Reason: The checkpoint retry delta time value supplied when a CA-XCOM API request was made is wrong. More than likely the delta-time format used is incorrect. The value was rejected by the VMS system service SYS$BINTIM. There should be a second message which describes the error returned by the SYS$BINTIM service. The SYS$BINTIM system service is described in the VMS *System Services Reference Manual*.

Action: Evaluate the error returned by the SYS$BINTIM system service. Make any necessary changes to the user program that made the CA-XCOM API request, recompile, relink, and retry the operation.

INVFILEDSC_RCVD, Invalid file descriptor record received.

Reason: The contents of a received file descriptor record is wrong or incorrect. Specifically, the maximum record length field is incorrect.

This problem typically occurs when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

INVITEMCODE, Invalid API Item Code specified.

Reason: An unknown CA-XCOM Application Programming Interface (API) function qualifier item code value was supplied as a parameter to the API interface when a user program made an API request.

Action: Examine the API function qualifier code value supplied by the user program. Compare it to the CA-XCOM API documentation to see if the correct function qualifier name was specified, and to program include files (e.g., C ".h" files) which assign integer values to the function qualifier names.

INVLD_RCDCNTRCV, Invalid record count received.

Reason: During a comparison of the actual number of (file) data records received with the record count, for a "GETFILE" transfer operation, the remote partner indicates that it does not match.

This problem can occur when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

INVWAITTIME, Incorrect WAIT period specified. Use DELTA time format.

Reason: The wait delta-time value supplied when a CA-XCOM API request was made is wrong. More than likely, the delta-time format used is incorrect.

The value was rejected by the VMS system service SYS$BINTIM. There should be a second message which describes the error returned by the SYS$BINTIM service. The SYS$BINTIM system service is described in the *VMS System Services Reference Manual*.

Action: Evaluate the error returned by the SYS$BINTIM system service. Make any necessary changes to the user program that made the CA-XCOM API request, recompile, relink, and retry the operation.

IPFAIL, IP failure, explanation follows.

Reason: The CA-XCOM component responsible for handling remotely initiated requests via TCP/IP has failed for some reason. There should be additional error messages which describe the exact cause of failure.

Action: Evaluate the additional error messages. Make any necessary changes, and retry the remotely initiated transfer.

IPSTART, XCOM IP Started!

Reason: This message is issued each time that XCOMIP.EXE is started. XCOMIP.EXE is the CA-XCOM component responsible for handling remotely initiated requests via TCP/IP. Each transfer remotely initiated via TCP/IP causes XCOMIP.EXE to be started. It processes one transfer and then ends.

Action: None.

LASTRCD_CNFMERR, Error confirming last data record #"rcd-number."

Reason: An error was returned by the protocol interface when a "CONFIRM" verb was issued to verify the transfer of the last data record. "rcd-number" is the record number of the last record transferred. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

LINETURN, Error turning line around - No Turn.

Reason: In the course of a CA-XCOM transfer operation, an error was returned from the protocol interface when an attempt was made to switch the line state from transmitting to receiving, or vice-versa. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

LNOTIFY_BFRSZER, LNOTIFY item code buffer length error.

Reason: The LNOTIFY item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 12 inclusive.

Action: Verify that the LNOTIFY string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

LNOTIFY_NAMEERR, Error in local notify username.

Reason: An authorization check of the local notify username string supplied in a CA-XCOM API request returned an error, possibly a "nosuchuser" error. There should be an additional error message detailing why the username validation failed.

Action: Examine the additional error message to determine why the username was rejected by the API. Make any necessary changes to the user program, recompile, relink, and retry the operation.

LOCFILE, Illegal local file name.

Reason: For a remotely initiated (by a remote host), CA-XCOM request the *VMS* file specification was found to be unacceptable. There should be additional error messages which describes exactly what was wrong with the supplied file specification.

Action: Evaluate the additional error messages. Make any necessary changes, and retry the remotely initiated transfer operation.

LOG_BFRLEN_ERR, LOG item code buffer length error.

Reason: The LOG item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 64 inclusive.

Action: Verify that the LOG string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

LOGFLE_ACCESERR, Error accessing CA-XCOMlog/message file "filename."

Reason: An error was returned by the VMS RMS file system when an attempt was made to access the log file supplied to the CA-XCOM software. "filename" is the file name specification of the log file used. There should be a second message which describes the specific RMS error returned.

Action: Verify that the target disk is online and the directory is writable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If it is imperative that the transfer be performed then try the operation with the "/NOLOG" command qualifier.

If the problem persists, contact CA-XCOM Technical Support.

MISSING_RMTSYS, Rmt sys name not supplied explicitly or as part of remote filename.

Reason: The remote system name was not supplied when a CA-XCOM transfer operation was requested.

Action: Supply the missing remote system name and retry the operation.

MVSBLKL_BFRSZER, MVSBLOCKL item code buffer length error.

Reason: The MVSBLOCKL item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 5 inclusive.

Action: Verify that the MVSBLOCKL string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

MVSBLKL_MVSONLY, MVSBLOCKL ONLY used when creating file on a mainframe, e.g. MVS system.

Reason: An MVSBLOCKL value was supplied when requesting a file transfer to a remote system which is not an IBM mainframe. An MVSBLOCKL can be specified only when communicating with an IBM mainframe.

This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator, verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe, then remove the MVSBLOCKL value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

MVSF_BLKLERR, MVSBLOCKL must be a multiple of MVSRECL.

Reason: For a CA-XCOM transfer which creates a format fixed file on an IBM mainframe, the MVSBLOCKL value supplied must be a multiple of the MVSRECL value supplied. This error is generated when this is not true.

Action: Make the necessary changes to the CA-XCOM transfer request command and retry the operation.

MVSF_BLKRCDERR, mainframe, e.g. MVS block len of "length" invalid with MVSRECL of "size."

Reason: The supplied value of an IBM mainframe, equivalent to "length," is incompatible with a supplied IBM mainframe record length value equivalent to "size." There should be an additional message describing the exact problem with this Fixed format transfer.

Action: Evaluate the additional error messages generated. Make the necessary changes, and retry the operation.

MVSF_INPVALINV, Invalid values specified for a mainframe, e.g. MVS FORMAT FIXED file create.

Reason: The values specified when a Fixed format file was to be created upon transfer of a file from the VMS to an IBM host is wrong. There should be additional error messages which describe this error in more detail.

Action: Evaluate the additional error messages generated. Make the necessary changes, and retry the operation.

MVSF_VAXRCDERR, Max rcdlen is "length." MVSRECL must be GEQ (max rcdlen).

Reason: For a format fixed IBM mainframe file create request, the MVSRECL value specified when a CA-XCOM transfer was requested is invalid. It must be greater than or equivalent to the maximum VMS file's record size which is equivalent to "length."

Action: Adjust the MVSRECL value specified so that it is equivalent to the maximum VMS file's record size displayed, and retry the operation.

MVSFB_BLKLERR, MVSBLOCKL must be a multiple of MVSRECL.

Reason: For a CA-XCOM transfer which creates a fixed blocked file on an IBM mainframe, the MVSBLOCKL value supplied must be a multiple of the MVSRECL value supplied. This error is generated when this is not true.

Action: Make the necessary changes to the CA-XCOM transfer request command and retry the operation.

MVSFB_BLKRCDERR, mainframe, e.g. MVS block len of "length" invalid with MVSRECL of "size."

Reason: The supplied value of an IBM mainframe block, equivalent to "length," is incompatible with a supplied IBM mainframe record length value, equivalent to "size." There should be an additional message detailing exactly what is wrong with this Fixed Block transfer.

Action: Evaluate the additional error messages generated. Make the necessary changes, and retry the operation.

MVSFB_INPVALINV, Invalid values specified for a mainframe, e.g. MVS FIXED BLOCKED file create.

Reason: The values specified when a Fixed Blocked file was to be created upon transfer of a file from the VMS to an IBM host is wrong. There should be additional error messages which describe this error in more detail.

Action: Evaluate the additional error messages generated. Make the necessary changes, and retry the operation.

MVSFB_VAXRCDERR, Max rcdlen is "length." MVSRECL must be GEQ (max rcdlen).

Reason: For a fixed blocked IBM mainframe file create request, the MVSRECL value specified when a CA-XCOM transfer was requested is invalid. It must be greater than or equivalent to the maximum VMS file's record size which is equivalent to "length."

Action: Adjust the MVSRECL value specified so that it is equivalent to the maximum VMS file's record size displayed, and retry the operation.

MVSFMF_MVSONLY, MVSFORMAT_F ONLY used when creating file on a mainframe, e.g. MVS system.

Reason: An MVSFORMAT_F value was supplied when requesting a file transfer to a remote system that is not an IBM mainframe. An MVSFORMAT_F can be specified only when communicating with an IBM mainframe.

This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator, verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe, then remove the MVSFORMAT_F value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

MVSFMFB_MVSONLY , MVSFORMAT_FB ONLY used when creating file on a mainframe, e.g. MVS system.

Reason: An MVSFORMAT_FB value was supplied when requesting a file transfer to a remote system that is not an IBM mainframe. An MVSFORMAT_FB can be specified only when communicating with an IBM mainframe.

This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator, verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe, then remove the MVSFORMAT_FB value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

MVSFMU_MVSONLY, MVSFORMAT_U ONLY used when creating file on a mainframe, e.g. MVS system.

Reason: An MVSFORMAT_U value was supplied when requesting a file transfer to a remote system that is not an IBM mainframe. An MVSFORMAT_U can be specified only when communicating with an IBM mainframe.

This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator, verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe, then remove the MVSFORMAT_U value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

MVSFMVB_MVSONLY, MVSFORMAT_VB ONLY used when creating file on a mainframe, e.g. MVS system.

Reason: An MVSFORMAT_VB value was supplied when requesting a file transfer to a remote system that is not an IBM mainframe. An MVSFORMAT_VB can be specified only when communicating with an IBM mainframe.

This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator, verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe, then remove the MVSFORMAT_VB value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

MVSRECL_BFRSZER, MVSRECL item code buffer length error.

Reason: The MVSRECL item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 5 inclusive.

Action: Verify that the MVSRECL string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

MVSRECL_MVSONLY, MVSRECL ONLY used when creating file on a mainframe, e.g. MVS system.

Reason: An MVSRECL value was supplied when requesting a file transfer to a remote system that is not an IBM mainframe. An MVSRECL can be specified only when communicating with a mainframe.

This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator, verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe, then remove the MVSRECL value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

MVSU_BLKLERR, MVSBLOCKL must be GEQ (max rcdlen).

Reason: For a CA-XCOM transfer which creates an undefined format file on an IBM mainframe, the MVSBLOCKL value supplied must be greater than or equivalent to the maximum VMS file's record size.

Action: Make the necessary changes to the CA-XCOM transfer request command and retry the operation.

MVSU_BLKRCDERR, mainframe, e.g. MVS block len of "length" invalid with max rcdlen of "size."

Reason: The supplied value of an IBM mainframe, equivalent to "length," is incompatible with a supplied IBM mainframe record length value equivalent to "size." There should be an additional message detailing exactly what is wrong with this Undefined format transfer.

Action: Evaluate the additional error messages generated. Make the necessary changes, and retry the operation.

MVSU_INPVALINV, Invalid values specified for a mainframe, e.g. MVS UNDEFINED format file create.

Reason: The values specified when an Undefined format file was to be created upon transfer of a file from the VMS to an IBM host is wrong. There should be additional error messages which describe this error in more detail.

Action: Evaluate the additional error messages generated. Make the necessary changes, and retry the operation.

MVSVB_BLKLERR, MVSBLOCKL must be 4 larger than MVSRECL.

Reason: For a CA-XCOM transfer which creates a variable blocked file on an IBM mainframe, the MVSBLOCKL value supplied must be at least 4 bytes larger than the MVSRECL value supplied. This error is generated when this is not true.

Action: Make the necessary changes to the CA-XCOM transfer request command and retry the operation.

MVSVB_BLKRCDERR, mainframe, e.g. MVS block len of "length" invalid with MVSRECL of "size."

Reason: The supplied value of an IBM mainframe equivalent to "length," is incompatible with a supplied IBM mainframe record length value equivalent to "size." There should be an additional message detailing exactly what is wrong with this Variable Block transfer.

Action: Evaluate the additional error messages generated. Make the necessary changes, and retry the operation.

MVSVB_INPVALINV, Invalid values specified for a mainframe, e.g. MVS VARIABLE BLOCKED file create.

Reason: The values specified when a Variable Blocked file was to be created upon transfer of a file from the VMS to an IBM host is wrong. There should be additional error messages which describe this error in more detail.

Action: Evaluate the additional error messages generated. Make the necessary changes, and retry the operation.

MVSVB_VAXRCDERR, Max rcdlen is "length." MVSRECL must be GEQ (4 + max rcdlen).

Reason: For a variable blocked IBM mainframe file create request, the MVSRECL value specified when a CA-XCOM transfer was requested is invalid. It must be at least 4 bytes larger than the maximum VMS file's record size which is equivalent to "length."

Action: Adjust the MVSRECL value specified so that it is at least 4 bytes larger than the maximum VMS file's record size displayed, and retry the operation.

NEGOTCNFMERR, Negotiation record transfer confirm error.

Reason: When a CA-XCOM transfer request is initiated, prior to transferring the data file, a handshake occurs between the local VMS CA-XCOM and the remote host CA-XCOM software. During this protocol handshake, the protocol interface either did not return a valid negotiation record confirmation indicator or else it returned an error.

There should be subsequent error messages which describe in more detail the LU 6.2 protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation. If there were no subsequent error messages then it could be that the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol. In such a case request, if necessary, that both the local and the remote CA-XCOM software be stopped and re-started, and then retry the transfer.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

NEGOTMSGSTR, "text."

Reason: When a CA-XCOM transfer request is initiated, prior to transferring the data file, a handshake occurs between the local VMS CA-XCOM and the remote IBM host CA-XCOM software. During this protocol handshake, the received or expected negotiation message contained message text rather than transfer protocol parameters. "text" is the text received.

This error usually is indicative of incompatibility encountered by the remote IBM host CA-XCOM software.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

NEGOTPREP_ERR, Error Preparing to receive Negotiation record.

Reason: When a CA-XCOM transfer request is initiated, prior to transferring the data file, a handshake occurs between the local VMS CA-XCOM and the remote host CA-XCOM software. During this protocol handshake, an error was returned by the communication interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

NEGOTRCVERR, Error receiving Negotiation record.

Reason: When a CA-XCOM transfer request is initiated, prior to transferring the data file, a handshake occurs between the local VMS CA-XCOM and the remote host CA-XCOM software. During this protocol handshake, an error was returned by the communication interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

NEGOTSNDERR, Error sending Negotiation record.

Reason: An attempt to send a CA-XCOM negotiation record for a transfer resulted in an error from the protocol interface.

There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

NODE, Illegal node qualifier value.

Reason: The value specified for the NODE command qualifier is not acceptable. "NODE" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

NORESTARTABLE, Restart not supported on remote system. Starting from top.

Reason: A user requested a checkpointed, or restartable, transfer to a remote IBM host CA-XCOM software when such a remote IBM host CA-XCOM software did not support checkpointable transfers. This is an informational message.

Action: None.

NORSTRTJOB, Remote job submit cannot be a restartable file transfer.

Reason: An attempt was made to checkpoint, or make restartable, a transfer which was a remote job being submitted. Such transfers are by definition not checkpointable or restartable.

Action: Retry the remote job submission transfer operation without requesting that it be checkpointed.

NOVIRTUALMEM, Unable to get enough virtual memory: "integer" bytes.

Reason: CA-XCOM was unable to acquire enough dynamic virtual memory to perform an operation. "integer" was the number of bytes requested.

This error may be the result of a process exceeding its paging file quota (PGFLQUOTA), the process working set limit (WSQUOTA) is not enough to accommodate the increased virtual address space, or when the process' virtual address space is full.

Action: Adjust the process quotas, as implied from the explanation above. If this does not resolve the problem, you may need to adjust the appropriate VMS SYSGEN parameters, particularly VIRTUALPAGECNT. You may also need to extend the system page and/or swap files.

PASWORD_BFRSZER, PASSWORD item code buffer length error.

Reason: The PASSWORD item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 31 inclusive.

Action: Verify that the RNOTIFY_FLAG string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

POLL, POLL time format not a delta time.

Reason: The wait delta-time value supplied when a CA-XCOM request was made is wrong. More than likely the delta-time format used is incorrect. The value was rejected by the VMS system service SYS$BINTIM. There should be a second message which describes the error returned by the SYS$BINTIM service. The SYS$BINTIM system service is described in the VMS System Services Reference manual.

"POLL" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Evaluate the error returned by the SYS$BINTIM system service. Make any necessary changes to XCOM$IMAGE:EXCOMACP.COM command procedure, and retry the operation.

PRINTQ, Illegal print queue name.

Reason: The value specified for the PRINT_Queue command qualifier is not acceptable. "PRINT_Queue" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

PRIORITY, Illegal priority qualifier value.

Reason: The value specified for the PRIORITY command qualifier is not acceptable. "PRIORITY" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

PRIVILEGE, Illegal privilege mask specified.

Reason: The value specified for the PRIVILEGE command qualifier is not acceptable. "PRIVILEGE" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

PRTFAIL, Unable to print job. Explanation follows.

Reason: The CA-XCOM remote request handler's attempt to receive a print file from a remote system resulted in failure. There should be additional messages detailing why the print request failed.

Action: Evaluate the additional error messages to determine the exact cause of failure. Make any necessary changes and retry the operation. Note that the changes required, more than likely, would have to be made on the remote system.

QJOBSTS, "text."

Reason: This message is given when an item, (e.g., a received report file or job file) has been queued to a destination VMS execution or print queue. "text" is the message text returned by the VMS queue routine.

Action: Typically none, but if the text of the message indicates that a problem occurred, then make any required changes, and retry the operation.

QUEUE_BFRSZERR, QUEUE item code buffer length error.

Reason: The QUEUE item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 31 inclusive.

Action: Verify that the QUEUE string size supplied when the CA-XCOM API request was made is within string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

RCDCNT_RCVERR, Error Receiving record count.

Reason: Upon an attempt to receive a count of the total number of data file records transmitted by the remote partner, an error was returned by the protocol interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

RCDCNT_SENDERR, Error Sending record count.

Reason: Upon an attempt to transmit a count of the total number of data file records transmitted to the remote partner, an error was returned by the protocol interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

RCVHDRERR, Error receiving header record.

Reason: When a remotely initiated CA-XCOM transfer request is initiated, prior to transferring data files, a transmission header is received from the remote host CA-XCOM software. An attempt to receive this header resulted in an error return from the protocol interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

READCFG_ERR, Unable to read CA-XCOMconfig record for remote system!.

Reason: An attempt to read the specified remote system name record from the CA-XCOM configuration file failed during a transfer operation. There should be an additional error message which describes why the read failed.

Action: Evaluate the additional error message(s). Make sure that the configuration file exists and that the remote system name used has an entry in it. Make any necessary changes to the CA-XCOM command, and retry the operation.

RMTFILE_BFRSZER, RMTFILE item code buffer length error.

Reason: The RMTFILE item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 255 inclusive.

Action: Verify that the RMTFILE string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

RMTFILE_VALUERR, RMTFILE item code buffer value error.

Reason: A parse of the RMTFILE value, when a CA-XCOM API request was made, returned an error. There should be an additional message which describes why it was rejected.

Action: Examine the additional error message returned, when the CA-XCOM API request was made. Make any necessary changes to the user program, recompile, relink, and retry the operation.

RMTSYS_BFRSZERR, RMTSYS item code buffer length error.

Reason: The RMTSYS item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 14 inclusive.

Action: Verify that the RMTSYS string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

RNFLAG_BFRSZERR, RNOTIFY_FLAG item code buffer length error.

Reason: The RNOTIFY_FLAG item code buffer length value supplied when a CA-XCOM API request was made is wrong. The value must be 1.

Action: Verify that the RNOTIFY_FLAG string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

RNFLAG_VALU_ERR, RNOTIFY_FLAG item code value error.

Reason: The RNOTIFY_FLAG value supplied when a CA-XCOM API request was made is wrong. The value must be one of the following:

```
XCOM$S_RNOTIFY_TSO,
XCOM$S_RNOTIFY_WRITELOG,
XCOM$S_RNOTIFY_CICS,
XCOM$S_RNOTIFY_LU,
XCOM$S_RNOTIFY_ROSCOE,
XCOM$S_RNOTIFY_VMSUSER.
```

Action: Verify that the RNOTIFY_FLAG value supplied when the CA-XCOM API request was made is within the above boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

RNOTIFY_BFRSZER, RNOTIFY item code buffer length error.

Reason: The RNOTIFY item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 12 inclusive.

Action: Verify that the RNOTIFY string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

RSTARTALPHA, Alpha restart in progress from record "integer." Filename follows.

Reason: A resumed transfer is proceeding from the primary (alpha) restart point. "integer" is the record number from which the file transfer will be resumed. The name of the file being transferred is displayed in a subsequent message.

Action: None.

RSTARTBETA, Beta restart in progress from record "integer." Filename follows.

Reason: A resumed transfer is proceeding from the secondary (beta) restart point. "integer" is the record number from which the file transfer will be resumed. The name of the file being transferred is displayed in a subsequent message.

Action: None.

RSTARTFILE, Restarted (Alpha or Beta) filename is: "file-pathname."

Reason: A resumption of a previously checkpointed transfer is in progress. "file-pathname" is the filename of the file being transferred.

Action: None.

SENDDATAERR, Error sending data record #"rcd-number."

Reason: An attempt to send file record data during a CA-XCOM transfer resulted in an error from the protocol interface. "rcd-number" is the number of the record on which the error was returned. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

SENDFAIL, Failed SENDing file to remote node.

Reason: An attempt to send a file to a remote node resulted in an error. There should be additional error messages which describes the exact cause of failure.

Action: Examine the additional errors detailing why the transfer failed. Make any necessary corrections, and retry the operation.

SENDHDRERR, Error sending header record.

Reason: When a CA-XCOM transfer request is initiated, prior to transferring the data file, a transmission header is sent to the remote host CA-XCOM software. An attempt to send this header resulted in an error return from the protocol interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

SESADDR, Illegal session number qualifier value.

Reason: The value specified for the SESADDR command qualifier is not acceptable. "SESADDR" is a command qualifier for the EXCOMACP command which can be found in the file XCOM$IMAGE:EXCOMACP.COM. This command file is used to start the CA-XCOM remote request handler component, also known as XCOMACP.

Action: Examine the XCOM$IMAGE:EXCOMACP.COM command procedure. Make any necessary changes, and retry its execution.

SESSIONATMPT, Attempting to establish SNA session.

Reason: The SNA session, required for an LU 6.2 conversation, is down or deactivated. This message indicates an attempt to activate a session. This message is usually given by the XCOMACP.

Action: None.

SESSIONDOWN, SNA session lost, attempting to re-establish.

Reason: An SNA session terminated. There should be additional messages explaining why the session terminated. An attempt will be made to re-establish the session.

Action: Evaluate the additional messages that should accompany this error message, take corrective actions as appropriate, and retry the operation.

SESSIONUP, SNA session established.

Reason: An SNA session has been successfully established.

Action**:** None.

SETFAIL, Unable to initiate local lu's.

Reason: The CA-XCOM component responsible for handling remotely initiated requests(also known as XCOMACP) was unable to define, activate, or otherwise establish a session with the protocol interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

SNDERRFDESC, Error Sending file descriptor record.

Reason: An attempt to transmit a file descriptor record, prior to a data file transfer, resulted in an error from the protocol interface. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

SPURIOUSRQST, Spurious ACP request "rqst-type" received & rejected.

Reason: The CA-XCOM component responsible for handling remotely initiated requests has received an unknown request type, equivalent to the integer "rqst-type." The request was rejected. There might be additional messages, from the protocol interface, which may give some insight as to why this spurious request was received and rejected.

Action: Evaluate the additional error messages. Make any necessary changes, and retry the remotely initiated transfer operation.

SUBFAIL, Unable to submit job. Explanation follows.

Reason: The CA-XCOM remote request handlers' attempt to receive a job file from a remote system resulted in failure. There should be additional messages detailing why the job request failed.

Action: Evaluate the additional error messages to determine the exact cause of failure. Make any necessary changes and retry the operation. Note that the changes required, more than likely, would have to be made on the remote system.

SUBJOBFAIL, Error submitting received batch job for user "user ID."

Reason: For a remotely initiated (by a remote host) job submit request, queuing of the received job file failed. There should be additional error messages detailing why the queue submit step failed.

Action: Evaluate the additional error messages. Make any necessary changes, and retry the remotely initiated job submit transfer operation.

SUBPRTFAIL, Error submitting received print job for user "user ID."

Reason: For a remotely initiated (by a remote host) print job request, queuing of the received job file failed. There should be additional error messages detailing why the queue submit step failed.

Action: Evaluate the additional error messages. Make any necessary changes, and retry the remotely initiated print job transfer operation.

TIMESTAMP, CA-XCOMtime stamp at "time."

Reason: This is a time-stamp message intended to indicate the time that a CA-XCOM event(s) occurred. "time" is the time value in standard VMS absolute time format.

Action: None.

TITLE_BFRSZERR, TITLE item code buffer length error.

Reason: The TITLE item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 21 inclusive.

Action: Verify that the TITLE string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

UNEXPCTD_DATA, Unexpected data record.

Reason: A data record was received when CA-XCOM was expecting a confirm request. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

UNIT_BFRLEN_ERR, UNIT item code buffer length error.

Reason: The UNIT item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 10 inclusive.

Action: Verify that the UNIT string size supplied when the CA-XCOM API request was made is within string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

UNIT_MVS_ONLY, UNIT ONLY used when creating file on a mainframe, e.g. MVS system.

Reason: A UNIT value was supplied when requesting a file transfer to a remote system which is not an IBM mainframe. A UNIT can be specified only when communicating with a mainframe.

This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator, verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe, then remove the UNIT value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

UNKAPIFUNC, Unknown API Function item code value specified.

Reason: An unknown CA-XCOM Application Programming Interface (API) function item code value was supplied as a parameter to the API interface when a user program made an API request.

Action: Examine the API function code value supplied by the user program. Compare it to the chapter "The Application Programming Interface" to see if the correct function name was specified, and to program include files (e.g., C ".h" files) which assign integer values to the function names.

UNXPCTD_CNFMSND, Unexpected CONFIRM_SEND transition.

Reason: A value indicating that the remote host CA-XCOM software has issued a "PREPARE_TO_RECEIVE" verb with type "SYNC_LEVEL" and the synchronization level is "CONFIRM" when we were expecting a data file. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

This problem can occur when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

UNXPCTD_FMHDATA, Unexpected FMH data received.

Reason: A Function Management Header (FMH) record was received when expecting a (file) data record. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

This problem can occur when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

UNXPCTD_SNDTRNS, Unexpected SEND transition.

Reason: An unexpected line state turn, from receive to send, has occurred while receiving data. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

This problem can occur when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

UNXPTD_CFMDALOC, Unexpected CONFIRM_DEALLOCATE transition.

Reason: A value indicating that the remote host CA-XCOM software has issued a "DEALLOCATE" verb with type "SYNC_LEVEL" and the synchronization level is "CONFIRM" when we were expecting a data file. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

This problem can occur when the two communicating CA-XCOM transaction programs are out of sync with respect to their mutually agreed upon communications protocol.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

USERID_BFRLSZER, USERID item code buffer length error.

Reason: The USERID item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 10 inclusive.

Action: Verify that the USERID string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

VAXFILE_ACCESER, RMS error on VAXFILE "filename"Open or Connect.

Reason: A VMS RMS file system error was returned when the local VMS file involved in a CA-XCOM transfer operation was accessed. "filename" is the file specification used. There should be an additional message which describes the specific RMS error returned.

Action: Verify that the target disk is online and the directory is accessible by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation. If the problem persists, contact CA-XCOM Technical Support.

VAXFILE_BFRSZER, VAXFILE item code buffer length error.

Reason: The VAXFILE item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 255 inclusive.

Action: Verify that the VAXFILE string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

VAXFILE_READERR, Error reading local file record "rcd-number."

Reason: An error status was returned by the VMS RMS file system while reading a record from the VMS input file during a CA-XCOM "SEND" file request. "rcd-number" is the record number on which the error occurred. There should be an additional message which describes the specific RMS error returned.

Action: Verify that the target disk is online and the directory is readable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists, contact CA-XCOM Technical Support.

VAXFILE_WRTERR, Error writing local file record.

Reason: An error status was returned by the VMS RMS file system while writing a record to the VMS output file during a CA-XCOM "GETFILE" request. There should be a subsequent message which describes the specific RMS error returned.

Action: Verify that the target disk is online and the directory is writable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation.

If the problem persists, contact CA-XCOM Technical Support.

VAXOUTFILE_ERR, Error opening output file.

Reason: An error status was returned by the VMS RMS file system when an attempt was made to access the local VMS output file during a CA-XCOM "GETFILE" request. There should be a second message which describes the specific RMS error returned.

Action: Verify that the target disk is online and the directory is writable by the user requesting the CA-XCOM transfer. Evaluate the RMS error returned. Make any necessary changes, and retry the operation. If the problem persists, contact CA-XCOM Technical Support.

VOLUME_BFRSZERR, VOLUME item code buffer length error.

Reason: The VOLUME item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 10 inclusive.

Action: Verify that the VOLUME string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

VOLUME_MVSONLY, VOLUME ONLY used when creating file on a mainframe, e.g. MVS system.

Reason: A VOLUME value was supplied when requesting a file transfer to a remote system which is not an IBM mainframe.

A VOLUME can be specified only when communicating with a mainframe. This problem can be caused by the remote system's operating system name being incorrectly specified in the CA-XCOM configuration file. This characteristic can be set via the CA-XCOM configurator. With this configurator, verify that the remote system is not an IBM mainframe.

Action: If the remote system is indeed not an IBM mainframe, then remove the VOLUME value specification from the transfer request command and retry the operation. If the remote system is supposed to be an IBM mainframe, but is not defined as such, then use the CA-XCOM configurator to rectify the problem and retry the operation.

WAIT_BFRLEN_ERR, WAIT item code buffer length error.

Reason: The WAIT item code buffer length value supplied when a CA-XCOM API request was made is wrong. The range is between 1 and 16 inclusive.

Action: Verify that the WAIT string size supplied when the CA-XCOM API request was made is within the string size boundary. Make any necessary changes to the user program, recompile, relink, and retry the operation.

XMTHDRCNFMERR, Transmit header record received confirm error.

Reason: Upon an attempt to complete a confirmation procedure after reception of a CA-XCOM transmission header, for a remotely initiated request, the protocol interface returned an error. There should be subsequent error messages which describe in more detail the protocol interface errors returned.

Action: Examine the subsequent error messages. Adjust, or resolve problems with the communication interface (APPC or TCP/IP) and retry the operation.

If the problem persists, contact CA-XCOM Technical Support. You may be asked to provide a trace of the APPC or TCP/IP session.

TXPI Messages

This section lists messages from the TXPI subsystem of CA-XCOM.

Note: These are not CA-XCOM for VMS errors. They are returned from TCP/IP.

101 Txpi is not supported for protocol

102 dwSizeof invalid for TXP_IFEEDBACK

103 dwSizeof invalid for TXPI_CONNECT

104 Internal error: dwSizeof invalid for CONNECTION

105 Parameter TXPI_CONNECT is NULL

106 Cannot allocate storage

107 Socket Type SOCK_DGRAM is not supported

108 Communication protocol unknown type

109 TxpiInitConnect P_TXPI_CONNECT

110 TxpiInitBroadcast is not supported

111 TxpiInitMulticast is not supported

112 Invalid TXPI_OPTIONS

113 Cannot allocate storage for the TXPI_CONNECT block

114 TxpiTerm for a server before TxpiInitConnection called for hClient

115 TxpiSetOptions cannot change the socket type

116 Cannot allocate storage for the TXPI_BUFFER block

117 Internal error: fnReceive returned too little data

118 Internal error: Receive about to discard

119 Freeing a TXPI buffer before receiving data

120 getclientid

121 givesocket error

122 TXPI_SERVER_OPTIONS is NULL in TxpiInitServer

123 dwSizeof invalid

201 WSAStartup error

202 WSACleanup error

203 Gethostbyname error

204 Inet_addr error

205 Socket error unknown type

206 Socket error

207 Set socket SO_BROADCAST option error

208 Set socket SO_BROADCAST option error

209 Set socket SO_BROADCAST option error

210 Set socket SO_BROADCAST option error

211 Socket connect error

212 Socket bind error

213 Socket accept error

214 Socket listen error

215 Socket send error

216 Socket sendto error

217 Socket receive error

218 Socket receive from error

219 Socket close error

220 Socket send select error

221 takesocket error

222 Socket select error

224 gethostname error

226 Select timed out with no data available

227 Socket received 0 bytes: partner closed socket

228 Select exception condition for socket

229 TxpiSend aborted because unreceived data is available

230 Internal error: invalid connection type

231 TxpiSend aborted because the partner called TxpiTerm

232 Error following select

233 Socket closed during accept/receive/select

234 Error from getpeername

235 Gethostid error

Glossary

Note - Terms defined in this glossary are related to CA-XCOM specifically to your platform, see your platform's documentation.

ABEND
Certain errors can cause an abnormal ending (ABEND) of the transaction program. When the LU terminates a program because of an ABEND condition, it deallocates all active conversations.

Access Code
A code used in access control lists to show access rights.

Access Control
An operating system mechanism which determines a user's access rights to files and directories.

Access Mode
The method the I/O system uses to access records for reading or writing. The access modes are sequential, random, and indexed.

ACF
See Advanced Communications Function.

Adjacent Node
A node that is directly connected (either logically or physically) to another node. A pair of adjacent SNA Type 2.1 nodes can be directly connected in a peer-to-peer manner. This is referred to as a Low Entry Networking (LEN) connection.

Advanced Communications Function (ACF)
A prefix given to IBM's mainframe communications packages to differentiate between the old releases of VTAM, NCP, and SSP, which came with the MVS operating system.

Advanced Peer-to-Peer Networking (APPN)
An IBM technology that allows networking of multiple Type 2.1 nodes without requiring a System/370 host. APPN nodes provide intermediate node network routing and support dynamic networking facilities, such as network reconfiguration, locating users in the network. APPN software is implemented on the System/36 and AS/400.

Advanced Program-To-Program Communications (APPC)
The marketing term for SNA LU 6.2 program-to-program communications. APPC/LU 6.2 provides a generalized communications vehicle that can be used by transaction programs to exchange information. IBM transaction programs such as DIS, SNA/DS, and DDM use LU 6.2 for their program-to-program communications.

American National Standards Institute (ANSI)
This is a United States organization that was created by the computer industry to establish computing standards. Participation in these standards is voluntary. (See also American Standard Code for Information Interchange.)

American Standard Code for Information Interchange (ASCII)
The standard binary code prepared and recommended by the American National Standards Institute to represent characters in a computer system. This system is used by most non-IBM computers, as well as PC/DOS and OS/2 systems. With ASCII, each character is represented in a byte consisting of seven bits of data and one parity bit. (See also Extended Binary-Coded Decimal Interchange Code.)

API
See Application Program Interface.

APPC
See Advanced Program-to-Program Communications.

Application
A program or set of programs which uses a data communication network to provide remote users with computer services or information. In SNA networks, application programs are considered end-users of the network and are represented by Logical Units (LUs).

Application Program Interface (API)
A set of "calls" that application programs use which access services provided by supporting software. For example, LU 6.2 Transaction Programs interface to the supporting LU via the LU's application program interface.

APPN
See Advanced Peer-to-Peer Networking.

Architecture
A set of rules and definitions describing the structure and operation of a network. Systems Network Architecture (SNA) is IBM's set of rules and definitions describing how their systems will interconnect and operate in a network.

ASCII
See American Standard Code for Information Interchange.

AS/400
IBM's strategic, multi-user, midrange applications processing system. The AS/400 supports a wide range of SNA communications, including 3270 emulation and peer-to-peer communications using logical unit type 6.2. The AS/400 is the successor to IBM's System/36 and System/38 product lines.

AST
See Asynchronous System Trap.

Asynchronous
A method of data transmission where every character sent is bounded by a start and stop bit, and where no timing or clocking information is exchanged between parties.

Asynchronous Communications
A communications protocol standard for data transmission that does not allow for the buffering of data or polling. The flow of data is maintained by start and stop control bits, not timing sequences. Thus, the timing interval between the transmission of each character can vary from one character to the next. This protocol is not recognized by IBM's SNA suite of protocols. See also Binary Synchronous Communications and Synchronous Data Link Control.

Asynchronous System Trap (AST)
A VMS-specific term. ASTs are a mechanism for signalling asynchronous events to a process. Specifically, a procedure (or routine) designated by either the process or the system executes in the context of the process. An example of these services is documented in the *VMS System Services Reference Manual.*

Automatic Dialer
A device which generates pulse or touchtone dialing sequences. An automatic dialer is used by computers and terminals to directly dial a call. Many modems have automatic dial features.

Basic Conversations
Conversations that require the transaction to build and interpret generalized data stream (GDS) headers. The transaction is responsible for error recovery and data stream mapping.

Batch Process
A noninteractive process that executes a command or command macro. When you request a batch process from the System/88 or Stratus Operating System for instance, the batch request is put into a specified queue and a batch process starts to execute the command whenever resources become available. The batch process runs independently of the process that issued the batch request.

Batch Task
A collection of related functions that run sequentially, usually without interaction with a user.

Baud
A unit of signal variation rate on a communication line. In modern usage, it is normally (and incorrectly) used in place of "bits per second." In data communications, each baud can encode one or more binary bits of computer data. Typically, one, two, or four bits are encoded.

Binary Synchronous Communications
A data communications protocol that allows for buffering and polling. Although supported by some IBM hardware and software, it is not a recognized protocol in the SNA suite of protocols. See also Asynchronous Communications and Synchronous Data Link Control.

Bisync
See Binary Synchronous Communication.

Bit
One binary digit of a computer's representation of information. There are normally eight bits in a computer character (byte).

Block
A set of information sent on a communication line. Normally associated with synchronous protocols and sometimes called a "frame," a disk block holds 4,096 bytes. It is the smallest addressable unit in disk secondary storage and is the unit of transfer of data between main storage and secondary storage. File and directory blocks are read into the buffer pool before being accessed by the system.

Block I/O
A method of transferring data between main and secondary storage that moves a block (4,096 bytes) at a time, disregarding the file and record structures of the data.

Buffer
A memory area reserved for use in performing input/output (I/O) operations.

Byte
A collection of eight bits which make up a letter, number, symbol, etc. Normally used as another term for "character," byte is an IBM term. An unsigned byte variable can contain integer values in the range of 0 to 255; a signed byte variable can contain integer values in the range of -128 to 128.

Carrier
Either a company which provides communication circuits to the public or a signal onto which digital information is placed for transmission. In popular modern usage, "I have carrier" means that the signal from the remote modem is reaching the local modem requirement for communication.

CCITT
International Consultative Committee for Telephone and Telegraph, a United Nations affiliate which proposes worldwide public standards for computer networking protocols. The International Standards Organization (ISO) usually shows agreement with CCITT proposals when it announces new protocol standards every four years.

CCS
See Common Communications Support.

Channel
A path over which information can flow between two points, sometimes used interchangeably with terms such as "circuit," "line," "trunk," or "path."

CICS
See Customer Information Control System.

Cluster Controller
An SNA term used to describe peripheral nodes which control multiple, clustered devices such as display stations and printers. This term is commonly used when talking about 3270 control units. A cluster controller node is now referred to as a peripheral node.

Command Macro
A user-written program invoked from the command line. A command macro is composed of calls to the operating system commands, calls to user programs and commands, and command macro statements. The command processor reads and executes lines from the macro file until it either reaches the end of the file or the terminating macro statement.

Common Communications Support (CCS)
An SAA element that consists of components used for communications between SAA systems. The CCS element is subdivided into categories of components including objects, data streams, application services, session services, network, and data link controls. The intent of this element is to allow interoperability between SAA systems.

Common Programming Interface (CPI)
An SAA element that is subdivided into categories of programming languages and services components. This element is used to standardize the available programming environments on SAA systems. SAA applications are developed using CPI components and interfaces.

Common Programming Interface for Communications (CPIC)
The LU 6.2-based application programming interface defined as part of SAA's CPI element. The CPIC interface is used by application programs for communicating with other application programs.

Common User Access (CUA)
An SAA element that contains specifications and guidelines for an application's user interface. This element is used to standardize the user interface provided by SAA application programs. CUA includes support for both non-programmable terminals, such as 3270s, and intelligent workstations, such as PS/2s running OS/2.

Communication Controller Node
An SNA network node which acts as a "pure" communications processor to handle functions like network routing and control of physical data links. IBM hardware products like the 3720, 3725, and 3745 act as SNA communications controllers when they are running the Network Control Program (NCP) software. SNA communications controllers are also referred to as Type 4 nodes.

Configuration Table
One of the table files the operating system uses to identify the elements of a system.

Control Point (CP)
The intelligence that manages a node and provides network services to attached logical units.

Conversation
The name for communication between two programs on different computer systems in an APPC session.

Cooperative Processing
The ability to access distributed resources in a transparent manner from any system in a network. Systems within a network cooperate with one another in carrying out the distributed access.

CP
See Control Point.

CPI
See Common Programming Interface.

CPIC
See Common Programming Interface for Communications.

CRC
See Cyclic Redundancy Check.

CUA
See Common User Access.

Customer Information Control System (CICS)
A popular IBM timesharing package that runs under the MVS operating system and is optimized for end-user applications.

Cyclic Redundancy Check
A means of determining whether a message has been received properly. The sender calculates a "check sum" of each character position in the message, and sends the result at the end of the message. The receiver, performing the same calculation, should get the same result.

Data
Information coded in computer language and having a defined code structure meaningful to both the sender and the receiver.

Database
Logically-organized data which may or may not be recalled through a sorted index.

Data Flow Control (DFC)
The Data Flow Control layer supports the SNA protocols needed to coordinate the flow of data on an SNA session. Protocols are provided to: control the direction of data flow; control logical grouping of data for error recovery purposes; send responses to data sent on the session; and provide support for other session control functions.

Data Line Monitor
A device used to view the actual data on a communication line, consisting of a CRT display and switches to control the monitoring process. This device is normally used for troubleshooting.

Data Link
See Link.

Data Link Control (DLC)
The data link control layer defines the protocols that SNA uses to transmit data across a single physical data link and to perform error detection and error recovery functions for that data. These DLC protocols are defined by the System/370 channel interface and token ring for local area networking. Synchronous Data Link Control (SDLC) is the DLC protocol used across wide area networks.

DDM
See Distributed Data Management.

Descriptor
A data structure used in a calling procedure for passing argument types, addresses, and other information.

DFC
See Data Flow Control.

DIA
See Document Interchange Architecture.

Disk Operating System (DOS)
IBM's standard operating system for the PC family of systems. DOS is a single-tasking operating system that runs on PC and PS/2 systems.

DISOSS
See Distributed Office Support System.

Display Station
A CRT terminal or intelligent workstation with a monitor and keyboard that allows information to be entered into the network and has the ability to display information received from the network. This term is typically associated with 3270 display stations (e.g., 3179).

Distributed Data Management (DDM)
An architecture describing a form of remote file access in SNA networks. DDM transaction programs on different systems use LU 6.2 to distribute requests for record and file access.

Distributed Office Support System (DISOSS)
An IBM System/370 mainframe-based office application that runs under CICS. DISOSS provides a number of office-oriented services, allowing end users on different systems to exchange mail and documents, to store and retrieve documents from host libraries, and to distribute documents in a network.

Distributed Processing
Processing performed by multiple systems in a network.

Distributed Resource
A resource residing on one system which is being accessed from another system in a network. The resource being accessed is not locally-resident on the requesting system.

Distributed Transaction Processing
Distributed processing between cooperating transaction programs.

DLC
See Data Link Control.

Document Interchange Architecture (DIA)
An IBM architecture describing a set of services that allows documents to be exchanged between different systems in an SNA network. DIA services include document library services which allow users to store and retrieve documents to and from host libraries, and document distribution services.

DOS
See Disk Operating System.

DOS/VSE
See Virtual System Extended (VSE).

Dumb Terminal
A terminal, such as a 3270 terminal, which has no application processing capability of its own. It relies solely on host-based application programs for processing and control. Terminal operators use such terminals to access host applications.

EBCDIC
See Extended Binary Coded Decimal Interchange Code.

Editor
A program used to create and modify text files.

End User
A device, such as a display station, a printer, or an application program, that is the source or destination of data exchanged in an SNA network. LUs represent end users, serving as their port into and out of the network.

Error Code
An alphanumeric status code returned by an operating system service subroutine to indicate that an error has occurred during execution.

Error Message
A character string associated with an error code.

Event Flag
Event flags are status posting bits maintained for general programming use. In the APPC/LU 6.2 programming interface, an event flag is set to indicate asynchronous completion of a procedure.

Exchange Identification
See Exchange Station ID.

Exchange Station ID (XID)
A code that allows one computer to recognize another computer or device in a dial, token ring, or APPN network. Each code must be unique within a network. This is also short for Exchange Station ID, an SDLC supervisory frame in which two nodes first making contact identify themselves. An XID frame contains a four-byte node ID and can also contain optional information such as the NETID and CP name. An XID is optional on leased lines, but is commonly employed over dialup connections and LANs.

Extended Binary Coded Decimal Interchange Code(EBCDIC)
A code system that allows a binary representation of characters and certain control information. EBCDIC is the standard developed and used by IBM in their mainframe and mini-computers. It differs from ASCII in that it uses all eight bits of a byte to represent a character and therefore may represent more characters (see also American Standard Code for Information Interchange).

File
A set of records or bytes stored on disk or tape as a unit. A disk file has a path name that identifies it as a unique entity in the system's directory hierarchy. Attributes of a disk file, such as its size and when it was created, are maintained in the directory containing the file.

Fixed File
A file with a fixed organization. In a fixed file, the records are the same size. Each record is stored in a disk or tape region holding a number of bytes that is the same for all the records in the file. Compare with relative file, sequential file, and stream file.

FMH
See Function Management Header.

Frame
A more modern term for "block" normally applied to protocols which bound their messages by fixed codes, such as SDLC and HDLC.

Full Duplex
A physical connection on which information can be transmitted in both directions between the same two points simultaneously.

Functional Layer
One of the major groupings of functions defined by the SNA architecture. Major functions have been isolated into separate layers so that changes can be made to one layer without having to change other layers, thereby making it easier to accommodate new technologies in SNA. SNA consists of seven layers: transaction services, presentation services, data flow control, transmission control, path control, data link control, and physical control.

Function Management Header (FMH)
Control information that allows an LU to transmit a data stream to a specific destination and control the presentation of the data at that destination. FMHs are the means by which an LU selects the functions it wants the presentation services components of its session partner to perform. For more information about FMHs, see IBM's *Systems Network Architecture - Sessions Between Logical Units,* Order No. GC20-1868.

Gateway
A system of hardware and software that handles protocol differences between an IBM SNA network and another network (for example, DECnet, IPX, NETBIOS, etc.)

GDS
See Generalized Data Stream.

Generalized Data Stream (GDS)
A standard data stream that is used in LU 6.2 communication. (See also Basic Conversations and Mapped Conversations.)

Half Duplex
A physical connection on which information can be transmitted in both directions, but not simultaneously. While sending, each party has the entire capacity of the channel.

HDLC
See High Level Data Link Control.

Hertz
Cycles per second (CPS).

Hierarchical
A connection characterized by a master-slave relationship. In SNA terminology, a hierarchical connection involves a peripheral node (slave) connection to a host subarea node (master). The host node maintains control and is responsible for initiating and terminating the connection.

High Level Data Link Control (HDLC)
A communication protocol for full duplex communication which is used as the basis for the packet switching X.25 protocol. HDLC is a level 2 protocol in terms of the ISO model.

Host Node
A Type 5 SNA node which contains a System Services Control Point (SSCP). A host node is typically a System/370 mainframe computer running VTAM. A host node serves as a centralized control point of a network. Host nodes support application programs and provide network management services. A host node is one type of subarea node, the other type being a communications controller node.

IMS
See Information Management System.

Independent Logical Unit
A logical unit that does not rely on the SSCP to establish its sessions. To be independent, a logical unit must meet these criteria:

- It must be a logical unit type 6.2.
- It must reside on a type 2.1 PU node.
- It must be capable of sending a "Bind" request.
- It must support parallel sessions.
- Its node must be able to send an XID, which includes a control point name vector.

Information Management System (IMS)
An IBM System/370 host-based Database/Data Communications (DB/DC) subsystem that runs in the MVS environment. IMS supports user-written batch and interactive applications, providing communications access to remote systems, and access to databases maintained by IMS for these applications.

Initial Program Load (IPL)
The process of transferring the operating system from disk into the main memory of a computer so that it can prepare itself to run application programs. See also Reboot.

Intelligent Workstation
A system, such as a personal computer, that has its own processing capability. Local applications can execute on an intelligent workstation so that connection to a host system is not required.

Interface
The connection between a computer or terminal and a datapath. There are various interface standards, including RS232.

Intermediate Node
A node in a network that provides network routing services but is not the source or destination of the data being routed. An intermediate node receives data from one node and, based on addressing information, sends the information to another node. Host nodes and communications controller nodes can function as intermediate nodes in SNA networks.

International Standards Organization (ISO)
An organization responsible for issuing recommendations on various issues in computers and communication. The ISO developed the famous seven layer "Basic Reference Model for Open Systems Interconnection" called the ISO Model.

Intersystem Communication (ISC)
The method CICS uses to enable communication between separate systems by means of programmable interfaces and SNA. (See also CICS.)

I/O Status Vector
This mechanism is VMS-specific and provides the VMS transaction program with complete information about error conditions. The status vector provides a top-level completion code, and in many cases, further qualifying codes.

IPL
See Initial Program Load.

ISC
See Intersystem Communication.

ISO
See International Standards Organization.

JES
See Job Entry Subsystem.

Job Entry Subsystem (JES)
A series of IBM products (JES, JES2, JES3) that allows remote users to submit jobs for execution on System/370 mainframes. The JES subsystems run in the MVS operating system environments.

LAN
See Local Area Network.

LEN
See Low Entry Networking.

Level N
One of the seven levels or layers of the ISO model. N represents the number of the level. Level 1 is the physical interface, and level 7 is the application or user interface.

Link
A physical connection between two nodes. Different types of links are supported in SNA networks, including System/370 local channel links, token ring LANs, and SDLC links. The Data Link Control (DLC) layer defines various protocols to manage data exchange across the different links.

Link Protocol
The set of rules which govern communications over a single link within a network. The link or data link protocol is level 2 of the ISO Model.

Local Area Network (LAN)
A communication technology which passes information over relatively short distances (less than one mile, typically) and at very high speeds. (This term is usually pronounced as a word, "lan," rather than by pronouncing the letters separately.)

Local Channel
The direct link between one IBM System/370 processor and either another System/370 processor, a communications controller, or a peripheral node. The local channel interface is one of the data links supported in SNA networks.

Logical Link
A temporary conversation path established between two transaction programs in a network.

Logical Unit (LU)
The addressable entity in an SNA network with which a user can send and receive messages. An LU could also be described as a user's portal to the network. An LU can be implemented in either hardware, software, or firmware. Whatever fulfills the SNA responsibilities of the LU is said to implement the LU.

Logical Unit-To-Logical Unit (LU-LU) Session
A logical connection between the LUs representing users of an SNA network. No communications can occur between LUs until they establish an LU-LU session.

Low Entry Networking (LEN)
A technical direction within SNA that provides for the routing of traffic between any two nodes, automatic definition of routes, and directory services. The enhancement to SNA that makes low entry networking possible is called the type 2.1 network node.

LU
See Logical Unit.

LU Type 0
An implementation-defined LU type that is generally used to support program-to-program communications. It is most often used in IBM's industry-specific systems (e.g., retail POS, banking), and is being superseded by LU Type 6.2 in most new applications.

LU Type 1
The LU type that is designed to support communications between a remote terminal and a host-based application. LU Type 1 is used for sending SNA Character String (SCS) data streams to 3270 printers. It is also used to support 3770 Remote Job Entry (RJE) terminals.

LU Type 2
The LU type that is designed to support communications with display stations using the 3270 data stream format.

LU Type 3
The LU type that is designed to support communications with printers using the 3270 data stream format.

LU Type 4
An early SNA LU type used for peer-to-peer communications. LU 4 has now been superseded by LU 6.2 for peer-to-peer communications.

LU Type 6.1
The LU type that is designed to support program-to-program communications between IBM host-based applications such as CICS and IMS.

LU Type 6.2
The LU type that is designed to support generalized program-to-program communications. LU Type 6.2 defines an application program interface (API) which applications use to communicate with each other. Another important feature of LU Type 6.2 is its ability to support peer-to-peer sessions directly between users on SNA workstations and mid-range processors.

Mainframe
A System/370 host computer. A mainframe is any model of IBM's System/370, 303X, 308X, 309X, and 4300 and 9370 series of processors. Due to VTAM software which runs in the mainframe, the mainframe functions as a Type 5 Host Node in an SNA network. In addition to serving as a network control point, mainframes also support network management facilities and application programs.

Mapped Conversations
Conversations that take place between user-written transaction programs. Mapped conversations transform all data being sent to another transaction into the generalized data stream (GDS) and then restore the data to its original form before the destination program receives it. In the VMS environment, the VMS transaction program does not recognize GDS headers.

Midrange System
One of IBM's non-mainframe, non-PC systems. Typically, midrange systems fall between mainframes and PCs in processing power and capacity. IBM midrange systems include the AS/400, System/36, System/38, Series/1, and 8100.

Mode
A set of characteristics used to define a conversation.

Mode Entry
An entry in a VTAM table that describes the mode being used. A mode entry defines characteristics of a session that both sides must agree upon, such as the LU type and the data frame size.

Mode Table
A VTAM module that contains one or more mode entries.

Modem
Modulator/Demodulator. A device which converts digital information to a series of tones suitable for transmission across an analog path, such as a conventional telephone circuit.

Multi-Domain SNA Network
An SNA network whose resources (LUs, PUs, and data links) are controlled by more than one SNA host. The Systems Services Control Point (SSCP) within each of the hosts controls some portion of the network's resources.

Multidrop
A wide area communication line which connects more than two points. On multidrop lines, one station is normally designated the "master" to prevent interference if two stations attempt to send at once.

Multiple Virtual Storage (MVS)
The general name given to the flagship operating system used on large IBM mainframes. There are three current variants of MVS: MVS/SP, MVS/XA, and MVS/ESA.

Multiplexer
A communication device which combines several user channels into a single trunk line for more economical transmission.

MVS
See Multiple Virtual Storage.

NAU
See Network Addressable Unit.

NCP
See Network Control Program.

Network

A communications facility that connects two or more points.

NetView
The IBM software package that provides VTAM network management capabilities. NetView provides facilities to allow network operators to monitor and control the network, detect and isolate problems in the network, determine the status of network components, and activate and deactivate network resources.

NetView Distribution Manager
An IBM System/370-based program product that is used for distributing software and microcode to remote systems in an SNA network.

NetView/PC
An IBM program product that runs on PC or PS/2 systems. NetView/PC is used to provide network management support for non-SNA devices. Applications that interface with NetView/PC are required to support the non-SNA device. These applications can then use the services of NetView/PC to send alert messages to NetView on a System/370 host.

Network Addressable Unit (NAU)
The origin or the destination of information transmitted through the path control network. In Systems Network Architecture (SNA), it is a logical unit, physical unit, or systems services control point.

Network Control Program (NCP)
The operating system for IBM front-end processors. A front-end processor cannot be "booted" with NCP until it is first customized during NCP generation.

Network Management
The set of functions and processes used to control a network. Network management functions include activating and deactivating network resources, monitoring the status of resources, detecting and isolating problems in the network, distributing software to systems in the network, configuring the network, and other related activities. NetView is IBM's primary System/370 host-based network management software.

Node
An endpoint of a communications link or a junction common to two or more links in a Network. Nodes can be processors, controllers, or workstations. It became popular a few years ago to stop using the term Physical Unit (PU) and use the term "node" instead. In SNA, a node embodies the set of responsibilities that govern physical attachment to the network. Whatever fulfills these responsibilities is said to implement the physical unit, which can be hardware, software, or firmware.

Node Type
An SNA node that has a particular role in an SNA network. SNA defines four different types of nodes: host (type 5) nodes, communications controller (type 4) nodes, and type 2.0 and type 2.1 peripheral nodes.

Non-Switched Line
A communications connection that is not initiated by dialing into a public data network. This is often known as a leased line, referring to the procedure of leasing a dedicated circuit from a phone company. See also Switched Line.

Nucleus
The portion of MVS code in which very critical, low-level routines reside. Code residing in the nucleus usually cannot be altered without shutting down a computer.

OfficeVision
An IBM family of SAA office applications that provides office services such as word processing, electronic mail, calendar management, decision support, file handling, document distribution, and communications. The OfficeVision family consists of a series of products for each of the SAA environments including: the OfficeVision/MVS and OfficeVision/VM series for the System/370 MVS and VM environments, respectively; OfficeVision/400 for the OS/400 environment on AS/400 systems; Office Vision/2 LAN series for the OS/2 Extended Edition environment on PC and PS/2 systems.

Operand
A parameter used to define the meaning of a macro instruction. A network control program, for example, is customized using macros, and it is common that, as new features are added, new operands must be specified to go with them.

Organization (File)
The way records in a file are stored on a disk. The four types of organization are sequential, relative, fixed, and stream.

OS/2
A multitasking operating system for IBM's PS/2 family of personal computers. OS/2 will also run on some models of the PC family, such as PC AT and PC XT 286 systems.

OS/2 EE
See OS/2 Extended Edition.

OS/2 Extended Edition
IBM's version of OS/2 that includes an integrated relational database manager and an integrated communications manager. OS/2 EE is the SAA environment for intelligent workstations.

Outbound Primary Logical Unit
A peripheral node that can start a session by sending a "Bind" request. Outbound PLUs allow two nonhost computers to hold sessions over an SNA backbone network, a capability that was only recently made possible.

Pacing
A method of limiting the number of frames sent between two systems to prevent the data buffer of the receiving machine from becoming overrun.

Packet Assembly/Disassembly (PAD)
A hardware device which converts information between the X.25 packet protocol format and a nonpacket protocol so that nonpacket devices may use a packet network.

Packet Switching
A form of communication where multiple users place their data on a single trunk line to minimize the cost per user. Each conversation is identified by a "logical channel number." The X.25 protocol is a CCITT standard for packet switching.

PAD
See Packet Assembly/Disassembly.

Parallel
A data transmission method in which the bits in a character are sent on eight channels simultaneously rather than on a single channel. Printers and other local devices are often interfaced via parallel transmission, but this method is rare in data communication.

Password
A sequence of characters a user can be required to supply for security reasons when logging onto a system. The characters in a password do not appear on the screen when they are typed in.

Path Control
Layer 3 of SNA that deals with the routing of data through a network. Path control provides end-to-end network routing that may span multiple data links. Path control is responsible for setting up an end-to-end path through the network connecting a pair of end users.

PC
IBM's original family of personal computer systems. PCs are based on Intel microprocessors including the 8088, 8086, and 80286 chips. DOS is the primary operating system running on most PCs. The original PC line was enhanced to include PC XT and PC AT models. The PC family has been superseded by the PS/2 family.

Peer-To-Peer Communications
Communications between two adjacent type 2.1 nodes. This type of peer connectivity is called Low Entry Networking (LEN). Such communications do not require a System/370 mainframe to be involved. This is contrasted with hierarchical communications in which a type 2.0 or type 2.1 peripheral node must be connected to a host system. Only LU 6.2 sessions are supported across peer-to-peer connections between type 2.1 nodes.

Peripheral Node (PN)
A type 2.1 node that contains logical units, one of which is a session partner. Peripheral nodes support the attachment of end users to the network. End users may be devices, such as displays and printers, or they may be application programs. While type 2.0 nodes are restricted to connecting to host nodes or communication controller nodes, type 2.1 nodes can also directly connect to other type 2.1 nodes without host involvement.

Physical Control Layer
Layer 1 of SNA that deals with the physical connections of systems into the network. IBM supports a number of industry standard physical interfaces at this layer, including the RS 232 and 802.2 token ring interfaces. This layer addresses the mechanical and electrical interfaces used to get information into and out of a system.

Physical Unit
A synonym for node. See also Node.

Physical Unit Name (PU name)
The mnemonic name given to a node. This name is defined to VTAM and/or NCP, and sometimes to the node itself.

Physical Unit Type 2
Now retroactively called physical unit 2.0, this is the specification for a peripheral node; examples of PU 2.0 implementations include 3174 cluster controllers and most minicomputers. Two type 2.0 PUs cannot attach to each other, but instead must be connected to a larger node (PU type 4 or 5). Node type 2 is being phased out.

Physical Unit Type 2.1
IBM's strategic node type. A PU 2.1 node can be directly connected to any other PU 2.1 node. All future IBM products will be Type 2.1 nodes.

Physical Unit Type 4
The node type of a front-end processor; this is being phased out. A type node 4 is subordinate to a type 5 node.

Physical Unit Type 5
The node type of a host device that contains a system services control point. To implement a PU type 5 is to emulate a mainframe.

PIP
See Program Initialization Parameter.

PLU
See Primary Logical Unit.

PN
See Peripheral Node.

Poll
A periodic request by a "master" communication station to a "slave" station requesting that the slave provide data or status information. "Polling" is the act of requesting status information from multiple stations.

PORT
A transport layer demultiplexing value. Each application has a unique port number associated with it. See also: Transmission Control Protocol, User Datagram Protocol.

Presentation Services (PS)
Layer 6 of SNA that deals with the presentation of data to and from end users. For older style terminal emulation (e.g., 3270), PS deals with the formatting and unformatting of data to and from a format that is usable by end users such as displays and printers. For LU 6.2, PS also provides an application program interface (API) used by application programs to access the services provided by the LU.

Presentation Services Profile
A subset of SNA Presentation Services (PS) protocols supported by a particular type of LU.

Primary Logical Unit (PLU)
An LU that initiates an SNA session with a partner LU. For each SNA LU-LU session, one LU assumes the role of the primary LU while the partner LU assumes the role of the secondary LU. The primary LU can initiate and terminate the session by sending the SNA BIND and UNBIND commands.

Procedure
A routine entered by a call in the transaction program.

Process
The sequence of states of the hardware and software during the execution of a user's program.

Profile
A subset of SNA commands and protocols at a particular layer of the SNA architecture.

Program Initialization Parameter (PIP)
The means of passing program initialization parameters to the destination transaction program.

Program Temporary Fix (PTF)
A patch sent by the vendor to fix a bug, or bugs, in a software package.

Program-to-Program Communications
Communications between a pair of programs. LU 6.2 provides program-to-program communications protocols. Two Transaction Programs (TPs) can communicate with one another using LU 6.2 protocols. IBM refers to this as Advanced Program-To-Program Communications (APPC).

Protocol
A set of agreements by which two or more stations agree on information structures, codes, etc., required for successful and error-free communication. SDLC, X.25, etc., are protocols. Data link control protocols, such as SDLC, define the rules of interaction between two nodes connected by a single data link.

Protocol Boundary
The interface between a Transaction Program (TP) and a Type 6.2 LU. The protocol boundary consists of a set of "verbs" that describe the functions provided by the LU which are available to the TP.

PS
See Presentation Services.

PS/2
IBM's family of personal computer systems that are the next generation beyond the original PC family. The PS/2 family consists of a number of models differing in processing power and capacity. Like the PC family, PS/2 models are based on Intel microprocessors. Lower end PS/2 models are bus-compatible with IBM's PC models, while higher end PS/2 models have a MicroChannel Architecture (MCA) bus. OS/2 is the primary operating system for the PS/2, although DOS is widely used as well.

PTF
See Program Temporary Fix.

Queue
A mechanism to record jobs that are waiting to be processed. Jobs can be given priorities within a queue.

Reboot
The startup of a computer, when the operating system is read in from a disk and necessary preparations are made for the system to become available and for applications to be run.

Reference
An argument in an APPC/LU 6.2 programming interface procedure that is passed by an address and is usually expressed as a reference name or label associated with a particular area or field.

Relative File
A file with a relative organization. In a relative file, the records can have varying sizes. Each record is stored in a disk or tape region holding a number of bytes that is the same for all the records in the file. Compare with fixed file, sequential file, and stream file.

Remote IBM Host Transaction Program
The transaction program residing on the IBM system with which another transaction program communicates.

Remote Job Entry (RJE)
Originally, the name given to old-fashioned card reader/line printer devices that were attached to a mainframe via telephone lines. Today, the term RJE is used to describe small computers that, in order to communicate with a host, emulate those old printer/readers. RJE communications use an old SNA protocol called Logical Unit Type 1.

Request for Comments (RFC)
The document series, begun in 1969, which describes the Internet suite of protocols and related experiments. Not all (in fact, very few) RFCs describe Internet standards, but all Internet standards are written up as RFCs. The RFC series of documents is unusual in that the proposed protocols are forwarded by the Internet research and development community, acting on their own behalf, as opposed to the formally reviewed and standardized protocols that are promoted by organization such as CCITT and ANSI. See also: BCP, FYI, STD.

Restore
A command used to copy onto disk data that was written to tape by the save command.

RFC
See Request for Comments

RJE
See Remote Job Entry.

Roscoe
A software package from Computer Associates that is a partial alternative to IBM's TSO; Roscoe is less powerful than TSO, but it imposes significantly less overhead.

RS-232
A standard for computer/terminal interfacing which defines a 25-pin connector. RS232 is the most popular interface standard.

SAA
See Systems Application Architecture.

SCS
See SNA Character String.

SDLC
See Synchronous Data Link Control.

Secondary Logical Unit (SLU)
The LU that accepts a session establishment request from a primary LU. For each SNA session between a pair of LUs, one LU functions as the primary LU while the other LU functions as the secondary LU. The primary LU is responsible for initiating (via the SNA BIND command) and terminating (via the SNA UNBIND command) the LU-LU session, while the secondary LU accepts or denies these requests.

Sequential File
A file with a sequential organization. In a sequential file, the records can have varying sizes and each record is stored in a disk or tape region holding approximately the same number of bytes as in the record. Thus, the record storage regions in a sequential file vary from record to record. Compare with fixed file, relative file, and stream file.

Serial
A data transmission method in which the bits in a character are sent, one after the other, over a single channel. Most modern data communication is serial.

Session
A logical connection that permits communication between two logical units. Before any communication is possible between a pair of NAUs, a session must be established that logically connects the pair. SNA supports SSCP-SSCP, SSCP-PU, SSCP-LU, and LU-LU sessions. SNA session level protocols are used to manage the exchange of information across the session between the pair of NAUs.

Single Domain Network
An SNA network with only one System/370 host, and therefore only a single System Services Control Point (SSCP) (which is implemented in VTAM in the System/370 host). All resources in the network are controlled by the single host.

SLU
See Secondary Logical Unit.

SMP/E
See System Modification Program/Extended.

SNA
See Systems Network Architecture.

SNA Character String (SCS)
A data stream consisting of intermixed end-user data, single-byte control codes, and/or multi-byte control sequences. The control codes and sequences are used to direct the presentation of the end user data on display stations or printers. SCS is the type of data stream used with LU Type 1 processing.

SNA/DS
See SNA/Distribution Services.

SNA/Distribution Services (SNA/DS)
An architecture that describes a generalized, asynchronous delivery facility based on store-and-forward techniques. SNA/DS is used to distribute different types of objects (e.g., mail, documents, programs) through an SNA network. SNA/DS is used in conjunction with Document Interchange Architecture (DIA) to provide electronic mail services. SNA/DS uses LU 6.2 for its program-to-program communications.

SNA/Management Services
IBM's set of network management services that are used for managing systems in an SNA network. NetView is IBM's major host-based product that supports SNA/Management Services.

SNA Network
Multiple interconnected systems using SNA protocols between systems to provide support for end-to-end information exchange. Typically, an SNA network consists of one or more System/370 mainframes that act as central control points, multiple communications controllers that act as intermediate routing nodes, and many terminals, PCs, and multi-user systems that support end users of the network.

SSCP
See System Services Control Point.

SSP
See Systems Support Program.

Start/Stop Bit
The bits which mark the beginning and end of each asynchronously transmitted character.

State
The condition of a conversation at a particular point in time. For example, when a conversation is in receive state, the transaction program cannot send data; it can only receive data. The state of a conversation determines what procedures a transaction program can call.

Stream File
A file with a sequential organization. In a stream file, the records can have varying sizes and each record is stored in a disk or tape region holding approximately the same number of bytes as in the record. Thus, the record storage regions in a stream file vary from record to record. In these ways, stream files are similar to sequential files. However, stream files differ from sequential files in the following ways:
While a sequential file must be accessed on a record basis, a stream file can be accessed on either a record or byte basis.
Sequential files are stored on disk with the record size at the beginning and end of each record. Stream files do not have any record size information stored with them; each new line character in the file is interpreted as the end of a record.
It is possible to have a stream file with only one record. When stream files are used to store text, each record contains one line of text. Compare with fixed file, relative file, and sequential file.

Subarea
A division of an SNA network that is under the control of, and addressed by, a front-end processor or a host access method such as VTAM.

Switched Line
A connection between two or more points that requires the user to dial into a public data network.

Synchronous
A form of transmission where the sender and receiver exchange clocking or timing information and send a block or frame with no space or markings between characters. Because no start/stop bits are required, synchronous transmission is about 25% more efficient than asynchronous transmission.

Synchronous Communications
Transmission of data at a fixed rate, with the transmitter and receiver synchronized by means of synchronization characters located at the beginning of each message or block of data.

Synchronous Data Link Control (SDLC)
SDLC is the synchronous protocol used by SNA. It is level 2 or the link level protocol of IBM's SNA. SDLC is essentially a subset of HDLC. It provides buffering and polling capabilities. CA-XCOM runs over SDLC.

System Modification Program/Extended (SMP/E)
An IBM-supplied utility program used to facilitate the installation of software packages and patches. SMP/E helps ensure that programs are installed in the proper sequence and that all prerequisites and corequisites are met.

Systems Network Architecture (SNA)
The logical description of all components within IBM networking strategy and how they interact. It describes sets of protocols used for communications between logical components. SNA also defines a set of layers that describes different levels of functionality needed to support communications between end users. CA-XCOM is an SNA-based software package.

System Services Control Point (SSCP)
The entity that controls and manages the resources of a data communications network owned by a host.

Systems Support Program (SSP)
The utility programs that load, dump, and debug the Network Control Program. (SSP here is short for the mainframe ACF/SSP, and is not to be confused with the SSP operating system of the System/36.)

Systems Support Program (SSP)
The utility programs that load, dump, and debug the Network Control Program. (SSP here is short for the mainframe ACF/SSP, and is not to be confused with the SSP operating system of the System/36.)

System/36
An IBM multi-user, midrange applications-processing system. It supports a wide range of SNA communications, including 3270 emulation and peer-to-peer communications using logical unit type 6.2. The System/36 is being replaced by IBM's AS/400 system.

System/38
An IBM minicomputer and the forerunner of the AS/400; noted for the relational database integrated into its operating system, the System/38 is hindered by its 1970s hardware design.

System/370
IBM's family of mainframe processors that are based on the System/370 architecture. Included in this family are 308X, 3090, 4300, and 9370 processors.

Systems Application Architecture (SAA)
IBM's umbrella architecture that consists of components used to bring greater consistency to IBM mainframe, midrange, and workstation products. SAA covers user interface, programming languages and services, and communications issues.

Text File
A sequential or stream file containing only ASCII characters.

TC
See Transmission Control.

TCP
See Transmission Control Protocol.

TCP/IP Protocol Suite
Transmission Control Protocol over Internet Protocol. This is a common shorthand which refers to the suite of tranport and application protocols which runs over IP.

Third-Party Processing
(A Computer Associates International term.) Use of a computer system to arrange for a second computer system to send a file, job, or report to a third computer system at a specified future time if not immediately.

Throughput
In data communications, the amount of data transmitted through a communications link in a fixed period of time.

Time-Sharing Option (TSO)
A very powerful (but high-overhead) IBM interactive application that is used by programmers and operators both to develop software and to customize and control an MVS system.

Token-Ring
IBM's strategic local area network (LAN) based on a token-passing scheme that is compatible with the IEE 802.2 and 802.5 token ring standards. A token ring LAN interface is one of the data link types supported in SNA networks.

TPN
See Transaction Program Name.

Transaction Program
An IBM-supplied or user-written application program that directly interfaces to a Type 6.2 LU via the LU 6.2 application program interface (API) provided by the LU. A logical connection, called a conversation, must be set up between the Transaction Programs (TPs) before any communication can take place. The conversation and exchange of information between the TPs is carried out over an underlying SNA LU 6.2 session managed by the pair of LUs supporting the TPs. Examples of IBM-supplied TPs are DIA, SNA/DS, and DDM.

Transaction Program Name (TPN)
The identifier of the remote IBM host transaction program with which another transaction program wants to engage in an LU 6.2 conversation.

Transaction Services (TS)
Layer 7 of SNA that deals with application level processing. Programs running at the transaction services layer are called Transaction Programs (TPs). These may be either IBM-supplied TPs such as DIA, SNA/DS, and DDM or they may be user-written TPs. TPs interact directly with a type 6.2 LU via an LU 6.2 application program interface (API).

Transmission Control (TC)
Layer 4 of SNA that deals with initiating and terminating sessions, controlling the rate of flow of information across the session, checking sequence numbers to ensure that information is not lost or duplicated, and encrypting and decrypting data as required.

Transmission Control Protocol (TCP)
An Internet Standard transport layer protocol defined in RFC 793. It is connection-oriented and stream-oriented, as opposed to UDP. Se also: User Datagram Protocol.

Transmission Subsystem Profile
A subset of SNA Transmission Control (TC) commands and protocols supported by a particular type of LU.

TS
See Transaction Services.

TSO
See Time-Sharing Option.

Type 2.0 Node
An SNA peripheral node that is capable of only hierarchical connections with a host system. Examples of type 2.0 node products are 3270 cluster controllers and other systems emulating 3270 operation.

Type 2.1 Node
An SNA peripheral node that supports both hierarchical connections to host nodes as well as peer-to-peer connections to other type 2.1 nodes with no host involvement. Examples of type 2.1 nodes are AS/400s, System/36s, System/38s, and PCs. APPC software in these systems support the type 2.1 node facilities.

Type 4 Node
An SNA communications controller node that serves as an intermediate routing node in an SNA network. Type 4 Node functions are implemented by Network Control Program (NCP) software running in a 37XX communications controller. The primary functions of a type 4 node are network routing and managing physical data links connected to the node.

Type 5 Node
An SNA host node characterized by a System Services Control Point (SSCP). A type 5 host node is typically a System/370 mainframe running VTAM. It supports application program end users and provides network management services.

User Datagram Protocol (UDP)
An Internet Standard transport layer protocol defined in RFC 768. It is a connectionless protocol which adds a level of reliability and mulitplexing to IP. See also: Transmission Control Protocol.

V.35
The most popular interface standard for data connections over 19.2 KBPS, defined by the CCITT.

Verbs
The LU functions available to Transaction Programs (TPs) that are formally architected as part of the LU 6.2 protocol boundary.

Version 1 Transfers
CA-XCOM transfers you conduct with a partner system running a 1.x version of CA-XCOM. A system which is running CA-XCOM Version 1.x can conduct only version 1 type transfers. A system running CA-XCOM Version 2.x can conduct both version 1 and version 2 type transfers. Increased functionality is available for version 2 type transfers (e.g., checkpoint-restart). See the chapter on Remote System Conventions and the chapter on Processing Options for more information.

Version 2 Transfers
CA-XCOM transfers you conduct with a partner system running a 2.x version of CA-XCOM. A system running CA-XCOM Version 1.x can conduct only version 1 type transfers. A system running CA-XCOM Version 2.x can conduct both version 1 and version 2 type transfers. Increased functionality is available for version 2 type transfers (e.g., checkpoint-restart). See the chapter on Remote System Conventions and the chapter on Processing Options for more information.

Virtual Machine (VM)
One of IBM's primary System/370 operating systems. VM presents a virtual machine interface to users so that, to each user, it appears that the entire machine is dedicated to their use.

Virtual System Extended (VSE)
A widely-used IBM mainframe, operating system, not covered by IBM's Systems Application Architecture, as are MVS and VM. It is formally called DOS/VSE, but VSE is a widely accepted shorter name.

Virtual Telecommunications Access Method (VTAM)
The software package that mainframe applications use to send and receive messages over an SNA network; implements Layers 2, 3, and 4 of SNA.

VM
See Virtual Machine.

VMS Transaction Program
The VMS application that the user writes using CA-XCOM.

VMS/SNA
VMS/SNA is a single-system connection to an IBM SNA network. It consists of the communications software necessary to allow a user of a VMS Alpha family of systems to connect directly to and participate in an SNA network.

VPS
See VTAM Printer Support.

VTAM
See Virtual Telecommunications Access Method.

VTAM Printer Support (VPS)
A software package (including a VTAM application) from Levi, Ray, and Shoup that sends spooled output to 3270-attached printers.

CA-XCOM
A software package (including a VTAM application) from Computer Associates International that provides for bulk data transfer between mainframes, minis, and micros using LU 6.2.

XID
See Exchange Station ID.

Zap
Short for SuperZap, this is a powerful utility program that allows those authorized to use it to modify external storage without limit. SuperZap can be dangerous, and its use is typically reserved to systems programmers.

Index

/

A

B

C

D

E

F

G

H

I

L

M

N

O

P

Q

R

S

T

U

V

W

X