



Avaya Computer Telephony
Release 1.3
Installation Guide

Issue 1
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Notice

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Preventing toll fraud

"Toll fraud" is the unauthorized use of your telecommunications system by an unauthorized party (for example, anyone who is not a corporate employee, agent, subcontractor, or person working on your company's behalf). Be aware that there may be a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

Avaya fraud intervention

If you suspect that you are being victimized by toll fraud and you need technical assistance or support, call Technical Service Center Toll Fraud Intervention Hotline at +1-800-643-2353 for the United States and Canada. For additional support telephone numbers, see the Avaya Web site:

<http://www.avaya.com>

Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Providing telecommunications security

Telecommunications security (of voice, data, and video communications) is the prevention of any type of intrusion to (that is, either unauthorized or malicious access to or use of) your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or person working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Use (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including, but not limited to, human and data privacy, intellectual property, material assets, financial resources, labor costs, and legal costs).

Your responsibility for your company's telecommunications security

The final responsibility for securing both this system and its networked equipment rests with you, an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources, including, but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure:

- Your Avaya-provided telecommunications systems and their interfaces
- Your Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
- Any other equipment networked to your Avaya products.

Warranty

Avaya Inc. provides a limited warranty on this product. Refer to your sales agreement to establish the terms of the limited warranty. In addition, Avaya's standard warranty language, as well as information regarding support for this product, while under warranty, is available through the following Web site:

<http://www.avaya.com/support>

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Avaya support

Avaya provides a telephone number for you to use to report problems or to ask questions about your contact center. The support telephone number is 1-800-242-2121 in the United States. For additional support telephone numbers, see the Avaya Web site:

<http://www.avaya.com>

Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Comments

To comment on this document, send e-mail to crminfodev@avaya.com.

Acknowledgment

This document was written by the CRM Information Development group.

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Installation Guide

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Preface - About This Document

This document focuses on installing Avaya™ Computer Telephony software and provides you with:

- Guidelines for using the online Avaya Computer Telephony documents (Preface, see "Using the Avaya Computer Telephony Documents" on page -19)
- An overview of Avaya Computer Telephony ([Chapter 1: Learning About Avaya Computer Telephony](#))
- Procedures for implementing Avaya Computer Telephony by administering the switch and installing the Avaya Computer Telephony software ([Chapter 2: Administering the Switch](#), [Chapter 3: Installing Avaya Computer Telephony Server Software](#), and [Chapter 4: Installing Avaya Computer Telephony TSAPI Client Software](#))
- A description of the software and tools that Avaya Computer Telephony provides for developing CTI based applications ([Chapter 5: Using CVLAN](#), [Chapter 6: Installing JTAPI Client Software](#), [Chapter 7: Using the JTAPI SDK](#), and [Chapter 8: Using the TSAPI SDK](#))

Reason for Reissue

This document is reissued to reflect changes associated with configuring Avaya Computer Telephony in firewall environments that use Network Address Translation or port redirection.

Intended Audience

This document is intended for anyone who is responsible for installing and maintaining the Avaya Computer Telephony software. Additionally, this document assumes that the reader has the following knowledge or skills.

- A basic understanding of CTI, such as the roles of the switch, the server, and client workstations
- Familiarity with Telecommunications Protocol/Internet Protocol (TCP/IP) addressing
- A working knowledge of Windows NT, Windows 2000 or Windows XP.
- Basic administrative skills on DEFINITY and Multi Application Platform for DEFINITY (MAPD)

Document Organization

This guide consists of high level conceptual information, task-oriented procedures, and basic information about Avaya Computer Telephony in general, as summarized in the following list.

- Preface — “About This Document”

The section you are currently reading provides you with an orientation to the rest of the information in this document as well as an introduction to online Avaya Computer Telephony documents that are included on the Avaya Computer Telephony CD ROM (be sure to read “Avaya Computer Telephony Documents” and familiarize yourself with the documents).

- Chapter 1: Learning About Avaya Computer Telephony

Use this chapter as a CTI refresher. It provides a conceptual description of the components (hardware and software) that a Avaya Computer Telephony implementation comprises.

- Chapter 2: Administering the Switch

Use this chapter for carrying out the switch based administrative tasks that form the prerequisites for installing the Avaya Computer Telephony software.

- Chapter 3: Installing Avaya Computer Telephony Server Software

Use this chapter for carrying out the tasks associated with installing the Avaya Computer Telephony server software.

- Chapter 4: Installing Avaya Computer Telephony TSAPI Client Software
Use this chapter for both planning and completing the tasks associated with installing the Avaya Computer Telephony client software. The planning tasks in this chapter involve determining an effective method for loading multiple clients.
- Chapter 5: Using CVLAN
Use this chapter only if you intend to use a CVLAN (CallVisor PC Local Area Network) application.
- Chapter 6: Installing JTAPI Client Software
Use this chapter completing the tasks associated with installing the JTAPI Client software.
- Chapter 7: Using the JTAPI SDK
Use this chapter to become familiar with the Java Telephony Application Programming Interface (JTAPI) toolkit that is provided on the Avaya Computer Telephony CD ROM.
- Chapter 8: Using the TSAPI SDK
Use this chapter to become familiar with the Telephony Services Application Programming Interface (TSAPI) toolkit that is provided on the Avaya Computer Telephony CD ROM.
- Appendix A: Avaya Computer Telephony Installed Files
Use this appendix to determine the locations of files installed by Avaya Computer Telephony.
- Appendix B: Administering CTI Links for Definity G3PD
Use this appendix as supplementary information for Chapter 2 (in the context of the DEFINITY G3 PBX Driver or “G3PD”).
- Appendix D: Pre-Release 11 Link Administration Instructions
Use this appendix only if you are migrating from a NetWare Telephony Server to a Windows NT, Windows 2000, or Windows XP based server.

Conventions Used in This Document

The following conventions are used throughout this document.

Convention	Example	Usage
bold monospace	add station	characters that you type exactly as depicted
italic monospace	<i>modname</i>	characters or variables that you substitute
plain monospace	Port :	a non-graphic user interface (GUI) element such as a field name.
bold sans-serif	Start	a mouse selection

Product Terminology

Throughout this document the terms "Definity" and "MultiVantage" are used synonymously.

Related Documents

Because Avaya Computer Telephony is a software solution that represents the bridge between switching resources and computing resources, this document assumes that you already have the components (hardware and software) that Avaya Computer Telephony joins together or *integrates*. For this reason, “Related Documents” refers to both switch oriented documents as well as the Avaya Computer Telephony documents that complement this installation guide.

For More Information About Avaya Products and Service

Use the following URLs for more information.

- For information about Avaya products and service, go to <http://www.avaya.com>
- For product documentation for all Avaya products and related documentation, go to <http://www.avaya.com/support>

Switch Oriented Documents

This section describes both “switch specific documents” (for the switch itself) and “switch interface documents” (for the communications interface between the switch and the server).

Switch Specific Documents

In the context of this document, the switching element is MultiVantage. The primary resources for information about MultiVantage are the following CD-ROM libraries.

- *Avaya MultiVantage Software on a DEFINITY Server and S8100 Library CD, 555-233-823*
- *Avaya MultiVantage S8700 Media Server Library CD, 555-233-824*

Switch Interface Documents

The communications interface between the switch and the server is the DEFINITY LAN Gateway (which resides in the switch).

- If you use a DEFINITY ECS or Avaya MultiVantage on a DEFINITY Server CSI, the primary resource for the DEFINITY LAN Gateway running on a Multi Application Platform for DEFINITY (MAPD) is: *DEFINITY ECS and CallVisor ASAI Applications over MAPD*, 555-230-136 (this document is included on the ASAI Documents CD (585-246-801)).
- If you use a DEFINITY ONE/IP600, the primary resource for DLG administrative tasks is this document. See "DEFINITY ONE Pre-Administration — Setting Up Your Avaya CT Configuration" on page -238.

Avaya Computer Telephony Documents

The Avaya Computer Telephony CD ROM provides a comprehensive set of documents that spans multiple audiences. To give you a better sense of what these documents are named, where they are located and what purposes they serve, this section is further divided into the following sections.

- Readme Files
- Online Documents
- Document Designations — Icons, Titles, and File Names
- Using the Avaya Computer Telephony Documents

Readme files

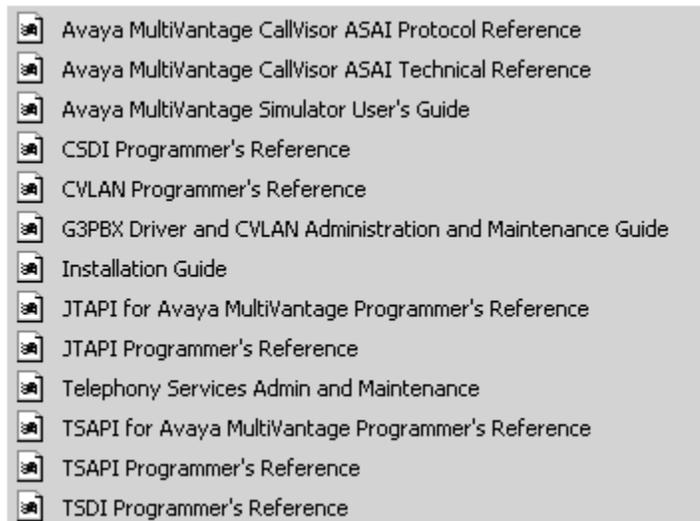
The Avaya Computer Telephony CD-ROM includes a set of Readme files that supplement the Avaya Computer Telephony documents. The following list identifies each Readme file and its location on the Avaya Computer Telephony CD-ROM (The examples below use D:\ as the drive; substitute as appropriate).

- Client Readme (D:\Readmes\Client Readme.txt)
- Documentation Readme (D:\Readmes\Documentation Readme.txt)
- JTPAI Client Readme (D:\Readmes\JTAPI Client Readme.txt)
- JTAPI SDK Readme (D:\Readmes\JTAPI SDK Readme.txt)
- Server Readme (D:\Readmes\Server Readme.txt)
- TSAPI SDK Readme (D:\Readmes\TSAPI SDK Readme.txt)

Online Documents

Avaya Computer Telephony Documents on Your Desktop depicts a desktop view of the Avaya Computer Telephony documents that are provided on the Avaya Computer Telephony CD ROM. If elected to install the documents on your PC, you can view the Avaya Computer Telephony document icons from your desktop (click **Start**, point to **Programs, Avaya Computer Telephony, Documents**).

Avaya Computer Telephony Documents on Your Desktop



Document Designations -- Icons, Titles, and File Names

The purpose of this section is to familiarize you with the various designations that are used for the Avaya Computer Telephony documents. The previous section identifies the desktop icons for each document. This section associates those icons with the formal document title, and the document file name. The document file name is a convenient document handle that appears in the footer of most of the Avaya Computer Telephony documents.

Avaya Computer Telephony Document Icons, Titles and File Names

Icon	Title	File Name
Installation Guide	Avaya Computer Telephony 1.3 Installation Guide	INSTALL.PDF
Telephony Services Admin. and Maintenance	Avaya Computer Telephony 1.3 Telephony Services Administration and Maintenance Guide	NETMANGD.PDF
G3PBX Driver and CVLAN Admin. and Maintenance Guide	Avaya Computer Telephony 1.3 G3 PBX Driver and CVLAN Administration and Maintenance Guide	DEFNETM.PDF
DEFINITY ECS Programmer's Guide	Avaya Computer Telephony 1.3 <i>Telephony Services Application Programming Interface (TSAPI) for Avaya™ MultiVantage™</i> Programmer's Reference	DEFPROG.PDF
Avaya MultiVantage Simulator User's Guide	Avaya Computer Telephony 1.3 <i>Avaya™ MultiVantage™ Simulator</i> User's Guide	SIMGUIDE.PDF
CSDI Programmer's Reference	Avaya Computer Telephony 1.3 CSTA Server Driver Interface (CSDI) Programmer's Reference	CSDI.PDF
TSAPI Programmer's Reference	Avaya Computer Telephony 1.3 Telephony Services Application Programming Interface (TSAPI) Programmer's Reference	TSAPI.PDF
TSDI Programmer's Reference	Avaya Computer Telephony 1.3 Telephony Services PBX Driver Interface (TSDI) Programmer's Reference	TSDI.PDF
CVLAN Programmer's Reference	Avaya Computer Telephony CVLAN Programmer's Reference	CALLVISR.PDF

Avaya Computer Telephony Document Icons, Titles and File Names (continued)

Icon	Title	File Name
Avaya MultiVantage CallVisor ASAI Technical Ref	Avaya MultiVantage CallVisor ASAI Technical Reference	ASAITECH.PDF
Avaya MultiVantage CallVisor ASAI Protocol Ref	Avaya MultiVantage CallVisor ASAI Protocol Reference	ASAIPROT.PDF
JTAPI Programmer's Reference	Avaya Computer Telephony 1.3 Java Telephony API (JTAPI) Programmer's Reference	JTAPI.PDF
JTAPI Client Programmer's Guide	Avaya Computer Telephony 1.3 Java Telephony API (JTAPI) for Avaya MultiVantage Programmer's Reference	JCLI.PDF

Using the Avaya Computer Telephony Documents

This section presents a few possible usage scenarios to help you determine which documents apply to your particular needs.

If You are Implementing or Maintaining a DEFINITY Based TSAPI Solution

If you are using Avaya Computer Telephony to implement a DEFINITY-based TSAPI solution, use the following Avaya Computer Telephony documents.

- *Avaya Computer Telephony Installation Guide* (INSTALL.PDF)
- *Avaya Computer Telephony, Telephony Services Administration and Maintenance Guide* (NETMANGD.PDF)
- *Avaya Computer Telephony G3 PBX Driver and CVLAN Administration and Maintenance* (DEFNETM.PDF)

If You are Developing a TSAPI Based Application

If you are developing a TSAPI based application, use the following documents.

- *Avaya Computer Telephony Installation Guide* (INSTALL.PDF)
- *Avaya Computer Telephony, Avaya MultiVantage Simulator User's Guide* (SIMGUIDE.PDF)
- *Avaya Computer Telephony, Telephony Services Administration and Maintenance* (NETMANGD.PDF)

Preface - About This Document

- *Avaya Computer Telephony G3 PBX Driver and CVLAN Administration and Maintenance (DEFNETM.PDF)*
- *Avaya Computer Telephony, Telephony Services Application Programming Interface (TSAPI) for Avaya MultiVantage (DEFPROG.PDF)*
- *Avaya Computer Telephony, Telephony Services Application Programming Interface (TSAPI) (TSAPI.PDF)*

If You Are Developing your own PBX Driver for Avaya Computer Telephony

If you are using the Telephony Services server and are developing your own PBX driver, use the following documents.

- *Avaya Computer Telephony Installation Guide(INSTALL.PDF)*
- *Avaya Computer Telephony CSTA Server Driver Interface (CSDI.PDF)*
- *Avaya Computer Telephony, Telephony Services Application Programming Interface (TSAPI.PDF)*
- *Avaya Computer Telephony, Telephony Services PBX Driver Interface (TSDI.PDF)*

If You Use CVLAN (CallVisor PC LAN) Based Applications

If you use a CVLAN based application, use the following documents.

- *Avaya Computer Telephony Installation Guide (INSTALL.PDF)*
- *Avaya Computer Telephony CVLAN Programmer's Reference (CALLVISR.PDF)*
- *Avaya MultiVantage CallVisor ASAI Technical Reference (ASAITECH.PDF)*
- *Avaya Computer Telephony, Telephony Services Administration and Maintenance (NETMANGD.PDF).*
- *Avaya Computer Telephony G3 PBX Driver and CVLAN Administration and Maintenance (DEFNETM.PDF)*

If you are Developing JTAPI based Applications

If you are working with JTAPI based applications, use the following documents.

- *Avaya Computer Telephony Installation Guide (INSTALL.PDF)*
- *Avaya Computer Telephony, Telephony Services Application Programming Interface (TSAPI) for Avaya MultiVantage (DEFPROG.PDF)*
- *Avaya Computer Telephony Java Telephony API (JTAPI) Programmer's Reference (JTAPI.PDF)*
- *Avaya Computer Telephony Java Telephony API (JTAPI) for Avaya MultiVantage Programmer's Reference (JCLI.PDF)*

Customer Support

For questions about Telephony Services, Tserver operation, or the DEFINITY G3 PBX Driver, customers can call the National Customer Care Center at:

1 800 344 9670



Chapter 1: Learning About Avaya Computer Telephony

Use this chapter to familiarize yourself with basic Computer Telephony Integration (CTI) concepts and the capabilities of Avaya Computer Telephony as an implementation of CTI.

This chapter contains the following sections:

- [What is CTI?](#) on page 24
- [The Essential Components of a CTI System](#) on page 26
- [A Typical Avaya Computer Telephony Configuration](#) on page 27
- [Avaya Computer Telephony Components](#) on page 29
- [A Closer Look at the Essential Avaya Computer Telephony Components](#) on page 30
- [Security Issues](#) on page 31
- [Private Data and Client Applications](#) on page 35
- [Implementing a Firewall Strategy](#)

What is CTI?

In simplest terms, CTI refers to the integration of your telephone (voice) and PC application (data) for intelligent and effective call processing. This integration is achieved logically, and no physical connection is required between your telephone and the PC — the CTI software performs the integration.

What is Avaya Computer Telephony?

Avaya Computer Telephony is call-center oriented Computer Telephony Integration (CTI) software that runs on Microsoft Windows NT, Windows 2000, or Windows XP.

What Does Avaya Computer Telephony Do?

Avaya Computer Telephony acts as an enabler of CTI applications. It provides applications with the ability to monitor and control resources in a telephone network, via a set of library routines and function calls. Avaya Computer Telephony presents a *programmatic interface* that provides a common ground for computing resources to interact with switching resources. More specifically, Avaya Computer Telephony is a *telephony server* that supports multiple telephony APIs.

What APIs Does Avaya Computer Telephony Support?

Avaya Computer Telephony supports the following APIs

- Telephony Services Application Program Interface (TSAPI)
- Java Telephony Application Programming Interface (JTAPI)
- CallVisor PC

The next three sections provide more information about each API.

TSAPI

TSAPI is a telephony services API based on the ECMA (European Computer Manufacturers Association) CSTA (Computer-Supported Telecommunication Applications) standard.

JTAPI

JTAPI is a portable, object oriented API for Java-based computer telephony applications. Through JTAPI, Java applications can access and control switch resources. See [Chapter 7: Using the JTAPI SDK](#) for more information about JTAPI.

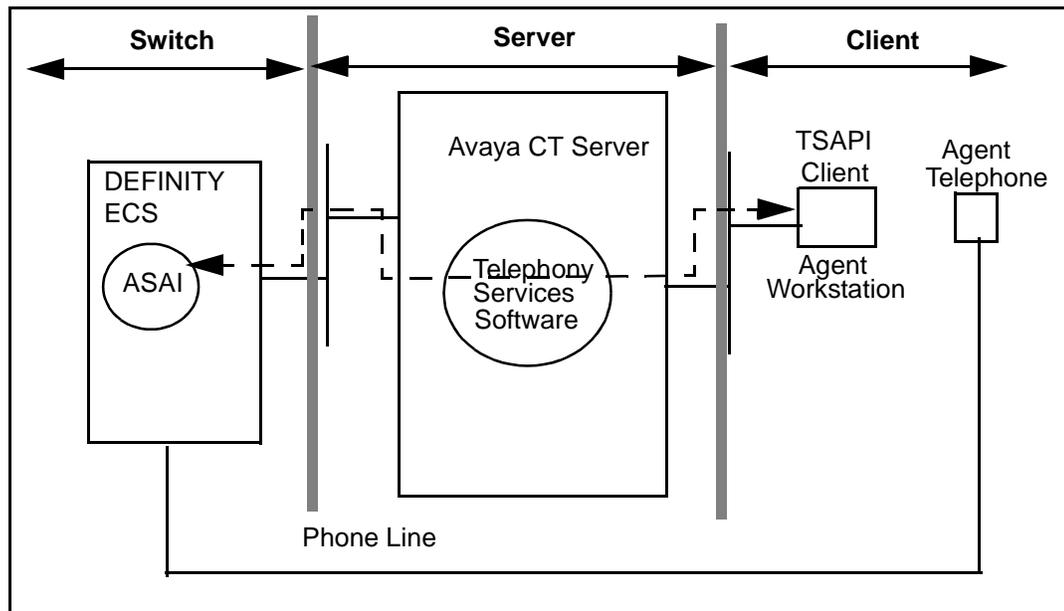
CallVisor PC

CallVisor PC is a proprietary API for applications that use the Adjunct/Switch Application Interface (ASAI). See [Chapter 5: Using CVLAN](#) for more information about CallVisor PC and CVLAN (CallVisor PC LAN).

The Essential Components of a CTI System

Although a CTI implementation can take many forms, Figure 1-1 depicts a simple model of CTI in terms of Avaya Computer Telephony components. This model depicts a DEFINITY switch that relies on the Adjunct Switch Application Interface (ASAI) to effect communications with adjuncts (such as the Avaya Computer Telephony server).

Figure 1-1: Essential Components of Avaya Computer Telephony — A High Level View



A Typical Avaya Computer Telephony Configuration

This section provides a high-level description of the hardware and software components used in a typical Avaya Computer Telephony configuration.

Hardware Components in a Typical Implementation of Avaya Computer Telephony

The basic hardware components in a typical Avaya Computer Telephony configuration are as follows.

- **DEFINITY Switch configured with ASAI**

The DEFINITY switch is a device that processes calls (incoming, outgoing, and internal) and connects them to the proper destinations.

In the context of Avaya Computer Telephony, the role of the DEFINITY switch changes. In a Avaya Computer Telephony implementation, the DEFINITY switch “hands off” call monitoring and call control functions to the Avaya Computer Telephony server (or the adjunct processor). The means of effecting this handoff is the Adjunct Switch Application Interface — ASAI.

To support Avaya Computer Telephony, the DEFINITY switch must be configured with Adjunct Links or an ASAI Interface. DEFINITY switches that support CTI are as follows.

- DEFINITY CSI, Si, and R (running software release G3V4 or later), Avaya MultiVantage on a DEFINITY Server CSI, SI, and R, and Avaya MultiVantage S8700 configurations

Note:

G3V4 requires a field maintenance release.

- DEFINITY ONE/IP600 Release 2 (R2), or later, and Avaya MultiVantage S8100 configurations

- **DEFINITY LAN Gateway**

The DEFINITY LAN Gateway, or DLG, is software that acts as a transport mechanism that allows the DEFINITY switch to communicate with the Avaya Computer Telephony server. It is required for all Avaya Computer Telephony implementations.

- DEFINITY CSI, Si, and R (running software release G3V4 or later), Avaya MultiVantage on a DEFINITY Server CSI, SI, and R, and Avaya MultiVantage S8700 configurations use a Multi-Application Platform for DEFINITY (MAPD) based DLG.

Learning About Avaya Computer Telephony

- DEFINITY ONE/IP600 and Avaya MultiVantage S8100 configurations use the Co-Resident DLG (without a MAPD board).

- Avaya Computer Telephony Server

The adjunct processor that performs call monitoring and control functions, security database functions, and link management. Avaya Computer Telephony runs on Windows NT, Windows 2000, or Windows XP.

- Avaya Computer Telephony Client Workstations

Client workstations run the applications that interact with the Avaya Computer Telephony server.

Avaya Computer Telephony Components

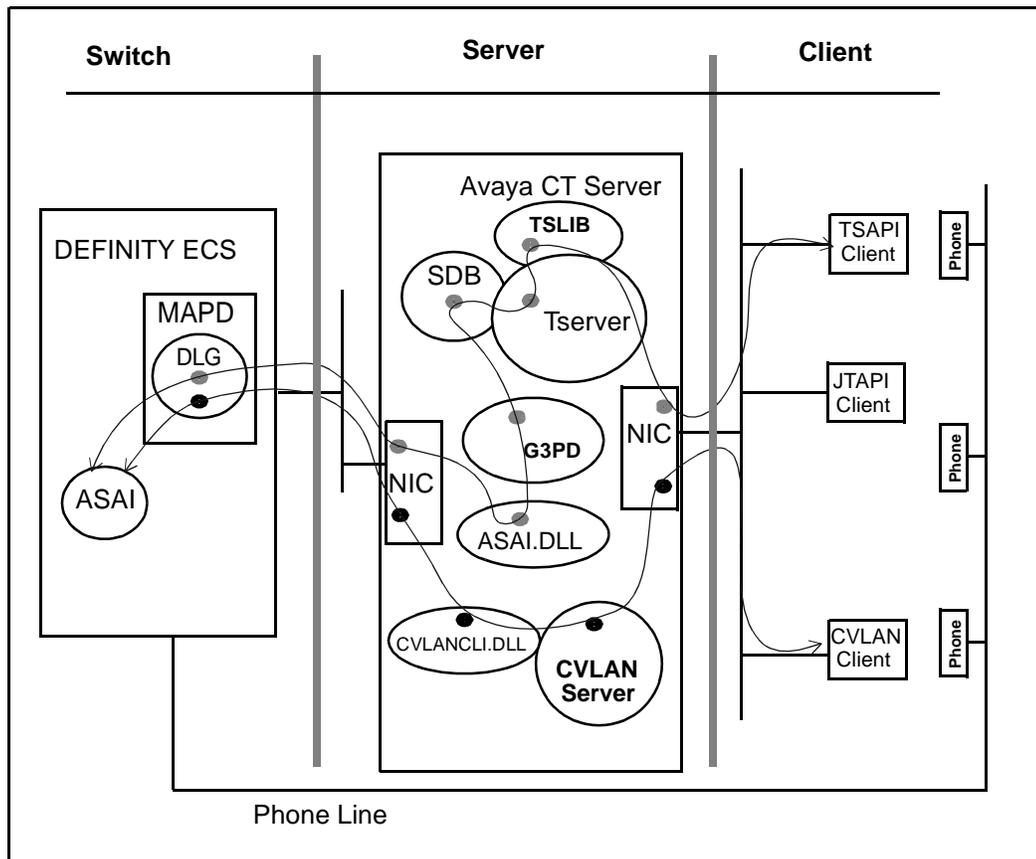
The Avaya Computer Telephony CD ROM contains the following software components:

- Security Database for Telephony Services (Used by Telephony Services for client authentication; it is not used by CVLAN.)
- Telephony Services Server (Tserver) Software
- Telephony Services Client Software
 - Windows NT, Windows 2000, or Windows XP
 - UnixWare
 - Solaris Sparc
 - HP-UX
- CVLAN Server
- CVLAN Clients
 - UNIX
 - Solaris x86
 - Solaris Sparc
 - Windows NT, Windows 2000 or Windows XP
 - IBM Advanced Interactive Executive (AIX)
- DEFINITY Driver (G3 PBX Driver)
- TSAPI Software Development Kit (SDK)
- JTAPI SDK
- CVLAN SDK
- Online Avaya Computer Telephony documents and Adobe Acrobat Reader

A Closer Look at the Essential Avaya Computer Telephony Components

The view of Avaya Computer Telephony depicted by Figure 1-2 includes the some of the major components described in “A Typical Avaya Computer Telephony Configuration” on page 27, to give you a better sense of where the components are and how they operate at a schematic level.

Figure 1-2: Essential Avaya Computer Telephony Components — A Closer Look



Security Issues

The term security has broad connotations. In the context of Avaya Computer Telephony, security refers to toll fraud issues only. The next two sections provide some basic guidelines for effecting secure, isolated LAN arrangements for DEFINITY. For more information about security-related issues, see Chapter 2 of *Avaya Computer Telephony 1.3 G3 PBX Driver and CVLAN Administration and Maintenance* (DEFNETM.PDF).

Security — DEFINITY Servers CSI, SI, R and S8700 Configurations

If your Avaya Computer Telephony configuration relies on a platform that uses the MAPD (DEFINITY Server CSI, SI, R and S8700 Configurations) refer to Figure 1-3 as you read this section.

Isolating the DEFINITY LAN Gateway

The DEFINITY LAN Gateway system assembly should be on its own separate segment and will consequently require its own separate LAN card. This means you will need two network interface cards (NICs) in your Telephony Server, one for client access and one for the connection between the DEFINITY G3 PBX Driver and the DEFINITY LAN Gateway system assembly.

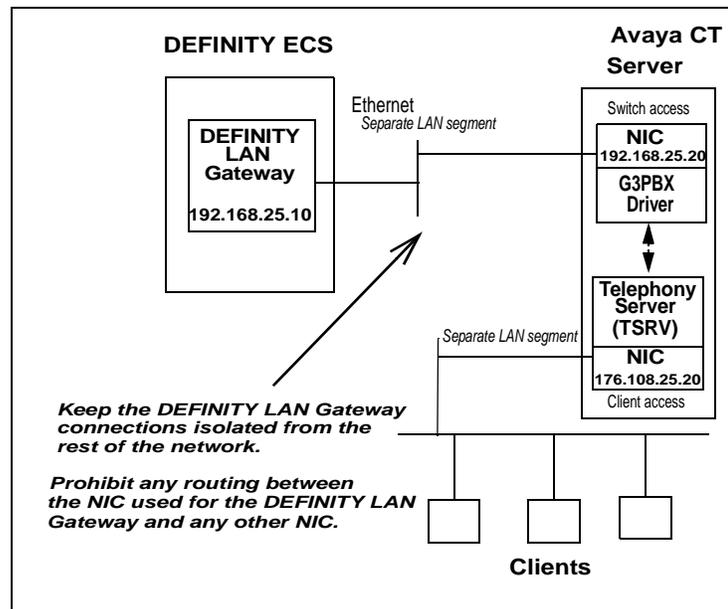
Follow these guidelines to ensure that the DEFINITY LAN Gateway system is not accessible from the rest of the network.

- Use a separate secure link connecting the Telephony Server to the DEFINITY LAN Gateway system.
- You will administer the IP address of the DEFINITY G3 PBX Driver during the installation of the DEFINITY G3 PBX Driver. Do not administer the same IP address for the DEFINITY G3 PBX Driver that your Telephony Server is using. If you do administer the same IP address for both, you will leave your system open for possible toll fraud and may receive a toll fraud warning.
- Make sure that IP forwarding (formerly referred to as IP routing) is turned off between the DEFINITY G3 PBX Driver NIC and the NIC on the Avaya Computer Telephony Server. After installing the NIC on your Avaya Computer Telephony server, configure the connection with no IP forwarding. See “Configuring the Tserver for a Secure LAN Gateway Connection” in Chapter 2 of *Avaya Computer Telephony 1.3 G3 PBX Driver and CVLAN Administration and Maintenance* (DEFNETM.PDF).

⚠ WARNING:

Customers who do not follow this recommendation may be subject to a person or persons gaining illegal access to the DEFINITY LAN Gateway application to commit toll fraud and/or tamper with the real-time aspects of Computer Telephony Integration (CTI) applications. (Toll fraud is the unauthorized use of your telecommunications system. Under applicable law, the customer is responsible for paying for such unauthorized usage.)

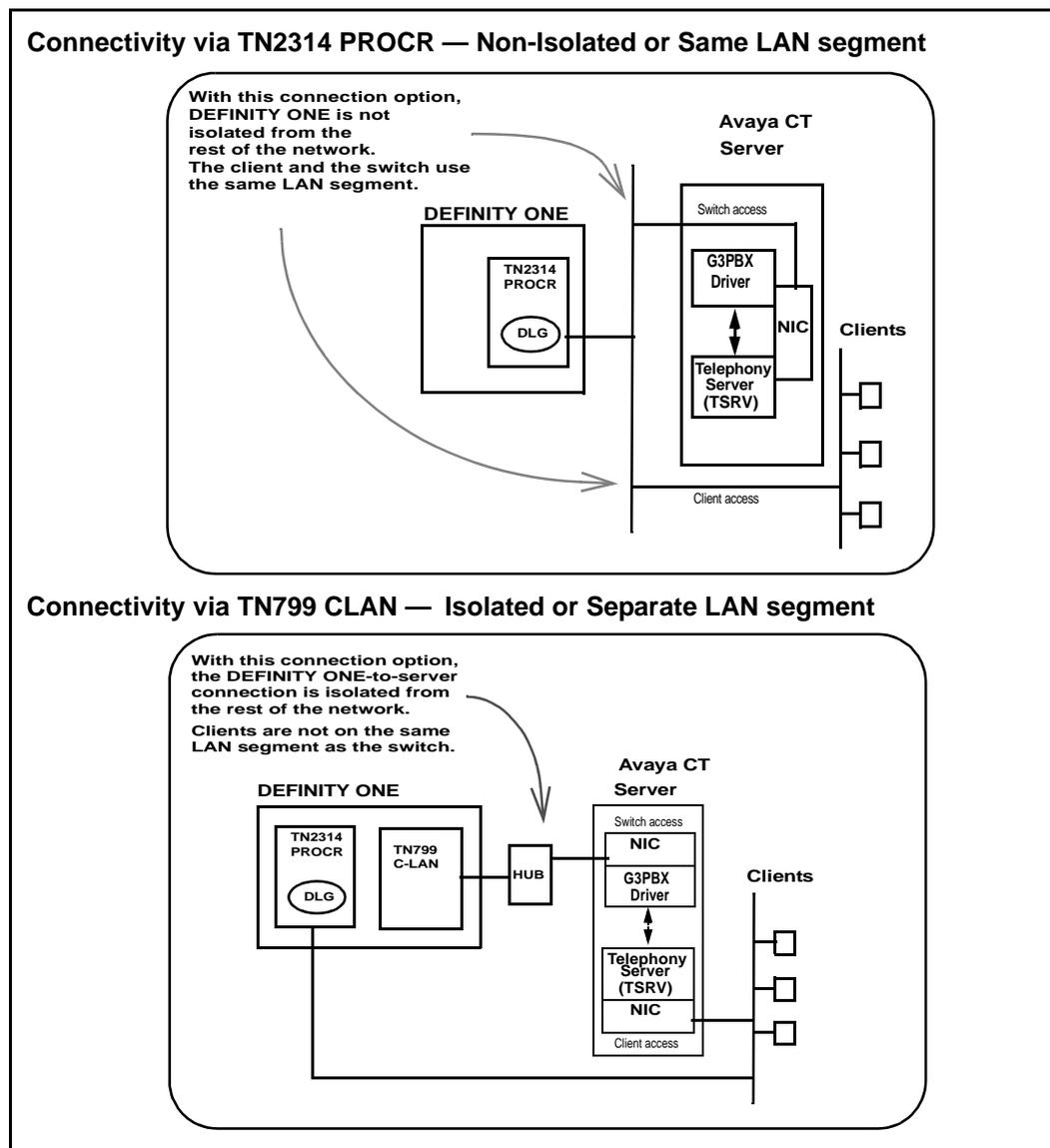
Figure 1-3: DEFINITY ECS/DEFINITY Server CSI Security Guidelines



Security — DEFINITY ONE/IP600 and Avaya MultiVantage S8100 Configurations

Figure 1-4 depicts two optional connection methods, a non-isolated link on the same LAN segment and an isolated, secure link on a separate LAN segment. Be sure to review Figure 1-4 and note the security issues and toll fraud implications. Use a separate, secure link connecting to DEFINITY ONE/IP600 or S8100 Media Server configuration.

Figure 1-4: Connectivity Options



Implementing a Firewall Strategy

Avaya Computer Telephony supports a variety of configuration methods and addressing techniques that are used in a firewall environment. The documentation presents the information in terms of where you are setting up your firewall.

- If you are setting up a firewall between the Avaya Computer Telephony client and the Avaya Computer Telephony Server (Tserver), see Chapter 6 of the *Telephony Services Administration and Maintenance Guide* (NETMANGD.PDF).
- If you are setting up a firewall between the G3PBX driver (located on the Avaya Computer Telephony Server) and the switch, see Chapter 2 of the *G3PBX Driver and CVLAN Administration and Maintenance Guide* (DEFNETM.PDF).

Note:

While Avaya Computer Telephony can support a firewall on either side of the Tserver, it is recommended that the firewall be placed between the Tserver and the client rather than the Tserver and the switch.

Private Data and Client Applications

Private Data allows Avaya Computer Telephony to take advantage of DEFINITY features. A complete description of private data is beyond the scope of this document, but a simple overview will help you understand how it affects your applications. At a conceptual level the main points are as follows.

- *Private data* is a switch-specific software implementation that provides value added services. Your applications can take advantage of the private data services that are included in the Telephony Services API.
- An application that is based on “Private Data Version 5,” for example, can run on a switch that is running “Private Data Version 6,” but the application is restricted to the capabilities of Private Data Version 5. In this sense, private data version control is transparent, or backward compatible.
- If you want your Private Data Version 5 based applications to take advantage of Private Data Version 6 capabilities, you must upgrade all the services your application uses to Private Data Version 6.

For more information about private data services, see *Avaya Computer Telephony, Telephony Services Application Programming Interface (TSAPI) for Avaya MultiVantage* (DEFPROG.PDF). Table 1-1 summarizes application client platforms and private data version compatibility.

Table 1-1: Avaya Computer Telephony Client Platforms - Private Data Version Compatibility

Win32®	Windows 95	All versions
	Windows 98	
	Windows NT 3.5.1 workstation or server	
	Windows NT 4.0 workstation or server Windows 2000 Professional or Server Windows XP	
Solaris Sparc	Solaris Sparc	All versions
UnixWare	UnixWare 1.x, UnixWare 2.0x, UnixWare 7	All versions
HP-UX	HP-UX Version 10	V5 and earlier
Java (JTAPI)	Java VM ¹	All versions
	Netscape Navigator® 3.x + or Internet Explorer™ 4.x +	

1. Any Java Virtual Machine (VM) compatible with the Sun Microsystems Java specification, Version 1.02 or later.



Chapter 2: Administering the Switch

This chapter describes DEFINITY-based tasks that must be performed to implement communications between the DEFINITY switch and the Avaya Computer Telephony server.

This chapter contains the following sections:

- [Scope of this Chapter](#) on page 37
- [Hardware and Software Components](#) on page 38
- [Using the Information in this Chapter](#) on page 39
- [Activating Software Features — RFA and License Files](#) on page 40
- [License Files](#) on page 40
- [License File and Optional Features Forms](#) on page 40
- [Administrative Tasks for Avaya Platforms That Use the MAPD](#) on page 41
- [Administrative Tasks for Avaya Platforms That Use the Co-Resident DLG](#) on page 53

Scope of this Chapter

Refer to Figure 2-1 as you read this section. The scope of this chapter includes activities associated with setting up the DEFINITY switch, administering the communications interface to the Avaya Computer Telephony server, and establishing a link. The next sections describes the components that are affected.

Hardware and Software Components

The hardware and software components relevant in this chapter are described in this list.

- **Avaya MultiVantage™** software — the call processing software that resides on all Avaya call processing configurations. From the viewpoint of product names, it is part of the name of each call processing platform.
- **The *DEFINITY Server, the Media Server, or the Media Gateway*** (such as DEFINITY Server CSI, DEFINITY Server SI, and DEFINITY Server R, Avaya S8100 Media Server configurations, Avaya S8300 with Avaya Media Gateway, and Avaya MultiVantage S8700 Media Server configurations)
- ***DEFINITY LAN Gateway*** (DLG), software which can reside on the Multi-Application Platform for DEFINITY (MAPD) or can be Co-Resident with call MultiVantage Processor Card. The following list describes the platforms that rely on the MAPD DLG and the platforms that rely on the Co-Resident DLG.
- Platforms that use the TN800 series MAPD
- DEFINITY Servers (CSI, SI, and R), and Avaya MultiVantage S8700 Media Server configurations.
- Platforms that use the Co-Resident DLG (the DLG software co-resides with MultiVantage call processing on the processor card.
 - Avaya S8100 Media Server configurations (formerly DEFINITY ONE and IP 600)
 - Avaya S8300 Media Gateway with G700 Media Server (with an Internal Call Controller)

Note:

In some configurations, the TN2314 card (with Co-Resident DLG) relies on the TN799 Control LAN (C-LAN) card for LAN isolation.

Using the Information in this Chapter

This chapter makes two basic assumptions — that you have a DEFINITY switch, with the DEFINITY LAN Gateway (DLG) system already installed, and that you have a TCP/IP based LAN that is capable of isolating your server-based functions from your client-based functions.

The type of DEFINITY switch you have determines how you use this chapter.

- If you use a DEFINITY Server (CSI, SI or R) or an Avaya MultiVantage S8700 Media Server configuration, complete the tasks described in “Administrative Tasks for Avaya Platforms That Use the MAPD” on page -41.
- If you use an Avaya MultiVantage S8100 Server (formerly DEFINITY ONE/IP600) or an Avaya MultiVantage S8300 Media Server with a G700 Media Gateway, complete the tasks described in “CTI Link Administration on Configurations with Processor Connectivity” on page -54
- If you use an Avaya S8100 Media Server (DEFINITY ONE/IP600) configuration with a processor and C-LAN, see “CTI Link Administration on Configurations with CLAN Connectivity” on page -56

Activating Software Features — RFA and License Files

With Release 10, Avaya implemented a new approach to activating software features. This new approach relies on the Remote Feature Activation (RFA) process and the creation of a License file. All activities associated with RFA and the generation of license files are carried out by Avaya support. To change software features, you will need to contact your Account Executive and have a new license file generated via the RFA process.

License Files

All DEFINITY R10, and subsequent MultiVantage systems require a valid license to operate as a switch. The License File controls following switch settings:

- software release
- offer category
- features
- capacities

Without a license file, the switch does not provide normal call processing.

License File and Optional Features Forms

Because the license file determines features and capabilities, the ASAI Optional features that appear on the OPTIONAL FEATURES form are pre-set, or inherited from the license file, and switch administrators cannot change them.

For example, if you type `display system parameters` and go to the page that lists optional features for ASAI (typically page 2) you would see the settings that were effected by the license file.

If your form lists `ASAI Link Plus Capabilities? n`, it means that your system has not been set up with ASAI Link Plus Capabilities. You can not change the "n" to a "y" on this form. To do so you would have to contact your AE and make arrangements to have the change implemented through RFA.

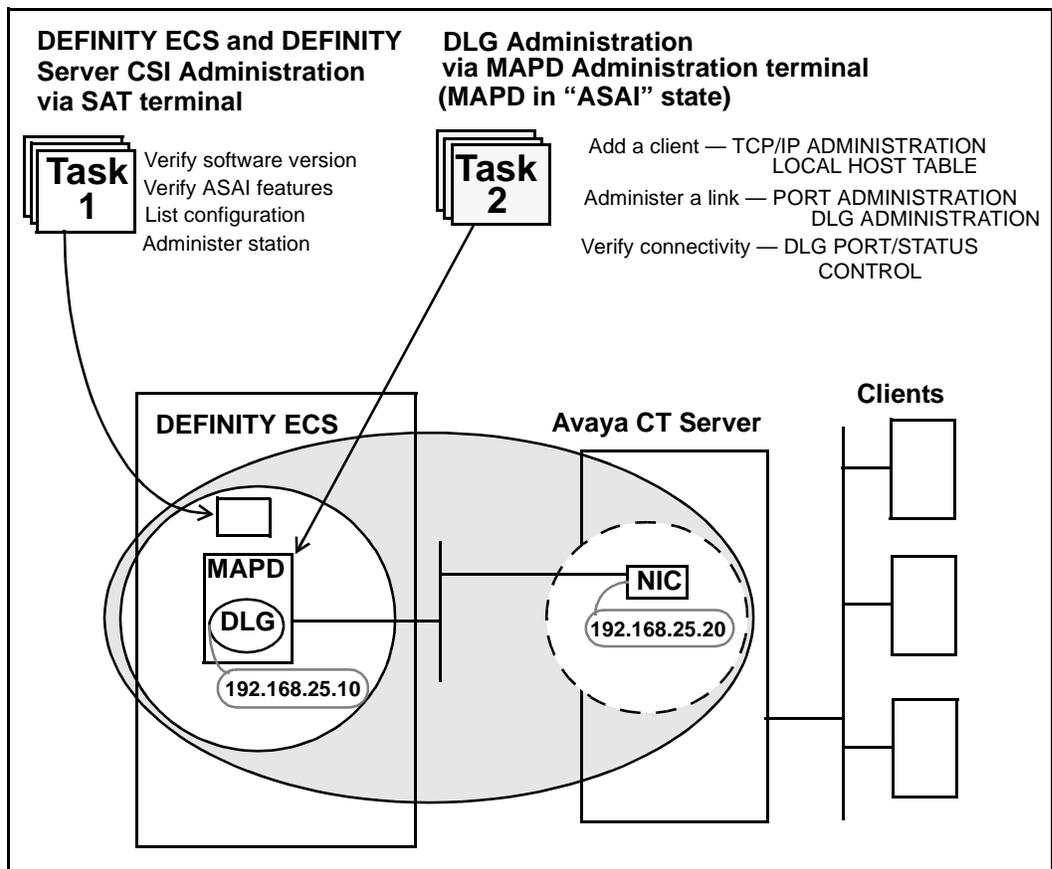
Administrative Tasks for Avaya Platforms That Use the MAPD

This section describes administrative tasks you must complete before you can install Avaya Computer Telephony in a configuration that uses a MAPD, such as DEFINITY Servers (CSI, SI, and R), Avaya MultiVantage S8700 Media Server for Multi-Connect Configurations, and Avaya MultiVantage S8700 Media Server for IP-Connect Configurations.

- Task 1: Administration on a DEFINITY System Administration Terminal (SAT)
- Task 2: MAPD and DLG Administration via a MAPD Administration Terminal

Once you complete these tasks, proceed with [Chapter 3: Installing Avaya Computer Telephony Server Software](#).

Figure 2-1: DEFINITY Server and MAPD/DLG Administration at a Glance



Setting Up Your LAN for Avaya Computer Telephony

This section applies to the following platforms, which rely on the MAPD-based DLG and rely on a Telephony Server with two Network Interface Cards (NICs). If you are configuring Avaya Computer Telephony in a NAT or a firewall environment, see [Implementing a Firewall Strategy](#) on page 34.

- DEFINITY Servers CSI, SI, and R
- Avaya MultiVantage S8700 Media Server for Multi-Connect Configurations
- Avaya MultiVantage S8700 Media Server for IP-Connect Configurations

Before you administer the DEFINITY switch (including the DLG), make sure that you have determined how your LAN is set up.

Server LAN Segment (connectivity to the switch)

Server LAN segment functions are in the DLG administrative domain. For server-to-switch functions follow these guidelines.

- The DLG must be connected to the LAN that the Avaya Computer Telephony server uses (the Avaya Computer Telephony server communicates with the switch via the DEFINITY G3 PBX Driver).
- The DLG should be on its own separate LAN segment. To effect this, you will need two Network Interface Cards (NICs) in the Avaya Computer Telephony Server, one for client access and one for the connection between the DLG and the DEFINITY G3 PBX Driver.

IP Addresses

It is strongly recommended that you use at least two IP addresses.

- IP address for the DLG

Make certain that you have the IP address or the DLG or its host name (if host names are used instead of IP addresses). See the DEFINITY switch administrator.

If you are using a separate LAN for your DLG (recommended) and all links go to a single switch, then you can use the default IP address, which is 192.168.25.10.

- IP Address for the DEFINITY G3 PBX Driver

Verify that you have a local IP address for the DEFINITY G3 PBX Driver on your Telephony Server. You will need this IP address for installing the DEFINITY G3 PBX Driver. You may obtain this address from the network administrator or you may use the default address provided in the installation program (192.168.25.20) if you have a private LAN (as recommended) between the Telephony Server and the DEFINITY ECS switch. This local IP address should be different from the IP address used for the Avaya Computer Telephony server, as recommended.

Client LAN Segment

See [Chapter 4: Installing Avaya Computer Telephony TSAPI Client Software](#) for more information about client-based Avaya Computer Telephony requirements.

Guidelines for Setting Up a Private LAN

Follow these guidelines for implementing a private LAN for Avaya Computer Telephony.

Use IP addresses within the following ranges:

- 10.0.0.0 — 10.255.255.255
- 172.16.0.0 — 172.31.255.255
- 192.168.0.0 — 192.168.255.255

If You Intend to Use Host Names

You have the option of using host names, instead of IP addresses, when administering the DEFINITY LAN Gateway and the DEFINITY G3 PBX Driver. If you use host names instead of IP addresses, each entry in the HOSTS file provides information about one host on the IP network. The DEFINITY LAN Gateway link connection is considered a host.

Note:

The DLG has a default set of administered parameters that correspond to the defaults provided in the Avaya Computer Telephony DEFINITY G3 PBX Driver installation. If you implement private addressing you will have to change these settings on the G3PBX Driver Configuration Dialog Box (see [Chapter 3: Installing Avaya Computer Telephony Server Software](#) .)

Task 1: Administering a Link

This section applies to the following platforms, which rely on the MAPD-based DLG.

- DEFINITY Servers CSI, SI, and R
- Avaya MultiVantage S8700 Media Server for Multi-Connect Configurations
- Avaya MultiVantage S8700 Media Server for IP-Connect Configurations

The objective of Task 1 is administering a link. From the DEFINITY SAT, follow these steps to complete Task 1.

Note:

Whenever you use the **change** form of a DEFINITY SAT command, you must log out for the changes to take effect.

1. Log in to the DEFINITY switch.
2. Type `display system-parameters customer-options`

The OPTIONAL FEATURES screen appears.

```
OPTIONAL FEATURES

Abbreviated Dialing Enhanced List? y      Audible Message Waiting? y
Access Security Gateway (ASG)? y          Authorization Codes? n
Analog Trunk Incoming Call ID? y          CAS Branch? n
A/D Grp/Sys List Dialing Start at 01? n   CAS Main? n
Answer Supervision by Call Classifier? n   Change COR by FAC? n
ARS? y Computer Telephony Adjunct Links? y
ARS/AAR Partitioning? y                   Co-Res DEFINITY LAN Gateway? y
ARS/AAR Dialing without FAC? y           Cvg OF Calls Redirected Off-net? n
ASAI Link Core Capabilities? n           DCS (Basic)? y
ASAI Link Plus Capabilities? n           DCS Call Coverage? y
Async. Transfer Mode (ATM) PNC? n        DCS with Rerouting? y
Async. Transfer Mode (ATM) Trunking? n    Digital Loss Plan Modification? n
ATM WAN Spare Processor? n               DS1 HSP? n
ATMS? n                                   DS1 Echo Cancellation? y
Attendant Vectoring? n
```

3. Check `Computer Telephony Adjunct Links?` and make sure it is set to `y`, (page 2 of the OPTIONAL FEATURES screen in the example above). This setting indicates that DEFINITY is capable of communicating with an adjunct.

Note:

If this field is not set to "y" then contact your Avaya Account Representative.

4. Type **list configuration software-versions**

The SOFTWARE VERSIONS screen appears.

```
list configuration software-versions

                SOFTWARE VERSIONS
                SPE_A                SPE_B

SOFTWARE VERSION
Memory Resident: G3V8c.00.0.507.0
```

5. Check the SOFTWARE VERSION to verify that the correct DEFINITY software version is running on the switch. The following versions are appropriate: G3V4, or later.

Note:

G3V4 requires a field maintenance release.

6. Type **list config all** to determine what ports are available on the MAPD for adding a station.

The SYSTEM CONFIGURATION screen appears.

Under Assigned Ports, each u represents an available or *unassigned* port.

```
list configuration all
Page 1

-----
                SYSTEM CONFIGURATION

Board
Number      Board Type      Code      Vintage      Assigned Ports
1A01      EXPANSION INTF      TN776      000001
1A02      EXPANSION INTF      TN776      000001
1A03
1A04      RESERVED LGATE      TN801      MAPD          u u u u u u u u
1A05      RESERVED LGATE      TN801      MAPD          u u u u u u u u
1A06      MAPD BOARD          TN801      000001        01 u u u u u u u u
                u u u u u u u u
                u u u u u u u u
                u u u u u u u u
```

7. Choose a port associated with the MAPD board to add a station to the DLG (on the MAPD).

8. Type **add cti-link <n>** (where n represents the link number)

The LINK screen appears.

Administering the Switch

9. Follow Steps a through i to add an ASAI-enabled station. Completing the LINK screen administers an adjunct IP link between DEFINITY and a Avaya Computer Telephony server.
 - a. In the `Extension:` type any valid extension on the dial plan (for example, `1008`).
 - b. In the `Type:` field, type `ADJLK`
 - c. In the `Port:` field, type an available port number
 - d. In the `Name:` field, type the name of the Avaya Computer Telephony server
 - e. In the `XID:` field, accept the default (`n`)
 - f. In the `Fixed TEI:` field, type `y`
 - g. In the `MIM Support:` field, accept the default (`n`)
 - h. In the `CRV Length:` field, type `2`
 - i. In the `Event Minimization:` field, accept the default (`n`)

All other fields on the **Link** screen use the default values.

This completes Task 1: DEFINITY Administration. Proceed to [Task 2: DLG Administration](#).

Task 2: DLG Administration

The objective of Task 2 is to establish connectivity between DEFINITY and your Avaya Computer Telephony server, by way of the DLG. Task 2 assumes that the DLG is already installed and administered. For more information see *DEFINITY ECS and CallVisor ASA/ Applications over MAPD (555-230-136)*.

From the MAPD administrative terminal, follow these steps to complete Task 2.

1. Log in to the MAPD system

The Main Menu appears.

Main Menu

```

1. Login/Password Administration
2. TCP/IP Administration...
3. Port Administration...
4. Maintenance...
5. DLG Port Status/Control
6
7
Th

```

If both the DLG and CVLAN applications are on the MAPD this Main Menu appears. 3. Port Administration... is for access to DLG and CVLAN)

Main Menu

```

1. Login/Password Administration
2. TCP/IP Administration...
3. DLG Administration
4. Maintenance...
5. DLG Port Status/Control
6. Exit

```

If only the DLG application is on the MAPD this Main Menu appears. 3. DLG Administration for access to DLG.

This line is used to provide abbreviated help on the currently selected field.

EXIT REFRESH ENTER HELP

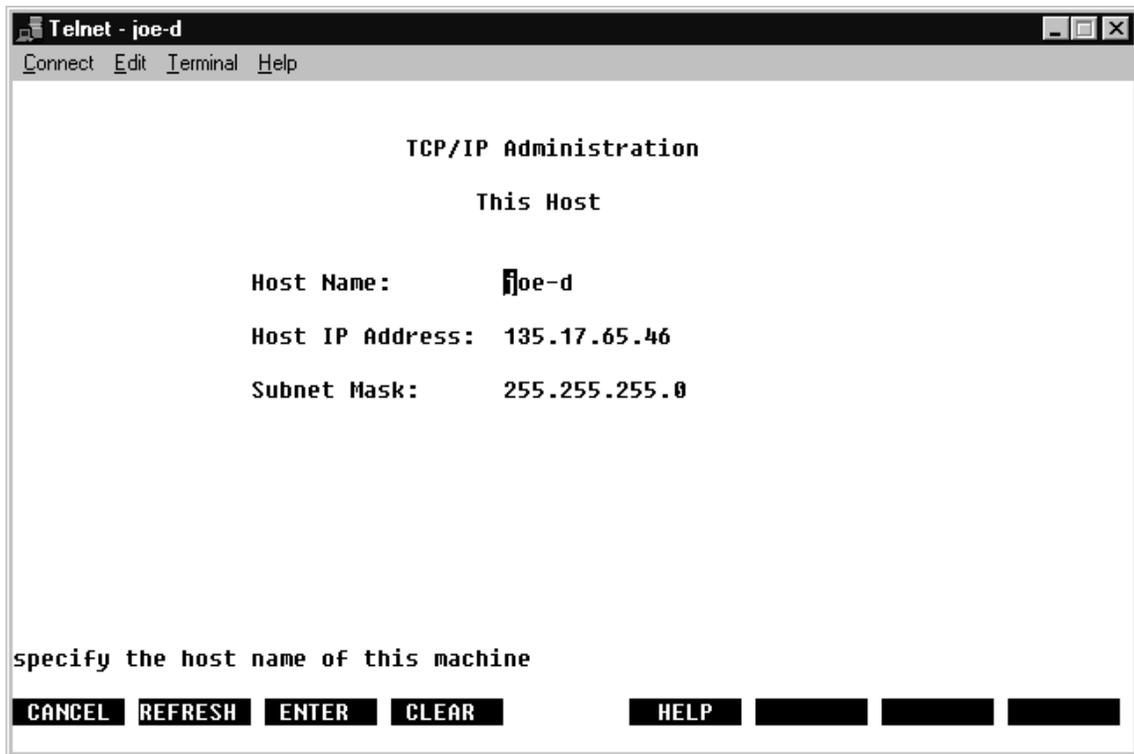
2. From the Main Menu, select 2. **TCP/IP Administration.**

Administering the Switch

3. From the TCP/IP Administration screen select **1. This Host**

The TCP/IP Administration This Host screen appears (This Host refers to the MAPD itself).

4. Verify (or make a note of) the Host Name and IP address of the MAPD.
 - The Host Name is the name that you assign to the MAPD.
 - The Host IP Address is the IP address required when you perform G3 PBX Driver link administration on the Avaya Computer Telephony Server. See [Chapter 3: Installing Avaya Computer Telephony Server Software](#).



5. Once you have noted this information, select **CANCEL** to return to the Main Menu.

6. From the Main Menu, select **2. TCP/IP Administration**.

The TCP/IP Administration screen appears.

TCP/IP Administration

1. This Host
2. Local Host Table
3. Network Routing Information...
4. Exit

This line is used to provide abbreviated help on the currently selected field.

EXIT	REFRESH	ENTER		HELP			
------	---------	-------	--	------	--	--	--

7. From the TCP/IP Administration screen select **2. Local Host Table**, which enables you to view, add, or delete hosts. *The host, in this case, is the Avaya Computer Telephony Server.*

The TCP/IP Administration Local Host Table screen appears.

9. From the Main Menu, select **3. Port Administration...**

The Port Administration screen appears.

Port Administration

1. Application Port Assignment
2. DLG Administration
3. CV/LAN Administration
4. Exit

This line is used to provide abbreviated help on the currently selected field.

EXIT	REFRESH	ENTER		HELP			
------	---------	-------	--	------	--	--	--

10. From the Port Administration screen, select **2. DLG Administration**

The DLG Administration screen appears.

11. Follow steps a through c to complete the DLG Administration screen.

DLG Administration

Port	Client Name or IP Address	Client Link	Client Status
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____

This line is used to provide abbreviated help on the currently selected field.

CANCEL	REFRESH	ADD	DELETE	HELP		UPDATE	
--------	---------	-----	--------	------	--	--------	--

Administering the Switch

- a. In the `Port` field, type the port number of the DEFINITY station administered for the link to the Avaya Computer Telephony server (see Task 1, Step 8a)
 - b. In the `Client Name` or `IP Address` field, type the IP address or name assigned to the G3PBX Driver on the Avaya Computer Telephony server. This `Client Name` or `IP Address` refers to the IP address you used in Step 8b. (The default is 192.168.25.20).
 - c. In the `Client Link` field, type a number from 1 to 8 for the link assigned to the Avaya Computer Telephony server.
12. Return to the Main Menu, and from the Main Menu, select **5. DLG Port/Status Control**.
- The DLG Port/Status Control screen appears.
13. From the DLG Port Status/Control screen follow these steps.

Port	DEFINITY Port State	TCP/IP Connection State	DLG Service State	Messages to DEFINITY	Messages from DEFINITY	Message Period (minutes)
---	-----	-----	-----	---	---	
---	-----	-----	-----	---	---	
---	-----	-----	-----	---	---	
---	-----	-----	-----	---	---	
---	-----	-----	-----	---	---	
---	-----	-----	-----	---	---	
---	-----	-----	-----	---	---	
---	-----	-----	-----	---	---	

This line is used to provide abbreviated help on the currently selected field.

CANCEL	REFRESH		MSGPER	HELP	STATE	UPDATE	DROP
--------	---------	--	--------	------	-------	--------	------

- a. Verify that the port number you administered in Step 11a appears under `Port`.
- b. Verify that `REACHABLE` appears under `TCP/IP Connection State`.

This completes the DLG/MAPD administrative tasks.

Administrative Tasks for Avaya Platforms That Use the Co-Resident DLG

This section applies to the following platforms, which can use the Co-Resident DEFINITY LAN Gateway (DLG).

- DEFINITY ONE/IP 600
- Avaya MultiVantage S8100 Media Server configurations
- Avaya MultiVantage S8300 Media Server with G700 Media Gateway

Because these platforms do not use the MAPD based DLG, there is no MAPD Administration. Based on your configuration, use one of the following procedures to administer a CTI link

- [CTI Link Administration on Configurations with Processor Connectivity](#) on page 54
- [CTI Link Administration on Configurations with CLAN Connectivity](#) on page 56 (NOTE: This procedure is not applicable to the S8300 Media Server configuration).

CTI Link Administration on Configurations with Processor Connectivity

This procedure assumes that you are running the appropriate level of software. Follow these steps from the system access terminal (SAT) to administer a CTI link (Link Type: **ADJ-IP**) in a configuration that supports a Co-Resident DLG, such as DEFINITY ONE/IP600, Avaya S8100 Media Server configurations, or an Avaya S8300 Media Server with G700 Media Gateway.

Note:

Italicized terms in angle brackets denote variables, for example **<123.213.123.111>**. Substitute the appropriate value for your system.

1. Type **list configuration software-versions** and verify that the appropriate level of software is running (R11.00.059 or later)
2. Type **display system-parameters customer-options**, and go to Page 4 of 10¹ of the OPTIONAL FEATURES form.
Verify that the `Processor Ethernet?` option field, is set to `y`.
3. Type **display system-parameters customer-options** and go to Page 2 of 10 of the OPTIONAL FEATURES form.
Verify that the `Co-Res DEFINITY LAN Gateway?` option field, is set to `y`.
4. Type **display system-parameters customer-options** and go to page 2 of 10 of the OPTIONAL FEATURES form.
Verify that `Computer Telephony Adjunct Link` is set to `y`.
5. Type **change ip-interfaces** and go to Page 1 of 6 of the IP INTERFACES form. Follow Steps a through f.
 - a. In the `Enable Eth Pt` option field, type `y`
 - b. In the `Type` option field, type **procr**
 - c. In the `Net Rgn` option field, type **1** or the appropriate Network region
 - d. In the `Node Name` option field, type the Processor's IP address; for example:
<123.213.123.111>
 - e. In the `Subnet Mask` option field, type the Processor's subnet mask, for example:
<255.255.255.0>
 - f. In the `Gateway` option field, type the router's IP address, for example
<123.213.321.110>
6. Type **change node-names**. (You are on Page 1 of 1 on the IP NODE NAMES form.)
 - a. In the `Name` option field, type **<the TServer's Hostname>**

¹ Page numbering is relative on the OPTIONS form. The total page count is affected by the options your system is configured with. For example, if you have ASAI Core but neither ASAI Plus nor Computer Telephony Adjunct Links, your total page count diminishes by one (4 of 9 instead of 4 of 10).

- b. In the IP Address option field, type **<the TServer's IP Address>**
7. type **add cti link <n>** (substitute with the appropriate link number)
 - a. In the Extension field, type **<station extension>**
 - b. In the Type field, type **ADJ-IP**
 - c. In the Name field, type **<name of the TServer>**
8. type **change ip-services**
 - a. In the Service Type field, type **DLG**
 - b. In the Enabled field, type **y**
 - c. In the Local Node field, type **procr**
 - d. In the Local Port field, type **5678**
9. After completing the IP-Services Form (Step 9), continue on to the DLG Administration form.
 - a. In the CTI Link field, type **<n>** (substitute with the appropriate link number)
 - b. In the Enabled field, type **y**
 - c. In the Client Name field, type **<TServer's node name>**
 - d. In the Client Link field, type **<TServer's Link Number>**
10. Type **status dlg cti-link**, and on the DLG CTI LINK STATUS form, verify that the Service State field displays established.

CTI Link Administration on Configurations with CLAN Connectivity

This procedure assumes that you are running the appropriate level of software. Follow these steps from the system access terminal (SAT) to administer a CTI link (Link Type: **ADJ-IP**) in a configuration that supports a Co-Resident DLG.

Note:

This procedure applies only to DEFINITY ONE/IP600 and Avaya S8100 Media Server configurations. It does not apply to S8300 Media Server configurations.

1. Type **list configuration software-versions** and verify that the appropriate level of software is running (R11.00.059 or later)
 2. Type **display system-parameters customer-options**, and go to Page 4 of 10¹ of the OPTIONAL FEATURES form.
Verify that the Processor Ethernet? option field, is set to *y*.
 3. Type **display system-parameters customer-options** and go to Page 2 of 10 of the OPTIONAL FEATURES form.
Verify that the Co-Res DEFINITY LAN Gateway? option field, is set to *y*.
 4. Type **display system-parameters customer-options** and go to page 2 of 10 of the OPTIONAL FEATURES form.
Verify that Computer Telephony Adjunct Link is set to *y*.
 5. Type **change ip-interfaces** and go to Page 1 of 6 of the IP INTERFACES form. Follow Steps a through f.
 - a. In the Enable Eth Pt option field, type *y*
 - b. In the Type option field, type **c-lan**
 - c. In the Net Rgn option field, type **1** or the appropriate Network region
 - d. In the Node Name option field, type the **<C-LAN's Node Name>**
 - e. In the Subnet Mask option field, type the **<C-LAN's Subnet Mask>**
 - f. In the Gateway option field, type the **<Router's IP address>**
 6. Type **change node-names**. (You are on Page 1 of 1 on the IP NODE NAMES form.)
 - a. In the Name option field, type **<the TServer's Hostname>**
 - b. In the IP Address option field, type **<the TServer's IP Address>**
 7. Type **add data-module <nnnn>** (substitute with the appropriate extension number)
 - a. In the Type field, type **ethernet**
- ¹ Page numbering is relative on the OPTIONS form. The total page count is affected by the options your system is configured with. For example, if you have ASAI Core but neither ASAI Plus nor Computer Telephony Adjunct Links, your total page count diminishes by one (4 of 9 instead of 4 of 10).

- b. In the `Port` field, type **<the slot number of the C-LAN Board and add port 17>**
(Example: **01a0317**)
 - c. In the `Link` option field, type **1**
 - d. In the `Name` field, type **<the TServer's Hostname**
8. Type **add cti-link <n>**
 - a. In the `Extension` field, type **<station extension>**
 - b. In the `Type` field, type **ADJ-IP**
 - c. In the `Name` field, type **<name of the TServer>**
9. type **change ip-services**
 - a. In the `Service Type` field, type **DLG**
 - b. In the `Enabled` field, type **y**
 - c. In the `Local Node` field, type **clan**
 - d. In the `Local Port` field, type **5678**
10. After completing the IP-Services Form (Step 9), continue on to the DLG Administration form.
 - a. In the `CTI Link` field, type **<n>** (substitute with the appropriate link number)
 - b. In the `Enabled` field, type **y**
 - c. In the `Client Name` field, type **<TServer's Hostname>**
 - d. In the `Client Link` field, type **<TServer's Link Number>**
11. Type **status dlg cti-link**, and on the DLG CTI LINK STATUS form, verify that the `Service State` field displays established.

■ ■ ■ ■ ■ ■

Chapter 3: Installing Avaya Computer Telephony Server Software

This chapter includes the following sections and focuses on the activities associated with installing the Avaya Computer Telephony Server software components.

- [Planning Your Installation](#) on page 60
- [Guidelines for Upgrading Avaya Computer Telephony](#) on page 64
- [Specialized Installations](#) on page 66
- [Before You Install the Avaya Computer Telephony Server Software](#) on page 67
- [Avaya Computer Telephony Installation Guidelines](#) on page 68
- [Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software](#) on page 70
- [Perform Initial Restart](#) on page 85
- [Basic Maintenance Tasks](#) on page 87

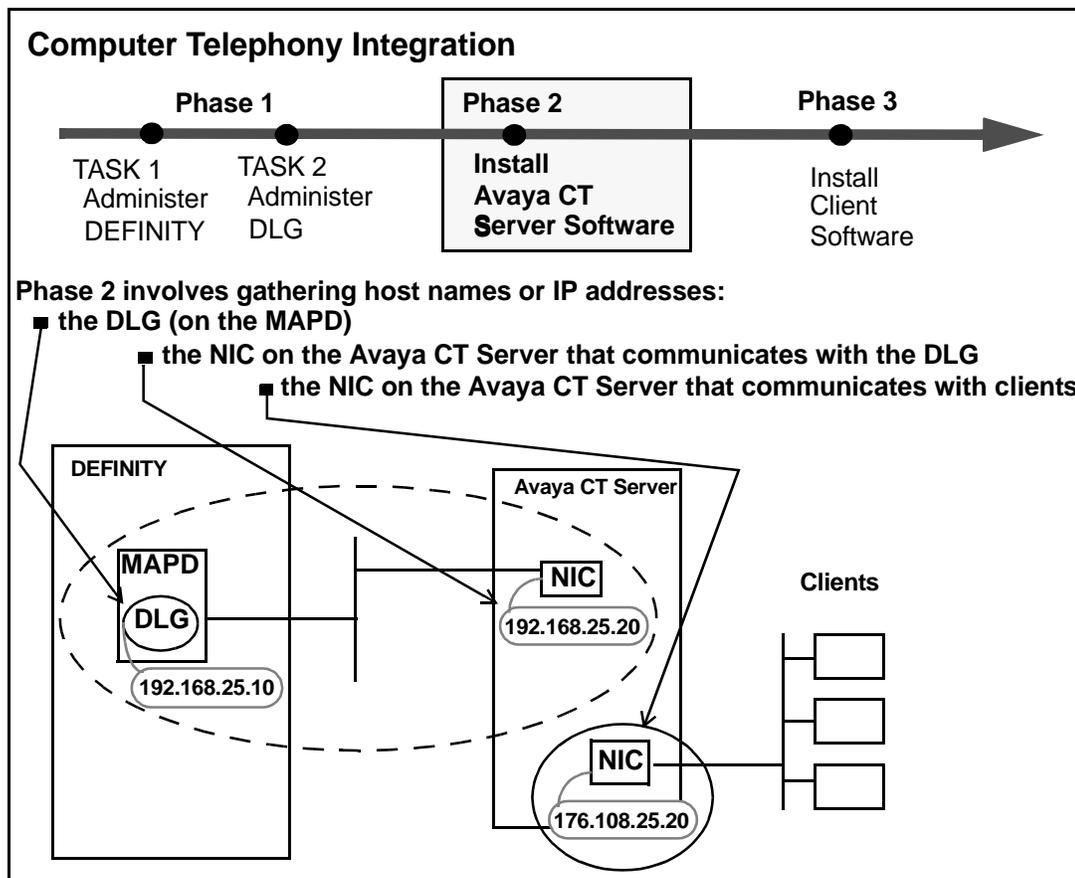
Planning Your Installation

Installing the Avaya Computer Telephony software represents a continuation of the switch-specific activities described in Chapter 2. Planning your installation represents the transition from Phase 1 to Phase 2 (see Figure 3-1). During this stage, the activities are as follows:

- Gather the necessary information
- Determine the requirements of your configuration
 - If you are installing Avaya Computer Telephony in a NAT or a Firewall environment, see [Implementing a Firewall Strategy](#) on page 34
- Determine the type of installation — initial Installation or upgrade
- Make sure your platform can support Avaya Computer Telephony

Each of these activities is described in the next part of this chapter.

Figure 3-1: “CTI — Planning Your Server Installation”



Gather the Necessary Information

The TCP/IP addressing information that is administered during DLG administration is particularly relevant to installing the Telephony Services software (see [Task 2: DLG Administration](#) on page 47). Make sure you have the following addressing information before you start the Avaya Computer Telephony server software installation procedure.

- The IP address of the DLG. The default is 192.168.25.10, but it is highly likely that this has been changed to conform to your network addressing requirements.
- The IP address that the DLG administrator assigned to the Avaya Computer Telephony server. The default is 192.168.25.20. Again, it is highly likely that this IP address has been changed to conform to your network addressing requirements. This IP address refers to the Network Interface Card, on the Avaya Computer Telephony Server, that communicates with the DLG. It is not the IP address of the NIC, on the Avaya Computer Telephony server, that communicates with clients.
- The host name or IP address that was assigned to the Avaya Computer Telephony server.

Determine the Requirements of Your Configuration

Determining the requirements of your configuration involves identifying the Avaya Computer Telephony software components you are going to implement. Basically this comes down to one question: “does this configuration support both the Tserver (Telephony Services Server) and the CVLAN (CallVisor PC Local Area Network) applications?” See [Chapter 5: Using CVLAN](#) for information about CVLAN.

Determine the Type of Installation -- Initial Installation or Upgrade

If you are upgrading an earlier release of Avaya Computer Telephony, see [Guidelines for Upgrading Avaya Computer Telephony](#) on page 64.

Make Sure Your Platform Can Support Avaya Computer Telephony

See [Table 3-1: Server Hardware](#) on page 62 and [Table 3-2: Server Software](#) on page 63 to make sure that you have the appropriate hardware and software.

Avaya Computer Telephony Hardware and Software Requirements

Table 3-1 lists the server hardware requirements for Telephony Services and CVLAN server which is based on Contact Center size (i.e number of Agents).

Table 3-1: Server Hardware

	Low to Low Mid-End Contact Center (10-200 Agents)	Mid-End Contact Center (200-500 Agents)	High-End Contact Center (500-2500 Agents)
CPU	Pentium III 350MHZ or higher	Pentium® III 500MHZ or higher	Pentium® III 700MHZ or higher
RAM	256MB or higher	512MB or higher	512MB or higher
Network Connections	For a standard installation, 2 network interface card(s) are recommended: <ul style="list-style-type: none"> ● one for the G3PD ● one for client access If your configuration uses NAT or a Firewall, see Implementing a Firewall Strategy on page 34	For a standard installation, 2 network interface card(s) are recommended: <ul style="list-style-type: none"> ● one for the G3PD ● one for client access If your configuration uses NAT or a Firewall, see Implementing a Firewall Strategy on page 34	For a standard installation, 2 network interface card(s) are recommended: <ul style="list-style-type: none"> ● one for the G3PD ● one for client access If your configuration uses NAT or a Firewall, see Implementing a Firewall Strategy on page 34
Drives	CD-ROM drive: 3.5-inch floppy drive (for license and authorization disks)	CD-ROM drive: 3.5-inch floppy drive (for license and authorization disks)	CD-ROM drive: 3.5-inch floppy drive (for license and authorization disks)
Disk Space ¹	300MB Hard Drive	300MB Hard Drive	300MB Hard Drive

1. Each disk space requirement is an approximation. The amount of disk space required also depends on other factors such as, the number of users, types of activity performed, and number and/or size of the trace files.

Table 3-2 lists the server software requirements for Telephony Services and CVLAN

Table 3-2: Server Software

Software	Description
Operating System	Any of the following: <ul style="list-style-type: none"> ● Windows NT 4.0 (Server is recommended) ● Windows NT Service Pack 6a or later, available from Microsoft ● Windows 2000 with Service Pack 2 ● Windows XP ● Windows 2003
Network Software	TCP/IP protocol stack

Guidelines for Upgrading Avaya Computer Telephony

Although the installation procedure in this chapter depicts an initial installation, you follow the same basic procedure to upgrade. If you are upgrading, however, be sure to review this section before you upgrade your Avaya Computer Telephony software.

- If you install any Service Packs or if you upgrade Windows NT, Windows 2000, Windows XP software on a machine that already has Telephony Services software installed, you must reinstall all of the Telephony Services software components, including the Telephony Services Security Database (SDB).
- If you are upgrading (or migrating) from a NetWare Telephony Server to a Windows NT, Windows 2000, Windows XP Telephony Server, see [Appendix C: Migrating your Security Database](#).
- Uninstalling the Telephony Server software is not recommended when upgrading from an earlier release unless the new software will be installed in a different directory on the server. (Information about the Telephony Server is stored in the Windows NT, Windows 2000, Windows XP Registry. These registry settings are removed when the software is uninstalled.)
- Stop Telephony Services and the Logging Service before you attempt to install the new software. See [Manually Stopping Telephony Services](#) on page 89.
- Overwrite your previous installation of Avaya Computer Telephony. If the previous installation did not use the default destination folders (C:\Program Files\Avaya\CT) for these components, be sure to specify the destination folders that were used during the initial installation. Steps 7 and 8 provide a Destination Directory dialog box that enables you to browse to, and specify another destination for Avaya Computer Telephony server files.

- Do not re-install the Security Database for Telephony services. If you are upgrading, the checkbox for “Security Database for Telephony Services” is not checked on the Server Setup dialog box (Step 3). Setup detects the previous installation of the Telephony Services Security Database (also referred to as Btrieve).

If you select this checkbox during an upgrade, Setup detects the previous installation of Btrieve and displays a warning box indicating that you have Btrieve Workstation v6.15 installed on this machine. In this case, you can continue with the installation — you do not need to exit.

Other Things to Consider for an Upgrade

You can take advantage of current settings or provisions that were effected in a prior installation.

- ***userIDs/accounts with administrative permissions***

At Step 12, on the Select Tserver Administrator dialog box, you can use the pull-down menu to see a list of all the user IDs/accounts with administrative permissions on the Telephony Server.

- Select the default user ID/account that the Telephony Server should use when it starts. Then click **Next**.

The Telephony Server administrative user ID/account that you choose here becomes the default user ID/account for first time use of administration software tools (i.e., Telephony Services Administrator [TSA32] and Telephony Services Maintenance [TSM32]).

Specialized Installations

The term specialized installations refers to effecting Avaya Computer Telephony installations that do not require all of the Avaya Computer Telephony software components. This section describes two kinds of specialized installations.

- Avaya Computer Telephony without the Telephony Services Security Database

You can elect not to install the Telephony Services Security database if you already have a database that serves your applications' needs. To install Avaya Computer Telephony without the Telephony Services Security Database, make sure that the checkbox for "Telephony Services Security Database" is *unchecked* (at Step 5 of the installation procedure). If you implement an installation of Avaya Computer Telephony without the Telephony Services security database, you do not have access to the Telephony Services Administration capabilities.

- Avaya Computer Telephony without the G3PBX Driver

If you are developing software applications and you do not have access to a DEFINITY switch (and you are using the DEFINITY simulator, for example) be sure that the checkbox for "DEFINITY G3 PBX Driver and CVLAN" is *unchecked* (at Step 4).

Before You Install the Avaya Computer Telephony Server Software

Here are some tips for effecting a smooth, uninterrupted installation.

- **Determine the IP address of the Telephony Server.**

In the Enter Information dialog box (Step 11), the Setup program asks you to specify the IP address of the server. This IP address refers to the NIC that the Tserver uses for communicating with its clients (as opposed to the IP address for the NIC designated for the G3 PBX Driver). To locate this IP address, use this procedure.

Click **Start**, point to **Settings**, click **Control Panel**, double-click **Network**, click **Protocols** (tab), select **TCP/IP Protocol**, and click **Properties**.

- **Know the locations of the installation-specific readme files.**

Readme file notifications are embedded in the installation procedure. To avoid disruption during installation, you can clear the checkboxes for viewing the readme files. Review the readme files after installation.

- Security Database Readme file

From the Windows NT, Windows 2000 or Windows XP desktop, click **Start**, point to **Programs**, click **Btrieve Technologies Database**, and double-click **Btrieve Workstation Engine Readme**

- Tserver Readme file.

From the Windows NT, Windows 2000 or Windows XP desktop, click **Start**, point to **Programs**, **Avaya Computer Telephony**, **TS Readme**

- G3PBX Driver Readme

From the Windows NT, Windows 2000 or Windows XP desktop, click **Start**, point to **Programs**, **Avaya Computer Telephony**, **DEFINITY G3 PBX**, and click **G3PBX Driver Readme**

- **Have license disks (or authorization disks) for Telephony Services and the G3PBX Driver handy.** Setup prompts you for them during the installation procedure.

- **Unless you are an experienced administrator, effect a default installation.**

If you are an experienced administrator and you want to override the defaults, these capabilities are available.

- The Destination Directory dialog boxes allow you to customize your directory settings. Unless you are able to effect a customized installation, accept the defaults.

- The G3PBX Driver Configuration dialog box allows you to carry out administrative tasks.

- You can specify the DEFINITY G3PBX Driver IP address and add links.

- If you are setting up CVLAN, you can click the ADMIN button and add CVLAN clients. See “Adding a CVLAN Client” on page -128 of this document.

Alternatively, you can make G3PD changes after completing the installation procedure. Use either G3 PBX Driver Configuration Utility or the G3 PBX Link Change Utility. See Chapter 2 of the *Avaya Computer Telephony 1.3 G3 PBX Driver and CVLAN Administration and Maintenance Guide (DEFNETM.PDF)*.

Avaya Computer Telephony Installation Guidelines

When installed in an NT Domain, Avaya Computer Telephony should be installed as an Application Member Server. Although Avaya Computer Telephony can be installed on a Domain Controller it is not recommended.

Avaya Computer Telephony should not be installed on a server that performs any of the following functions;

- Print Server
- Web Server
- FTP Server
- Fax Server
- RAS Server
- Router
- Voice/Screen Call Recorder Server
- Intelligent Voice Response Server

Avaya Computer Telephony should not be installed on a server that is running applications that use a Java Virtual Machine (Microsoft, Sun, or IBM).

Avaya Computer Telephony should not be installed on a server that is running Microsoft SQL or any other database.

Avaya Computer Telephony can be Co-Resident with the following Avaya Applications/ Platforms.

- BCMSVu
- Avaya Computer Telephony Internet Solutions
- Avaya Call Service
- Avaya Interaction Center
- Avaya Enterprise Manager
- DEFINITY Anywhere

- Avaya Web Collaboration
- Avaya Messaging
- Avaya Unified Communication Center

Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software

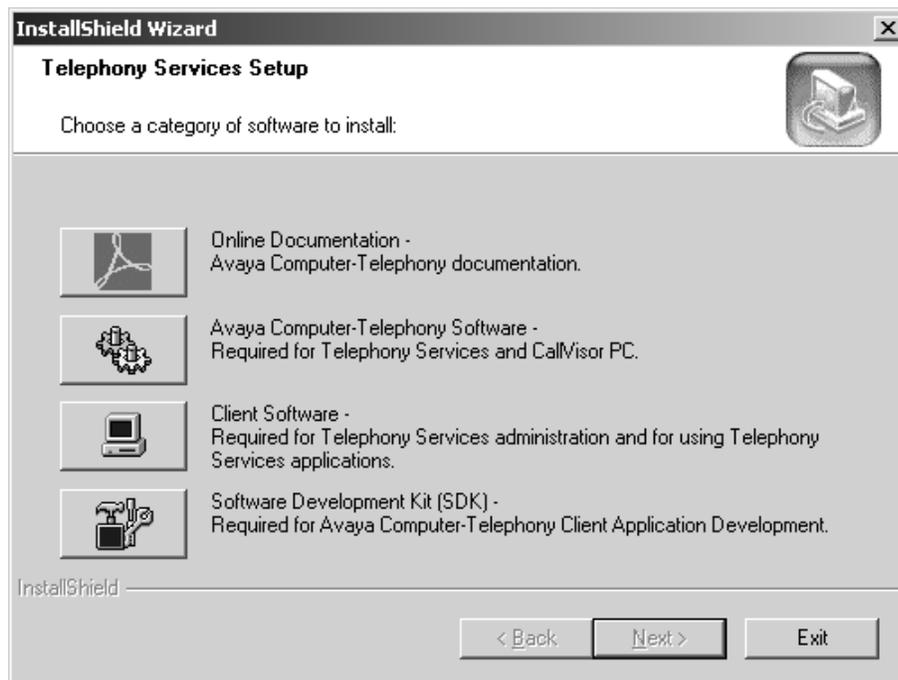
Follow these steps for an initial installation Avaya Computer Telephony Server Software. You can click **Cancel** or **Exit** at any time to exit from the Setup program.

Note:

This procedure depicts the CD-ROM drive ID as **D:**. Substitute **D** with the appropriate letter as necessary.

1. Log on to the Windows NT, Windows 2000 or Windows XP server as a user with administrator-equivalent permissions.
2. Insert the CD into the CD-ROM drive.
(When Windows NT, Windows 2000 or Windows XP is using the Explorer shell, the Setup program runs automatically if you have not disabled the AutoRun feature).
3. (Applies only if AutoRun is disabled) Click **Start**, then click **Run**. In the Run dialog box, enter **D:\WININST\SETUP.EXE** (or Browse to it on the CD) to start the Setup program.

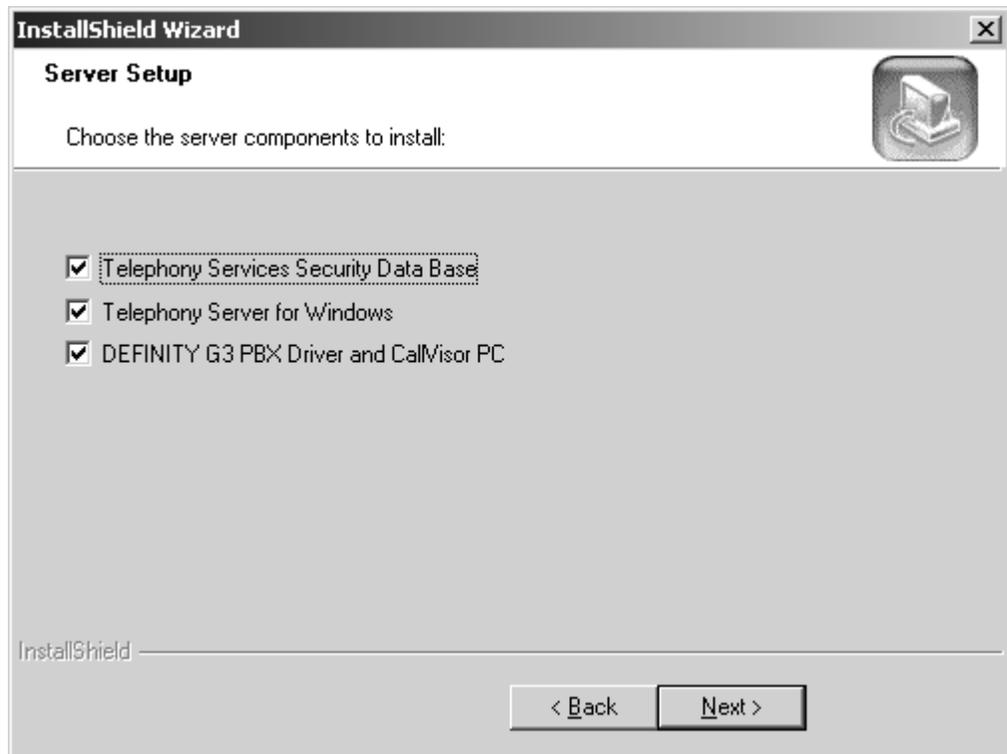
Setup displays the Telephony Services Setup dialog box.



Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software

4. Click the button for **Avaya Computer Telephony Software**.

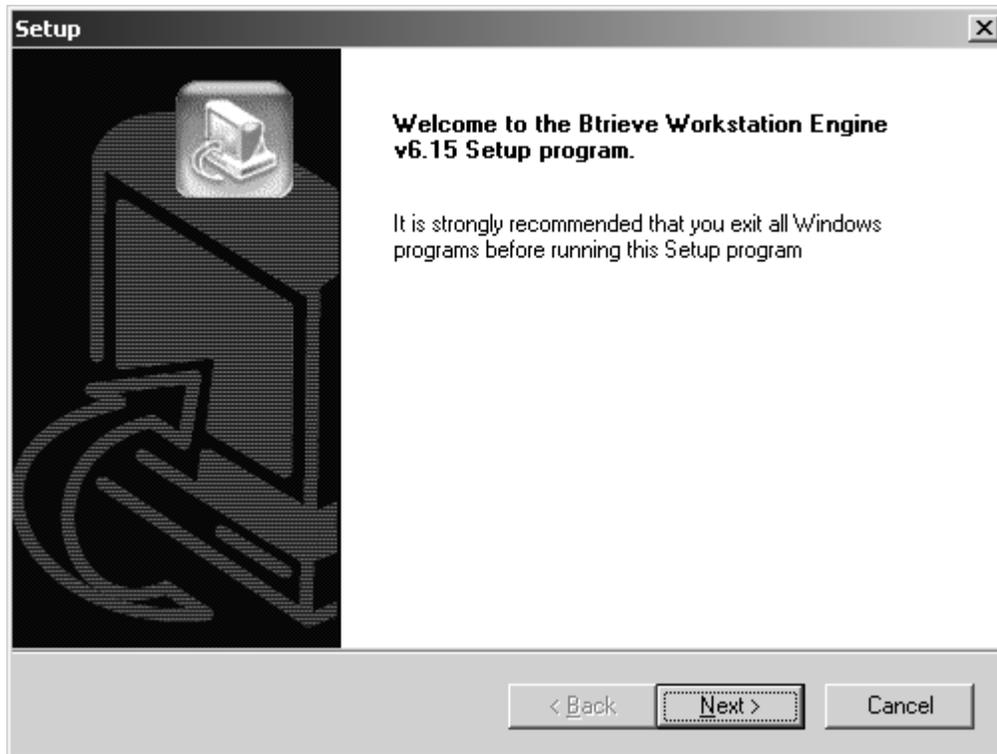
Setup displays the Server Setup dialog box. For an initial installation, all server components are selected by default.



Installing Avaya Computer Telephony Server Software

5. click **Next** to accept the default settings and continue with the installation.

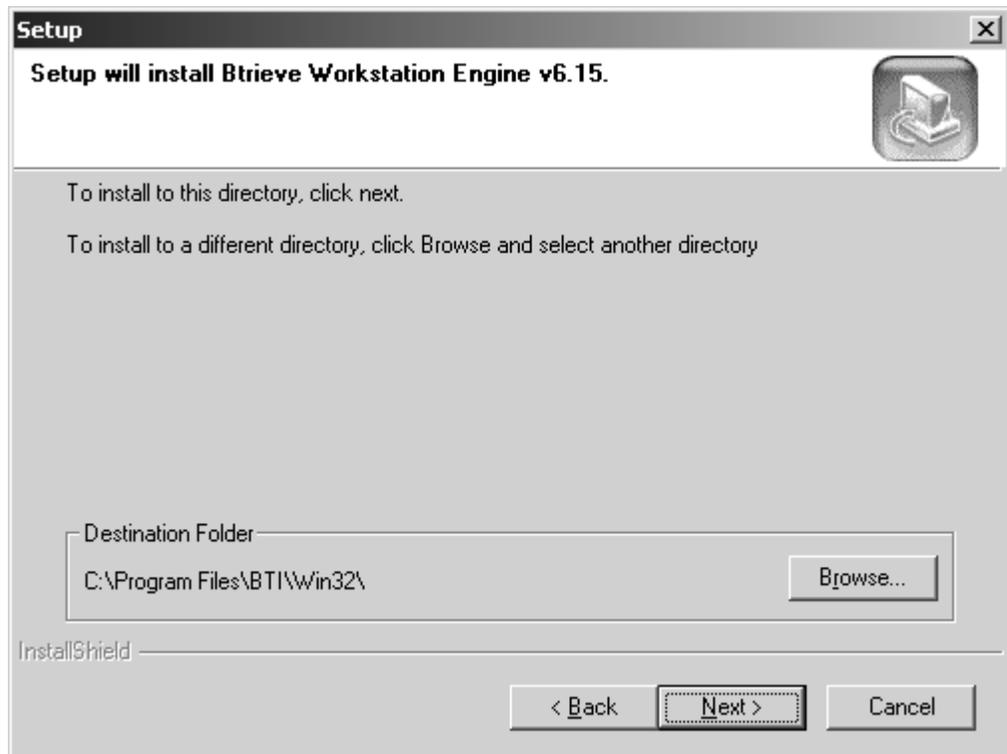
Setup displays the message, "Installation in progress, please wait...", followed by the Welcome dialog box for the Telephony Services Security Database (Btrieve Workstation Engine v6.15).



Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software

6. Click **Next** to continue with the installation.

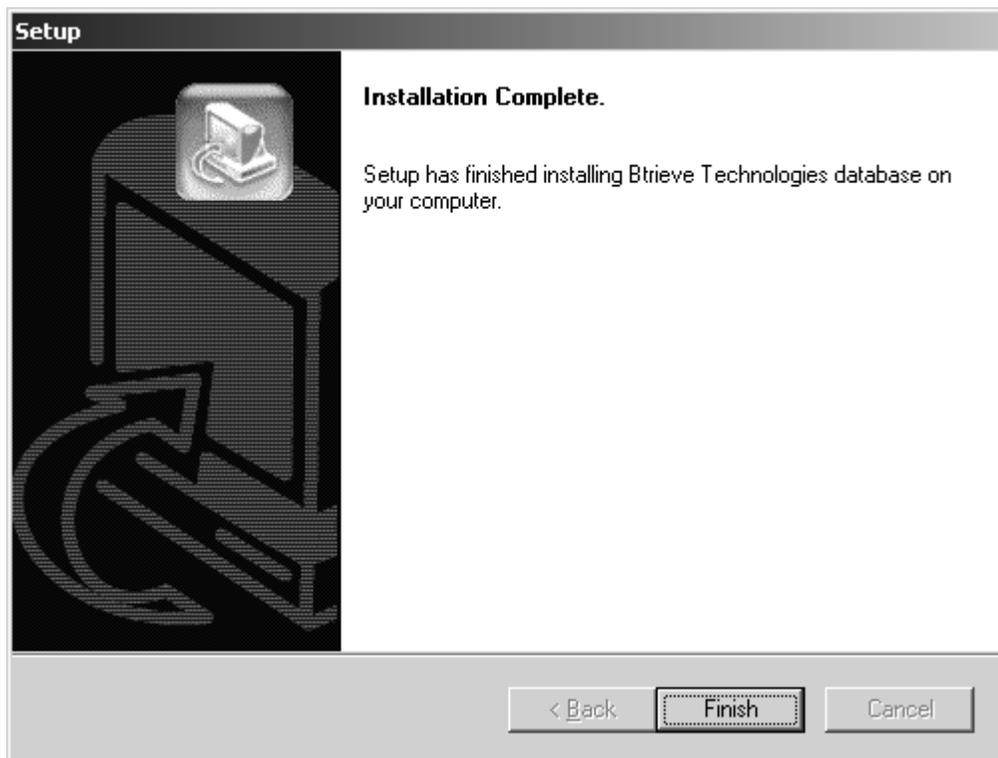
Setup displays a dialog box indicating that Setup will install Btrieve Workstation Engine v6.15 in the default destination folder, C:\Program Files\BTI\Win32\.



7. Click **Next** to accept the default destination folder and continue with the installation.

Installing Avaya Computer Telephony Server Software

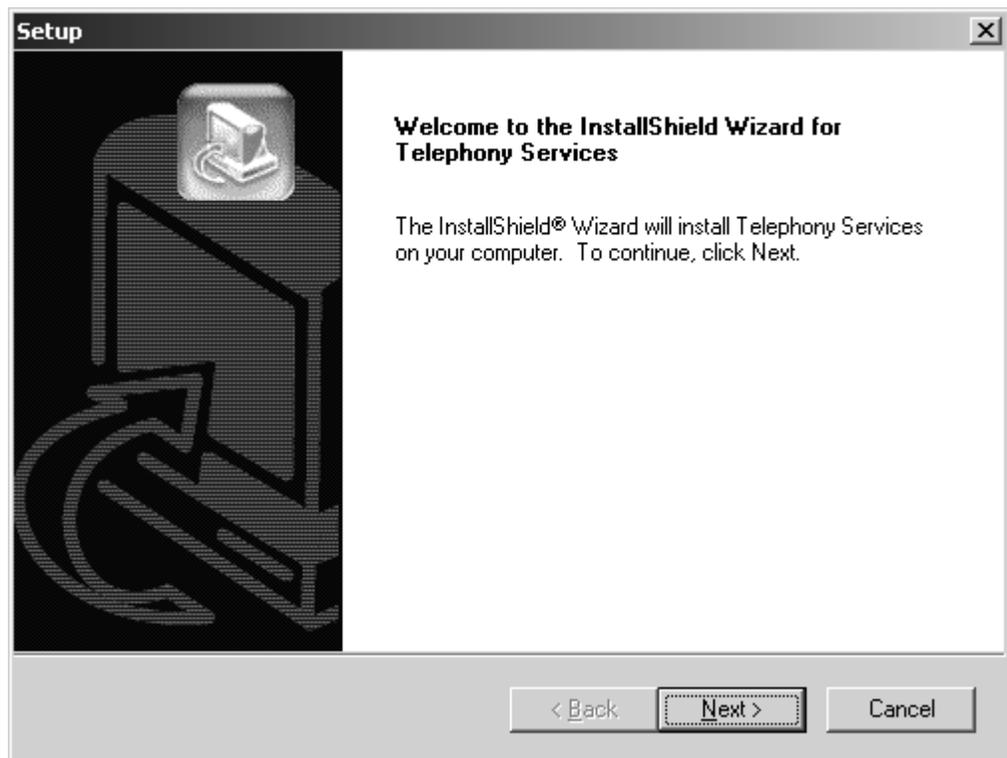
Setup displays the Installation Complete dialog box, indicating that Setup has finished installing Btrieve on your computer.



8. Click **Finish** (you have finished installing Btrieve) and continue with the installation to install Telephony Services on your computer.

Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software

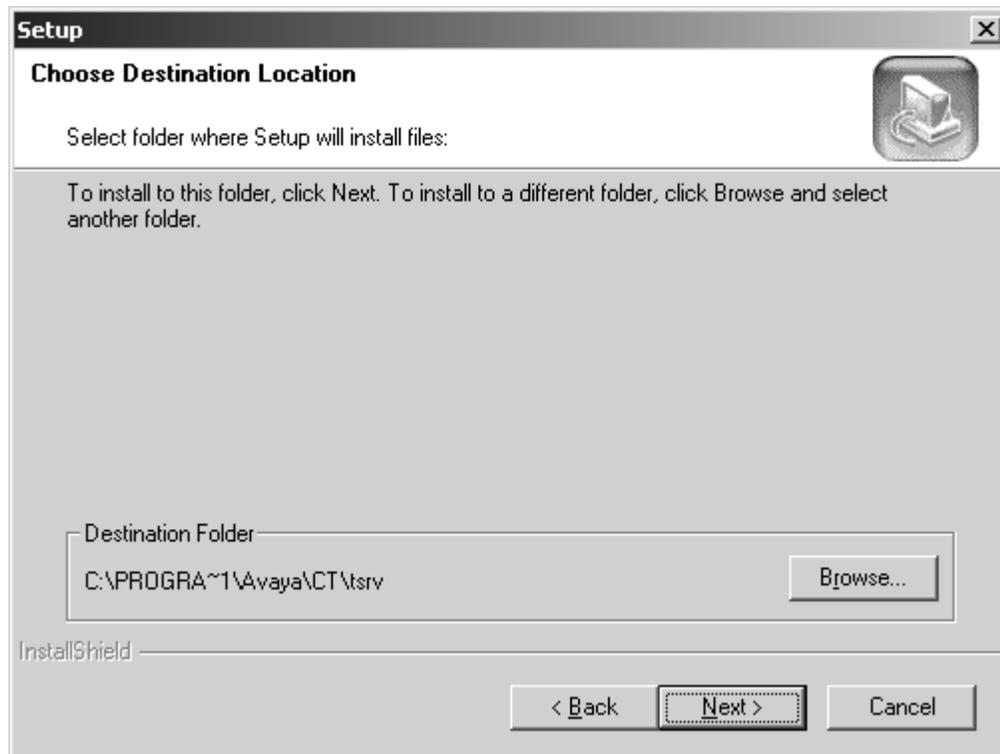
Setup displays the message, "Installation in progress, please wait...", followed by the Welcome dialog box for the Telephony Services Setup program.



9. Click **Next** to continue with the installation.

Installing Avaya Computer Telephony Server Software

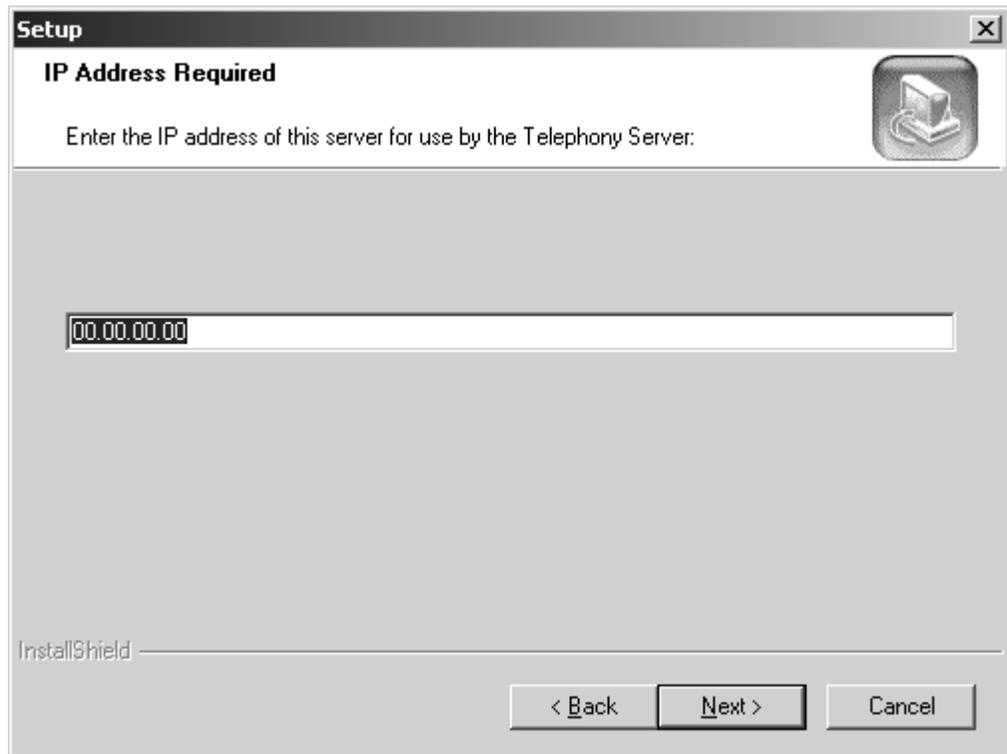
Setup displays the Choose Destination Location dialog box indicating that Setup will install the Telephony Services files in the default destination folder, C:\Program Files\Avaya\CT\tsrv.



10. Click **Next** to accept the default destination folder and continue with the installation.

Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software

Setup displays the IP Address Required dialog box.



11. Enter the IP address for this Telephony Server (which is the IP address of the NIC that the Telephony Server uses for communicating with TSAPI clients), and click **Next**.

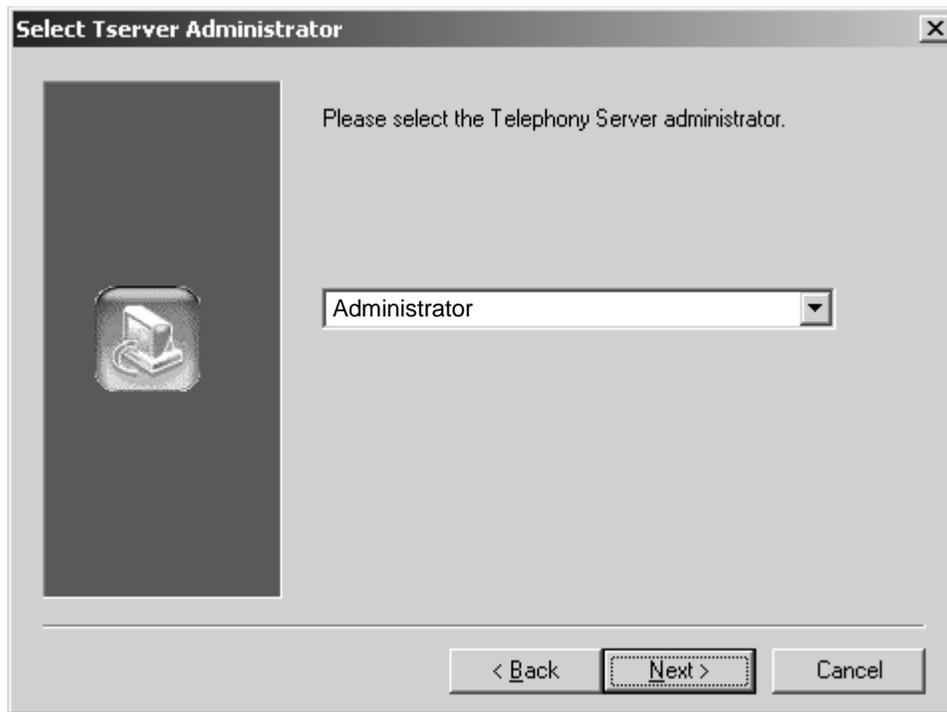
Note:

If you are configuring the Telephony Server in a firewall environment, see one of the following documents, based on the location of your firewall.

- If your firewall is between the client and the Avaya Computer Telephony server, see Chapter 6 of the Telephony Services Administration and Maintenance Guide (NETMANGD.PDF).
- If your firewall is between the Avaya Computer Telephony server and MultiVantage, see Chapter 2 of the G3PBX Driver and CVLAN Administration and Maintenance Guide (DEFNETM.PDF).

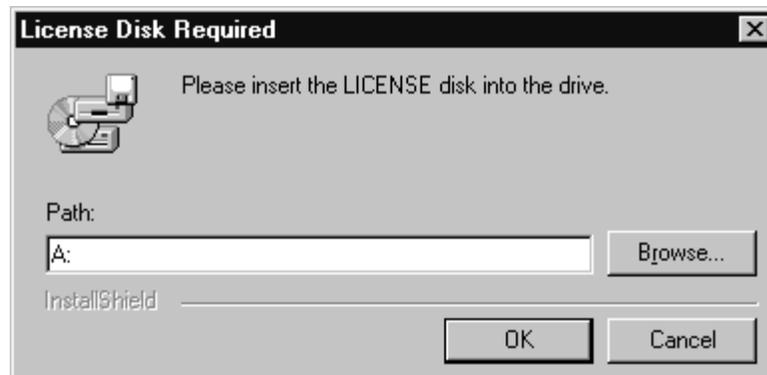
Installing Avaya Computer Telephony Server Software

Setup displays the Select Tserver Administrator dialog box with the list box displaying **Administrator**.



12. Click **Next** to continue with the installation.

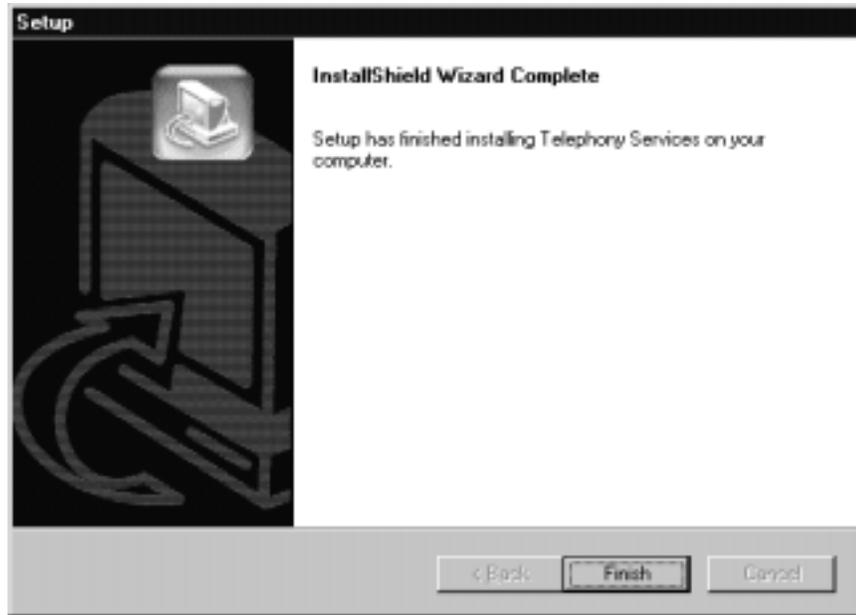
Setup copies the files and installs the Telephony Server software (as Windows NT, Windows 2000 or Windows XP services) and prompts you to insert the license disk.



Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software

13. Insert the disk in the appropriate drive on the server PC, and click **OK**.

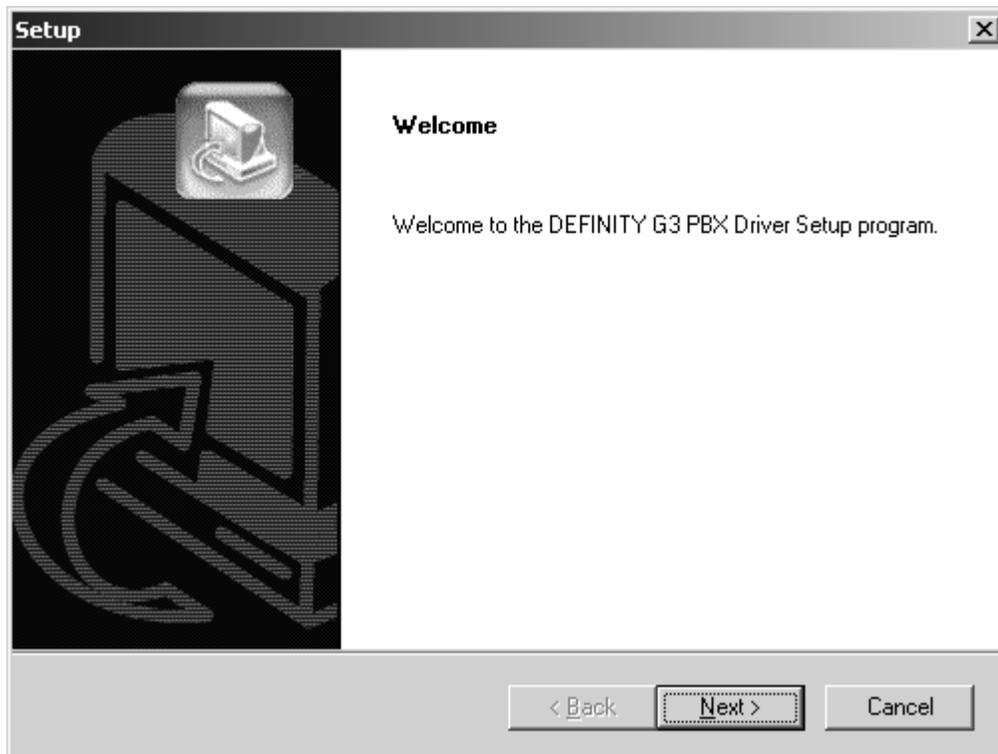
After copying the license file, Setup displays the InstallShield Wizard Complete dialog box, indicating that Setup finished installing Telephony Services on your computer.



14. Click **Finish** (you have finished installing Telephony Services software) and continue with the installation to install the DEFINITY G3PBX Driver on your computer.

Installing Avaya Computer Telephony Server Software

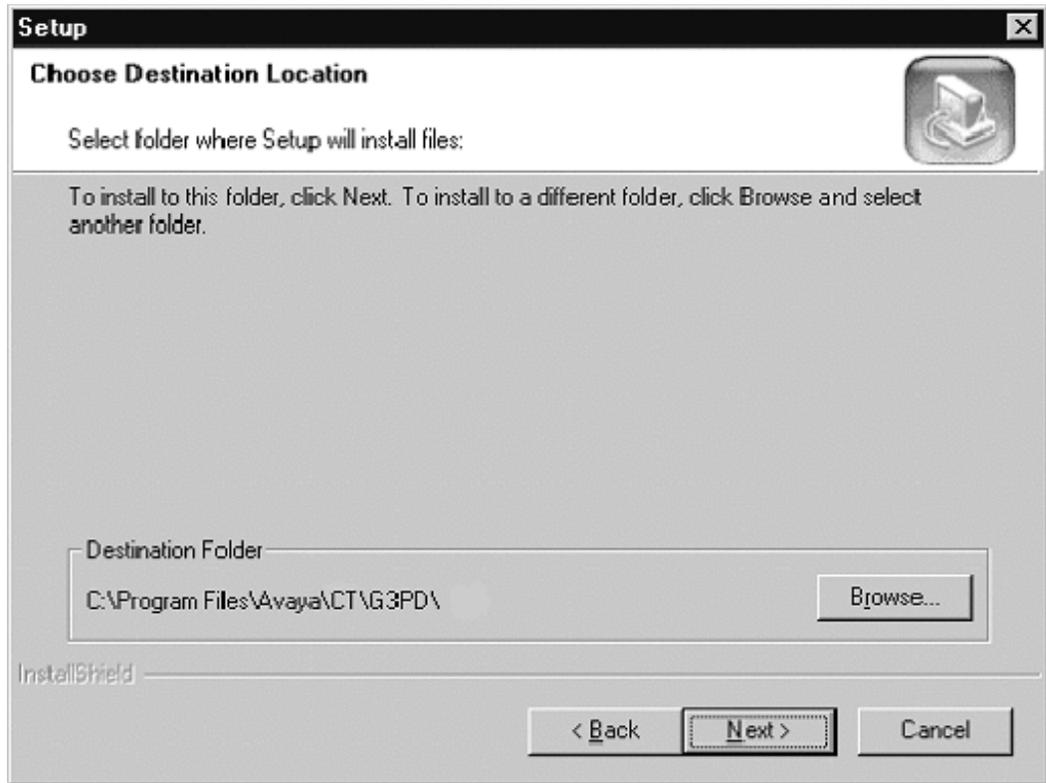
Setup displays the message, "Installation in progress, please wait..." followed by the Welcome dialog box for the DEFINITY G3 PBX Driver Setup. (Setup installs the CVLAN Server during this phase of installation).



15. Click **Next** to continue with the installation.

Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software

Setup displays the Choose Destination Location dialog box indicating that Setup will install the G3PBX Driver in the default location, C:\Program Files\Avaya\CT\G3PD\.



16. click **Next** to accept the default destination folder and continue with the installation.

Installing Avaya Computer Telephony Server Software

Setup displays the DEFINITY G3 PBX Driver Configuration dialog box.

Link	Advertised Switch Name	IP Address or Hostname	CVLAN Clients
1:	AVAYA_ECS	192.168.25.10	Admin
2:			Admin
3:			Admin
4:			Admin
5:			Admin
6:			Admin
7:			Admin
8:			Admin

17. Complete the G3PBX Driver configuration box as follows,

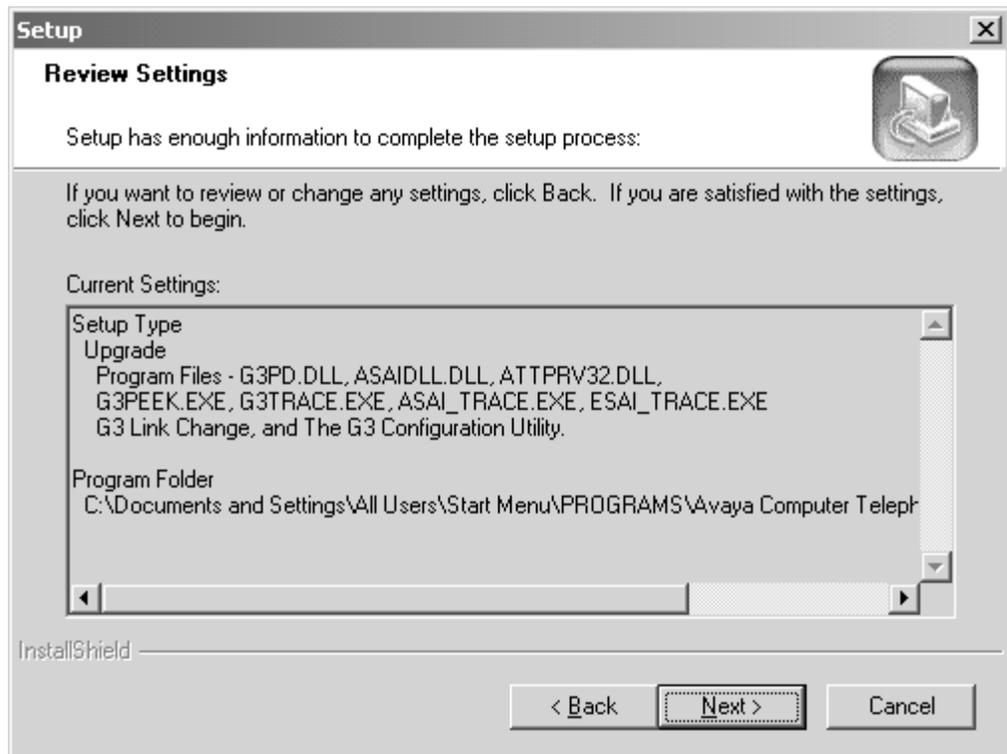
- in the **DEFINITY G3 PBX Driver IP Address** field, enter the IP address of the NIC used for communicating with the switch.
- In the **Advertised Switch Name** field, enter the appropriate name for the switch you are connecting to (the default name is Avaya_ECS).
- in the **IP Address or Host Name** field, enter the appropriate IP address for the switch you are connecting to (this the IP address of the Ethernet interface for the DEFINITY LAN Gateway).

Note:

If you are installing Avaya Computer Telephony in a firewall environment, where the firewall is between MultiVantage and the Avaya Computer Telephony Server, see Chapter 2 of the G3PBX Driver and CVLAN Administration and Maintenance Guide (DEFNETM.PDF).

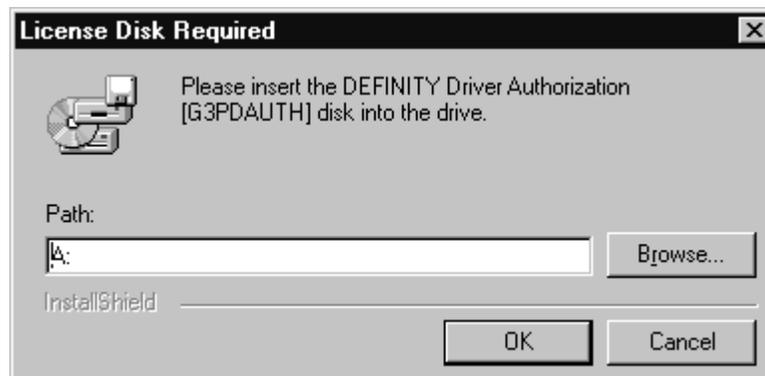
Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software

Setup displays the Review Settings dialog box with the current settings for the installation.



18. Click **Next** to continue with the installation.

Setup displays the License Disk Required dialog box.



Installing Avaya Computer Telephony Server Software

19. Insert the DEFINITY Driver Authorization [G3PDAUTH] disk in the appropriate drive on the server PC, and click **OK**.

After copying the G3PDAUTH file, Setup displays the following Information box, indicating that Setup is complete.



20. Click **OK** to continue with the installation.

Setup displays the InstallShield Wizard Complete dialog box.



21. Click **Finish** to complete the Installation of the Avaya Computer Telephony Server software (This step stops the Setup program).

Note:

Make sure you review each of the readme files associated with the installation. See [Before You Install the Avaya Computer Telephony Server Software](#) on page 67 for locations of the readme files.

Perform Initial Restart

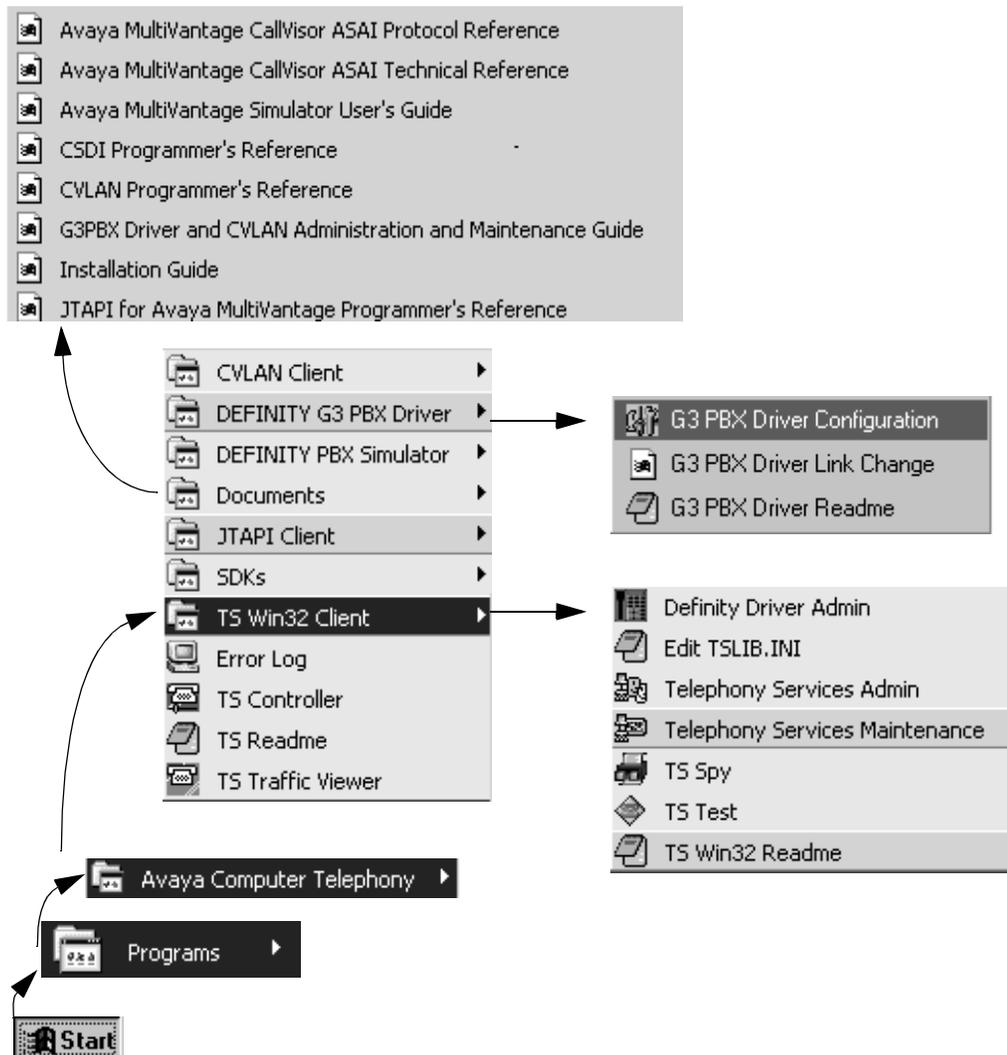
After installing the Avaya Computer Telephony software you do not have to reboot the PC. To start using Avaya Computer Telephony server software follow these steps.

1. Click **Start** point to **Programs, Avaya Computer Telephony**, and click **TS Controller**.
2. From the TS Controller dialog box, click **Start**.

Desktop Components

Figure 3-2 depicts the desktop icons provided by Avaya Computer Telephony software.

Figure 3-2: Avaya Computer Telephony Components on Your Desktop



Basic Maintenance Tasks

This section describes the following basic maintenance tasks for Telephony Services:

- Starting and Stopping the Telephony Services Software
- Manually Stopping Telephony Services
- Removing Software

Starting and Stopping the Telephony Services Software

This section describes the following tasks.

- starting Telephony Services
 - enabling automatic startup and recovery of telephony services
- performing manual start and enabling automatic startup and recovery
- manually stopping Telephony Services

Starting Telephony Services

You have already encountered this procedure in the context of the installation (“Perform Initial Restart” on page -85). Recall that when the Telephony Services server software (the Telephony Server, or Tserver and the CVLAN server) is initially installed, it is in the “STOPPED” state and must be manually started.

Follow these steps to start the Telephony Services server.

1. Click **Start**, point to **Programs, Avaya Computer Telephony**, and click **TS Controller**.



2. Click **Start** to start Telephony Services.

Telephony Services starts the Tserver and the CVLAN server and Information box displays.

3. Click **OK** to dismiss the information box and return to the Telephony Services Controller dialog box.

On the Telephony Services controller dialog box, under “Status,” the Telephony Services state is listed as “RUNNING.”

4. Click **Close** to exit the Telephony Services Controller dialog box.

This completes the procedure to manually start Telephony Services software.

Enabling Automatic Startup and Recovery

This procedure is an extension of the previous procedure, “Starting Telephony Services” on page -88, with steps for enabling automatic Startup and Recovery. You are recommended to effect automatic startup and recovery.

1. Click **Start**, point to **Programs, Avaya Computer Telephony**, and click **TS Controller**.
The Tserver displays the TS Controller dialog box.
2. Under Startup, click the checkbox next to “Automatically Start Telephony Services On Server Boot.”
3. Under Recovery, click the checkbox next to “Automatically Restart Telephony Services.”
4. Click **Close** to exit the Telephony Services Controller dialog box.

This completes the procedure for enabling automatic startup and recovery.

Manually Stopping Telephony Services

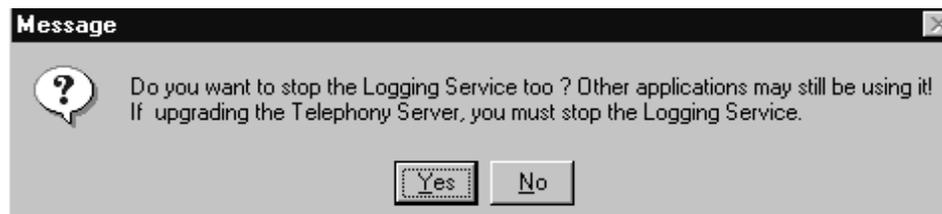
Follow this procedure to manually or explicitly stop Telephony Services and the CVLAN server.

1. Click **Start**, point to **Programs, Avaya Computer Telephony**, and click **TS Controller**.
2. From the Telephony Services Controller dialog box, click **Stop**.

The Telephony Services and CVLAN server are stopped, and an Information box displays.

3. Click **OK**

The operating system displays a message box that prompts you to stop the Logging Service.



4. Click **Yes** to stop the logging service.
5. From the Telephony Services Controller dialog box, click **Close** to exit the Telephony Services Controller.

Removing Software

Use the standard Windows procedure described below to remove the following server components.

- Btrieve Workstation Engine v6.15.
- Telephony Services

Note:

Before you can remove the Telephony Services server software (Tserver and CVLAN server) you must unregister telephony services. Follow the procedure in “Reinstalling Telephony Services Server Software” on page - 90 (which includes the standard Windows procedure for removing Telephony Services).

- DEFINITY G3 PBX Driver

Procedure to Remove Programs

1. From the desktop click **Start**, point to **Settings** and click **Control Panel**.
2. From the Control Panel, click **Add/Remove Programs**.
3. Windows displays the Add/Remove Programs Properties dialog box.
4. Select the appropriate module you wish to uninstall (Avaya Computer Telephony Services, Btrieve, or Avaya Computer Telephony ECS Driver), and click **Add/Remove**.
5. Windows displays the Confirm File Deletion box, asking you to confirm that you want to completely remove the software program and all of its components.
6. Click **Yes**.

The uninstall program removes the software and displays an Information box indicating that the program and all of its components have been removed.
7. Click **OK**.

This completes the procedure to remove a software program.

Reinstalling Telephony Services Server Software

If you need to reinstall the Telephony Services software, it is recommended that you do not uninstall the currently installed Telephony Services software before performing the reinstallation. This is because many of the parameters used by Telephony Services are stored in the Windows NT, Windows 2000 or Windows XP registry. When the software is uninstalled, these parameters are also removed.

Note:

Although Windows NT, Windows 2000 or Windows XP registry information is removed when you uninstall the Telephony Services software, the log files (error log file, message trace file, performance log, traffic log, and SDB log file) are not removed. When the Telephony Server is restarted after reinstallation, new log file information starts at the top of the files. Any information previously contained in the files is overwritten with the new information.

To reinstall the Telephony Service software, follow the steps in Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software.

■ ■ ■ ■ ■ ■

Chapter 4: Installing Avaya Computer Telephony TSAPI Client Software

This chapter describes installation related procedures for Avaya Computer Telephony, Telephony Services Application Programming Interface (TSAPI) clients. It includes the following topics:

- [Avaya Computer Telephony Clients and Private Data Versions](#) on page 94
- [Planning Your Installation](#) on page 94
- [TSAPI Client Hardware and Software Requirements](#) on page 96
- [Before You Install the Avaya Computer Telephony TSAPI Client Software](#) on page 100
- [Installing the Windows Client Software](#) on page 101
- [Installing TSAPI Solaris Sparc Client Software](#) on page 110
- [Installing UnixWare Client Software](#) on page 112
- [Installing HP-UX Client Software](#) on page 116
- [Removing Telephony Services Client Software](#) on page 119

Avaya Computer Telephony Clients and Private Data Versions

In the context of general information about Avaya Computer Telephony, [Chapter 1: Learning About Avaya Computer Telephony](#) provides Table 1-1 on page -35, which associates Avaya Computer Telephony, Client Application platform operating systems with the level of DEFINITY Private Data Versions that they support.

Briefly summarized, Table 1-1 on page -35 states that the Avaya Computer Telephony Windows 32-bit client platform and the Avaya Computer Telephony UnixWare client platform supports all versions of DEFINITY Private Data up to Private Data Version 6.

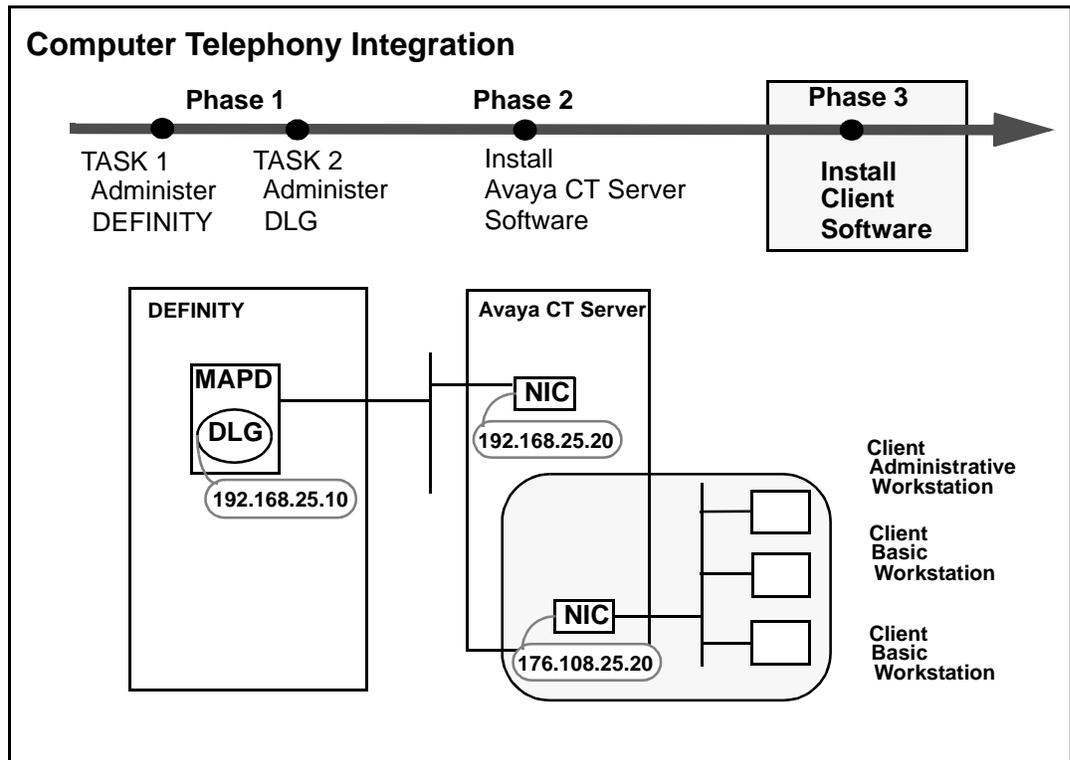
Planning Your Installation

Installing the Avaya Computer Telephony TSAPI client software represents a continuation of the server-specific activities described in Chapter 3. Planning your installation represents the transition from Phase 2 to Phase 3 (see Figure 4-1). During this transitional state, the activities are as follows.

- Make sure that your client workstations can support Avaya Computer Telephony (see “Avaya Computer Telephony Client Hardware and Software Requirements” on page -96)
- Determine if this is an upgrade or an initial installation
- Determine how you intend to distribute the software
 - CD-ROM
 - Network Drive

Each of these activities is described in the next part of this chapter.

Figure 4-1: The CTI Continuum — Planning Your Client Installation



TSAPI Client Hardware and Software Requirements

Tables 4-1 and 4-2 list the TSAPI client hardware and software requirements.

Avaya Computer Telephony Client Hardware and Software Requirements

Table 4-1: Windows-Based Client Hardware and Software Requirements

CPU	486 or Pentium recommended
RAM	Windows 95 8 MB required; 16 MB recommended Windows NT, Windows 2000, Windows XP or Windows 98 16 MB required; 24-32 MB recommended
Free Memory	Installing and running Telephony Services and CVLAN on a Windows client requires 500 KB of free memory.
Disk Space	500 KB of disk space is required, or 1.5 MB if the Telephony Services Administration software is also installed.
Win32 Client Platform Operating Systems (The Win32 client platform operating systems (i.e., Windows 95, Windows 98, Windows NT, Windows 2000, Windows XP)	Win32 clients: Windows 95 Microsoft TCP/IP or equivalent 32-bit Winsock TCP/IP transport provider Windows 98 Microsoft TCP/IP or equivalent 32-bit Winsock TCP/IP transport provider Windows NT Windows NT 3.51 or 4.0 (Workstation or Server); Microsoft TCP/IP or equivalent 32-bit Winsock TCP/IP transport provider Windows 2000 Windows XP

UnixWare Client Hardware and Software Requirements

Table 4-2: UnixWare Client Hardware and Software Requirements

CPU	386 or higher required; 486 or Pentium recommended
RAM	UnixWare Personal Edition 8 MB required UnixWare Application Server 12 MB required
Disk Space	300 KB
Operating Systems	UnixWare 1.x UnixWare 2.0x

HP-UX Client Hardware and Software Requirements

Table 4-3: HP-UX Client Hardware and Software Requirements

CPU	HP 9000 Series 700 or Series 800 machine
RAM	32 Mbytes required
Disk Space	1 Mbyte
Operating System	HP-UX

TSAPI Solaris Client Hardware and Software Requirements

Table 4-4: TSAPI Solaris Client Hardware and Software Requirements

Disk Space	1.2 MB
Processor	SPARC
Operating Systems	Solaris 2.5.1, Solaris 8

Telephony Services Client Software

Telephony Services client software for Windows consists of the following components. (For information about CVLAN clients, see [Chapter 5: Using CVLAN.](#))

- Telephony Services client software — allows TSAPI applications to communicate with the Telephony Server.
- Client administration software — enables the system administrator to perform specific tasks. The Win32 client software includes administration and maintenance software for the Telephony Server. The Win32 software also includes operation, administration, and maintenance software for the DEFINITY G3 PBX Driver.
- DEFINITY G3 private data support libraries — allow TSAPI applications to take advantage of DEFINITY G3-specific driver features that are available through private data and escape services. This software is installed automatically as part of the client installation procedure.

Once you have installed Telephony Services software on your client, you can easily access the Telephony Services applications by creating a shortcut icon for each application. (Use the “Create Shortcut icon” feature of Windows NT, Windows 2000, Windows XP, Windows 95, or Windows 98 to create the icons. Refer to your Windows documentation for details.)

Telephony Services Client Platforms

The Telephony Services client software can be installed on the following client platforms:

- Windows NT 3.51 workstation or server, Windows NT 4.0 workstation or server, Windows 2000, Windows XP, Windows 95 or Windows 98.
 - 32-bit (Win32) TSAPI applications use the 32-bit Telephony Services client software.
- UnixWare — The UnixWare client software comes in single-threaded (UnixWare 1.x) and multi-threaded (UnixWare 2.0x) versions. For details on using the Link Status command, see the “Link Status Command” section in Chapter 3 of *Avaya Computer Telephony 1.3 G3 PBX Driver and CVLAN Administration and Maintenance* (DEFNETM.PDF).
- Solaris Sparc - The Solaris client software can be installed on a Solaris SPARC client workstation.
- HP-UX - The HP-UX client software can be installed on a client PC.

Client Administration Software Components

The Telephony Services client software includes Windows based administrative software that allows the system administrator to maintain and operate the system. Follow these guidelines before you install the client software:

- Identify the system administrator's workstation. You will need to install the Windows-based administrative software on an appropriate client workstation.
- Determine how you intend to distribute and install the client software (CD-ROM, disk, and, if applicable, from the network server).

Client Administration Workstation

You can assign the PC designated as the Telephony Services server as the Administrative Client workstation, or you can use a separate workstation on your LAN.

The client software includes the following applications that enable the system administrator to perform specific tasks:

- **Telephony Services Administrator (TSA32)** is the client-based 32-bit Windows NT, Windows 2000, Windows XP, Windows 95 or Windows 98 application that allows the system administrator to enter information for the SDB. The 32-bit Tserver maintenance and status operations are accessed through the TSM32.
- **Telephony Services Maintenance (TSM32)** is the client-based 32-bit Windows NT, Windows 2000, Windows XP, Windows 95, or Windows 98 application that allows the system administrator to view and modify maintenance and status parameters (such as Error Logging, Message Tracing, or Tlink Information).
- **DEFINITY G3 PBX Driver Administrator utility** is a client-based 32-bit Windows NT, Windows 2000, Windows XP application that provides maintenance commands that are particularly useful if there are communications problems between the server and the DEFINITY LAN Gateway. This utility can be used to perform G3PD OA&M tasks for the Tserver. It does not apply to CVLAN.

Before You Install the Avaya Computer Telephony TSAPI Client Software

Be sure to read this section before you run the Setup program to install the Avaya Computer Telephony TSAPI Client Software.

- **Obtain the IP address or Host Name of the Telephony Server**

In the TCP/IP Name Server dialog box, the Setup program asks you to specify the IP address of the server.

- **Review the Readme file**

The Client Readme file contains information you may need before installing Telephony Services on your client. It is located on the Avaya Computer Telephony CD-ROM as follows: <DriveID>:\Readmes\Client Readme.txt

Note:

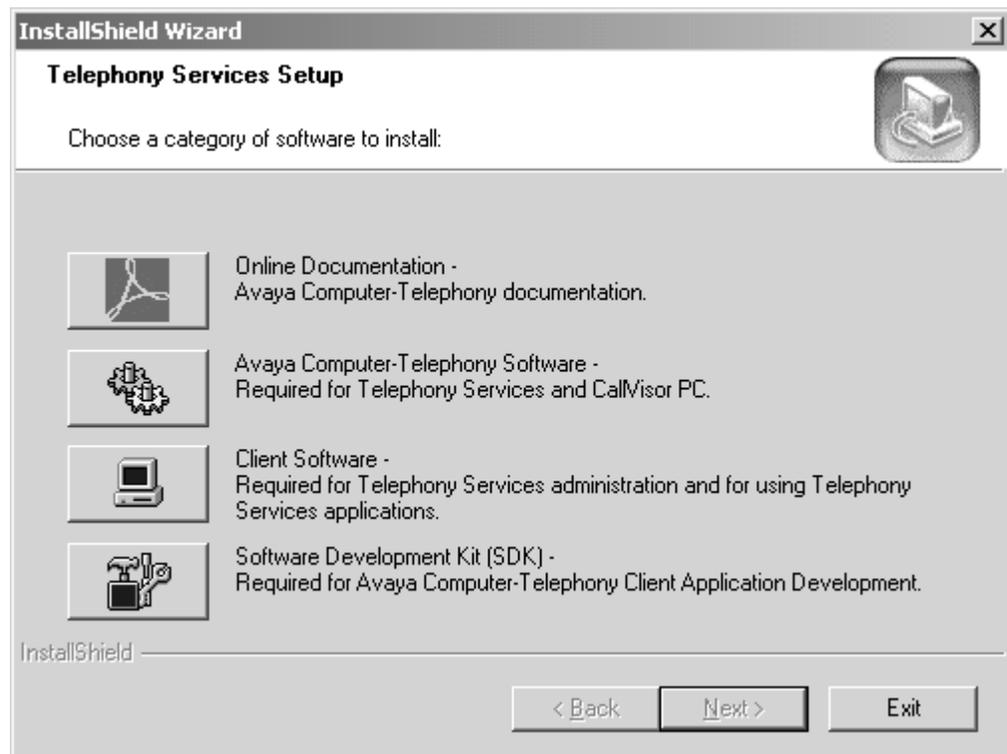
The Setup program installs the Client Readme file as follows:
C:\Program Files\Avaya\CT\TS Win32\Client Readme.txt

Installing the Windows Client Software

Follow these steps for an initial installation of Telephony Services software on the Windows client workstation designated as the Administrative Client Workstation. You can click **Cancel** or **Exit** at any time to exit from the Setup program.

1. Log on to the PC as a user with administrator-equivalent permissions.
2. Insert the CD into the CD-ROM drive.
(When Windows NT, Windows 2000, Windows XP is using the Explorer shell, the Setup program runs automatically if you have not disabled the AutoRun feature).
3. (Applies only if AutoRun is disabled) Click **Start**, then click **Run**. In the Run dialog box, enter **D:\WININST\SETUP.EXE** (or Browse to it on the CD) to start the Setup program.

The Telephony Services Setup screen displays:



Installing Avaya Computer Telephony TSAPI Client Software

4. Click on the **Client Software** button.

Setup displays the Client Setup dialog box.



5. Click the button for **Telephony Services 32-bit Windows Client**.

Setup displays the Welcome dialog box.

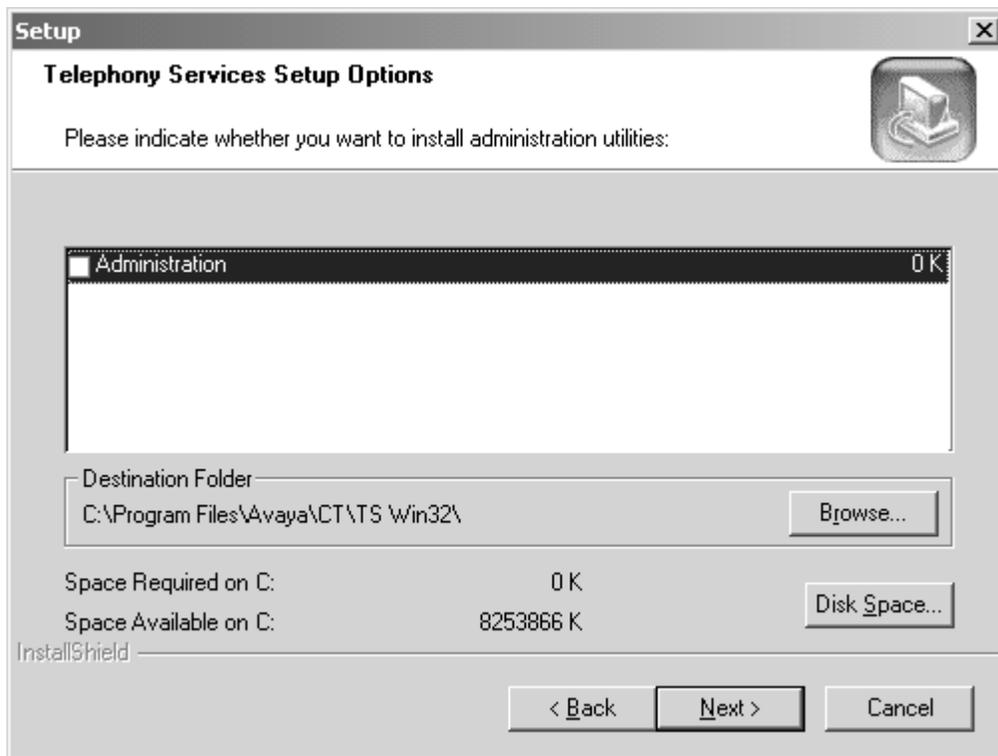


Installing Avaya Computer Telephony TSAPI Client Software

6. Click **Next** to continue with the installation.

Setup displays the Telephony Services Setup Options dialog box.

T

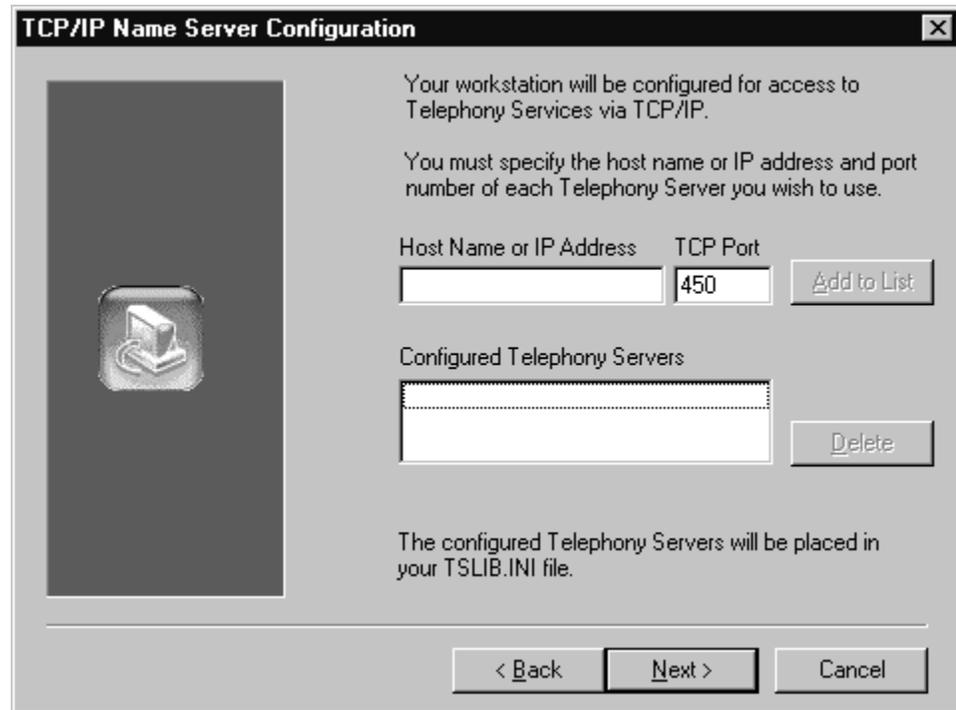


7. If applicable, under Components, click the checkbox to select Administration Utilities, and click **Next**.

Note:

Select Administration Utilities only if you are responsible for administering and maintaining the Avaya Computer Telephony Server.

Setup displays the TCP/IP Name Server Configuration dialog box.



8. (See the Note below for firewall installations.) In the **Host Name or IP Address** field enter the IP address of the Telephony Server, and in the TCP Port field, enter **450**. If your installation uses more than one Telephony Server, click **Add to List**.

Note:

If you are installing the client software in a firewall environment, see For more information about NAT and Firewall environments, see [Implementing a Firewall Strategy](#) on page 34.

9. (Skip this step if you used IP addresses in Step 8) In the **Host Name or IP Address** follow these guidelines for your host name entry.
- If you are not using DNS, enter the host name of the Tserver.
 - If you using DNS, type the fully qualified domain name, such as **tserver.company.com**

Installing Avaya Computer Telephony TSAPI Client Software

Note:

If you enter the wrong Host Name or mistype the name, a warning message displays stating that the name appears to be invalid. The name will be added to the list but you should contact your administrator to verify that you have entered the address correctly.

Note:

Setup saves the information from the TCP/IP Name Server Configuration dialog box in a `tslib.ini` file in the Windows directory. You can use a copy of the `tslib.ini` file to streamline subsequent client installations. See [Setting Up Multiple Clients](#) on page 108.

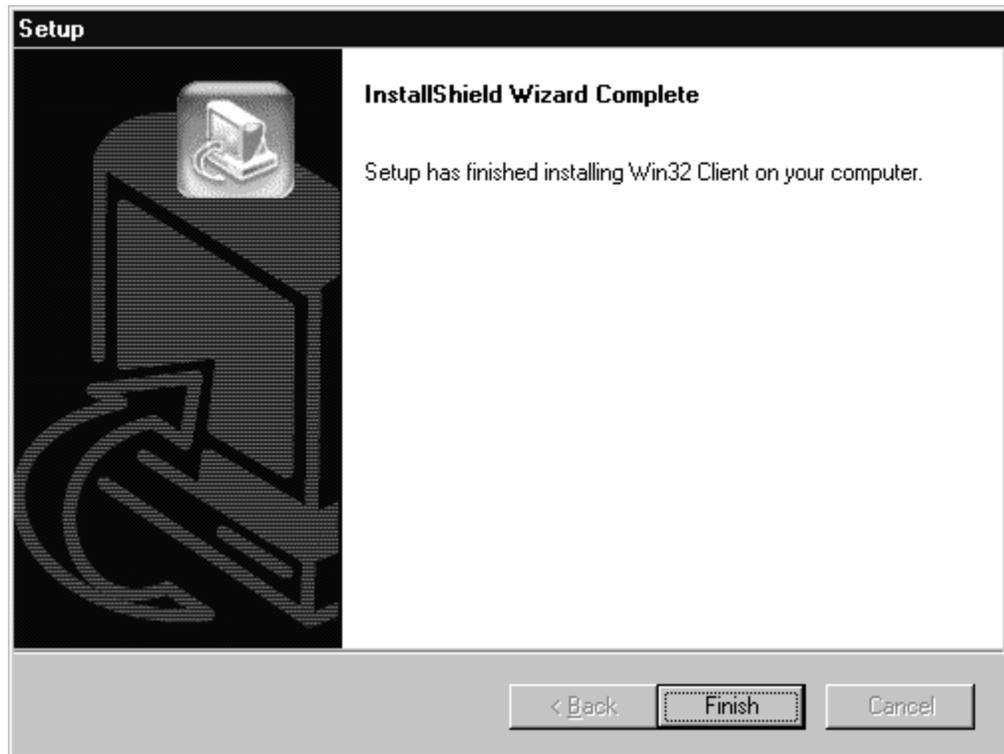
Setup searches your system for old Telephony Services software and issues a message as it performs each search.

If the Setup program finds copies of `CSTA32.DLL` and `ATTPRV32.DLL`, it will request confirmation to delete the old software.

Note:

It is recommended that you allow Setup to remove these files. (Setup does not make copies.) If you do not remove these files, Telephony Services applications may not operate correctly.

After completing the search, Setup copies the appropriate files and creates the TS Win32 Client program group (Windows NT 3.51) or program folder in the "Start" menu (Windows 95, Windows 98, Windows NT, Windows 2000 or Windows XP).



10. Click **Finish**.

This completes the Telephony Services 32-bit Windows client installation and setup.

Installing the Windows Client Software from a Network Drive

This section describes how to install Windows 32-bit client software from a network drive. In addition, it includes information on how to verify the installation. You can use this procedure to set up additional administrative clients or multiple basic clients (basic clients are client workstations without the administrative software).

To install the Windows client software from a network drive, you must first transfer the WIN32 directory from the CD to the network drive. Then you can install from the file server.

1. Create or locate the directory \CSTA\CLIENT\TSAPI\Windows on a network drive.
2. Change to the \CLIENT\TSAPI\Windows directory on the CD-ROM.
3. Copy all files from the \CLIENT\TSAPI\Windows directory on the CD-ROM to the \CSTA\CLIENT\TSAPI\WIN32 directory on the network drive. Use the Windows File Manager, the Windows Explorer, or the following DOS command:

```
XCOPY source_directory destination_directory /s /e
```

 **CAUTION:**

Do not use the COPY command for this procedure. It is important to maintain the directory structure within each subdirectory.

Note:

Use an ASCII text editor such as Windows Notepad to read the README.TXT file (located in \CLIENT\TSAPI\Windows\README.TXT). This file contains information you may need before installing Telephony Services on your client.

4. From the \CSTA\CLIENT\TSAPI\Windows directory on the network drive, run SETUP.EXE.

Setting Up Multiple Clients

If multiple clients are to use the same Telephony Server, you can simplify subsequent client installations. You must install from a network drive to perform this procedure.

- Install the Telephony Services Client on a client workstation. Then, do either of the following:
- Copy the tslib.ini file that you created on the client (located in the Windows directory) back to the Windows directory on the network file server. Any subsequent installations will then have the new tslib.ini provided as the default, and each client will not have to enter TCP/IP information.
- Or, copy the tslib.ini file that you created on the client (located in the Windows directory) to a file server. This file must be accessible to all the TCP/IP Telephony Services clients. Then, using a text editor, modify the tslib.ini file on the client and put the following line in

the [Shared Admin] section: `tslib.ini=n:\csta\tslib.ini` (where "`n:\csta\`" specifies the network drive and path to the `tslib.ini` file on your server). Remove the [Telephony Servers] section. Copy the `tslib.ini` file from your client back to the Windows directory on the network file server for use in subsequent installations.

Verifying 32-bit Client Software Installation

1. Run the "TS Test" (TSTEST.EXE) application. Click **Start**, point to **Programs, Avaya Computer Telephony, TS Win32 Client**, and click **TS Test**.
2. Select the Tserver CSTA service you want to test by using the "Server" field.
3. Enter login information.
4. Enter the phone numbers that are properly administered in DEFINITY and the Avaya Computer Telephony server in the "From" and "To" fields and select "Dial."
5. If you experience trouble, run "TS Spy" (TSSPY32.EXE), reexecute steps 1 through 4 and monitor the activity between the Tserver and TS Test.

Installing TSAPI Solaris Sparc Client Software

The Solaris client software can be installed on a Solaris SPARC client workstation.

Note:

In order to perform the installation, the Solaris Volume Manager *must* be running. Solaris runs the Volume Manager by default; however, if the Volume Manager has been shut off, the installation will fail.)

1. Become super-user (root): `su`
2. Enter the root password when prompted.
3. Insert the Telephony Services CD-ROM into your Solaris SPARC system CD-ROM drive.

Note:

Solaris File Manager users may find it more convenient to access the CD-ROM by double-clicking on the **tsapicl** icon in the File Manager's **/cdrom** folder.

4. At the command prompt, enter the `pkgadd` command.
The `pkgadd` command format is as follows:

```
pkgadd -d /cdrom/cdrom0/client/TSAPI/sparc/tsapicl.spl
```

Note:

For a detailed description of the `pkgadd` command, refer to your Solaris SPARC documentation.

The system now displays a list of the packages.

5. Select the `tsapicl` package.
6. Once the installation is complete a message is displayed, "Installation of tsapicl was successful."
7. Type `eject` to eject the CD from the CD-ROM drive.

After installation has completed, `asaidll.lib`, `asaidll.dll`, `libcsta.sl`, `libattpriv.sl`, `readme.txt`, `tslibrc`, `tstest`, header files, and some utilities will have been installed.

Verifying TSAPI Solaris SPARC Client Software Installation

1. Edit the **tslibrc** file (see [Editing the Template File -- tslibrc](#) on page 118).
2. Execute the TS Test and make a call.

Installing UnixWare Client Software

The Telephony Services client software for UnixWare can be installed from a command line, from a CD, or from diskettes.

Installing from Command Line

The Telephony Services software is installed from the command line via the UnixWare `pkgadd` command. To do this, you must be logged on as root. Desktop users should open a "Terminal" window.

Note:

For a detailed description of the `pkgadd` command, refer to your UnixWare documentation.

Installing from the CD

Follow these steps to install the UnixWare client from the CD.

1. Become super-user (root): `su`
2. Enter the root password when prompted.
3. Insert the Telephony Services CD-ROM into your workstation CD-ROM drive.
4. At the command prompt, mount the CD-ROM.

The mount command format is as follows:

```
mount -F cdfs -r /dev/cdrom/device /mountpoint
```

Note: For UnixWare 7.x, use this format

```
mount -F cdfs -r -onoextend /dev/cdrom/device /mountpoint
```

where *device* specifies the CD-ROM drive that contains the Telephony Services installation disk and *mountpoint* is the name of an existing directory (such as `/cdrom1` or `/CD-ROM_1`) on which to mount the CD-ROM. You can use the `ls` command to find the appropriate names for your system.

Note:

Desktop users may find it easier to mount the CD-ROM by double-clicking on the CD-ROM icon in the "Disks-etc" folder.

- At the command prompt, enter the `pkgadd` command.
The `pkgadd` command format is as follows:

```
pkgadd -d /mountpoint/client/tsapi/unixware/nwtslib.sp1
```

where *mountpoint* is the name of an existing directory (such as `/cdrom1` or `/CD-ROM_1`) on which to mount the CD-ROM. (Note that the full pathname, beginning with a `'/'`, is required.)

- The system now displays a list of the packages in the spool file. Press <Enter> to select the `nwtslib` package.
- Specify the transport type.

UnixWare clients can use either IPX/SPX or TCP/IP as their network transport. The system displays a list of transports and the following message:

```
Please specify a transport type for the Telephony Services
library. (To access Windows NT, Windows 2000 or Windows XP
Telephony Servers, you must select "tcp.")
spxIPX/SPX Protocol
tcpTCP/IP Protocol
```

```
Select a transport type [?,??]
```

Type "s" for IPX/SPX or "t" for TCP/IP; then press <Enter>.

Note:

This release of Telephony Services for Windows NT, Windows 2000, Windows XP only supports TCP/IP as a network protocol; you must select TCP/IP even though both options appear on the screen.

- The `pg` command displays the Telephony Services "readme" file, `tslib.readme`.
This file contains information about changes that were made after the manuals were completed.
- The installation is complete. Unmount the CD-ROM.
The `umount` command format is as follows:

```
umount /dev/cdrom/device
```

where *device* specifies the CD-ROM drive that contains the Telephony Services installation disk. You may now remove the CD-ROM.

Note:

If TCP/IP is selected for the transport type, a template file called `/usr/lib/tslibrc` is created during installation. For more information, see [Editing the Template File -- tslibrc](#) on page 118.

Installing from Diskette

To install a UnixWare client using a diskette, you must first create the installation diskette, then follow the installation procedure using the files on the diskette. You will need one formatted high-density diskette.

1. Become super-user (root): `su`
Enter the root password when prompted.
2. Insert the Telephony Services CD-ROM into your workstation CD-ROM drive.
3. At the command prompt, mount the CD-ROM.

The `mount` command format is as follows:

```
mount -F cdfs -r /dev/cdrom/device /mountpoint
```

where *device* specifies the CD-ROM drive that contains the Telephony Services installation disk and *mountpoint* is the name of an existing directory (such as `/cdrom1` or `/CD-ROM_1`) on which to mount the CD-ROM. You can use the `ls` command to find the appropriate names for your system.

Note:

Desktop users may find it easier to mount the CD-ROM by double-clicking on the CD-ROM icon in the "Disks-etc" folder.

4. Change to the UnixWare client software directory.

```
cd /mountpoint/client/tsapi/unixware <Enter>
```

5. Insert an empty formatted diskette into the drive. Copy the package file using the following command:

```
cat nwtplib.spl >/dev/fd0 <Enter>
```

6. Leave the unixware directory.

```
cd / <Enter>
```

7. Unmount the CD-ROM.

The `umount` command format is as follows:

```
umount /dev/cdrom/device
```

where *device* specifies the CD-ROM drive that contains the Telephony Services installation disk. You may now remove the CD-ROM.

8. Remove the diskette from the drive. Attach a label to the diskette and write the following information on it:

Telephony Services UnixWare Client <DISK1> Disk 1 of 1

9. From the client where you wish to install the software, enter the `pkgadd` command. The `pkgadd` command format is as follows:

```
pkgadd -d diskette [n]
```

where `n` specifies the number of the disk drive containing the installation diskette.

Follow the procedure, "Installing from the CD," beginning with step 6.

About Installing HP-UX Client Software

The Avaya Computer Telephony HP-UX client software is distributed on CD-ROM in tar (tape archive) format. The Avaya Computer Telephony HP-UX client software comes in a multi-threaded version (HP-UX 10).

Note:

HP-UX clients require a CD-ROM drive. You can not install the HP-UX client from floppy disks or from a network drive.

There are two methods for installing the software.

- Log in to the computer as root, and install the HP-UX client software from the command line using the **swinstall** command.
- As an alternative to logging in as root, Use the HP System Administration Manager (SAM) to perform the installation.

For more information about the **swinstall** command or SAM, refer to your HP-UX documentation.

Installing HP-UX Client Software

Follow this procedure to install HP-UX Client Software.

1. From the computer where you are installing the HP-UX client software, type **su - root** to log in as root.

The system prompts you for the root password.

2. Type the root password.
3. Set and export the DISPLAY environment variable by typing the following command sequence.

```
DISPLAY=:0.0
```

```
export DISPLAY
```

4. Insert the Avaya Computer Telephony CD-ROM into your computer's CD-ROM drive.
5. Use the **mount** command to mount the CD-ROM drive. For example, type:

```
mount -F cdfs /dev/dsk/device/mountpoint
```

where *device* specifies the CD-ROM drive that contains the Telephony Services installation disk and *mountpoint* is the name of an existing directory

(such as `/cdrom1` or `/CD-ROM_1`) on which to mount the CD-ROM. You can use the `ls` command to find the appropriate names for your system.

6. Use the `swinstall` command to start the software installation. From the command line, type:

```
swinstall -s /mountpoint/CLIENT/TSAPI/HPUX/TSLIB.TAR\;1
```

The system displays the **SD Install - Target Selection** dialog box.

7. Follow a, b, and c to select installation targets.
 - a. From the **Targets** list, highlight the targets on which you want to install the software.
 - b. From the **Actions** menu, choose **Mark for Install**.
 - c. Again, from the **Actions** menu, choose **Show Software For Selection**.

The system displays the **SD Install - Software Selection** dialog box.

8. Select **tslib**.
9. From the **Actions** menu, choose **Mark for Install**.
10. Before continuing to Step 11, it is recommended that you follow these steps to review the "Readme" file that accompanies the software.
 - a. Highlight **Avaya Computer Telephony**
 - b. Select **Actions, Show Description of Software...., Readme**
 - c. Review the Readme file.
11. Select **Actions**, and click **Install (analysis)...**
12. When the analysis is complete, click **OK** to proceed with the installation.
13. When the installation is complete, click **Done** to close the **Install** window.
14. Click **File** from the menu bar and then click **Exit**.
15. Remove the CD-ROM using the `umount` command.

The `umount` command format is as follows:

```
umount /dev/dsk/device
```

where:

device specifies the CD-ROM drive that contains the Avaya Computer Telephony installation disk.

16. Remove the CD-ROM.

This completes the procedure to install the Avaya Computer Telephony HP-UX client software. Keep in mind that you must edit the "tslibrc" file for each client. See the next section, [Editing the Template File -- tslibrc](#) on page 118.

Editing the Template File -- tslibrc

This information applies to HP-UX, Solaris, and UnixWare clients only.

If you select TCP for the transport type during client installation, Avaya Computer Telephony creates a template file called **/usr/lib/tslibrc**.

The **tslibrc** file contains sample names and addresses and you must change the sample addressing information to the actual addressing and port information for the server your clients need to access. Follow these guidelines to edit the tslibrc file.

- If you are using IP addresses
 - In a non-firewall environment, enter the IP address of the NIC for the Telephony Server (as opposed to the NIC for the G3PD), followed by a space and 450, for example: 122.222.000 450
 - If you are setting up Avaya Computer Telephony in a firewall environment, see [Implementing a Firewall Strategy](#).
- If you are using a host name
 - Enter a valid host name and 450, for example: telserver 450. The host name must resolve to a routable IP address.

Removing Telephony Services Client Software

This section contains procedures for removing Windows client software.

Removing Windows 32-Bit Client Software

Use the standard Windows removal procedure to uninstall the Windows 32-bit client software.

1. From the desktop, click **Start**, point to **Settings** and click **Control Panel**.
2. From the Control Panel, click **Add/Remove Programs**.
3. Windows displays the Add/Remove Programs Properties dialog box.
4. Select **Avaya Computer Telephony TS Win32 client**, and click **Add/Remove**.

Note:

You will not receive a confirmation message once you click on the Add/Remove button.

The uninstall program removes the software and displays an Information box indicating that the program and all of its components have been removed.

5. Click **Finish**.

This completes the procedure to remove a software program.

Removing TSAPI Solaris Client Software

Follow these steps to remove the TSAPI Solaris client software:

1. Use the `pkgrm` command.
2. The system displays a list of installed packages.
3. Enter the number or the name of the package you want to remove. In this case the name of the package is:

```
tsapicl
```

4. Select "Yes" to remove the package.
The software is uninstalled.
5. Type "q" to quit the `pkgrm` command.

Removing UnixWare Client Software

Follow these steps to remove the UnixWare client software:

1. Use the **pkgrm** command.
The system displays a list of installed packages.
2. Enter the number corresponding to the **nwtslib** package.
3. Select **Yes** to remove the package.
The software is uninstalled.
4. Type **q** to quit the **pkgrm** command.

Removing HP-UX Client Software

Follow this procedure to remove the HP-UX client software.

1. From the computer where you are removing the HP-UX client software, type **su - root** to log in as root
2. Type **swremove -i**
3. Choose **tslib** from the list of packages to be removed.

This completes the procedure to remove the HP-UX client software.



Chapter 5: Using CVLAN

This chapter includes the following sections which provide information about using CVLAN (CallVisor PC Local Area Network) software in the Windows environment.

- [Overview](#) on page 122
- [Implementing CVLAN and Telephony Services](#) on page 123
- [The CVLAN Server](#) on page 125
- [CVLAN Administration Guidelines for Sharing Links](#) on page 126
- [Before You Administer CVLAN Clients](#) on page 127
- [Basic CVLAN Client Administration](#) on page 127
- [Starting the CVLAN Server](#) on page 132
- [Stopping the CVLAN Server](#) on page 135
- [CVLAN Client Hardware and Software Requirements](#) on page 136
- [Installing CVLAN Client Software](#) on page 138
- [Removing CVLAN Client Software](#) on page 146
- [CVLAN Software Development Kit](#) on page 147

Overview

CVLAN is a client/server implementation of the Call Visor PC API. (CallVisor PC is a proprietary Application Program Interface that supports the Adjunct/Switch Application Interface -- ASAI).

CVLAN consists of a client component and a server component.

- The CVLAN server is installed on the Avaya Computer Telephony server (which must be running Windows NT, Windows 2000 or Windows XP), and it provides LAN connectivity to remote workstations that require access to CallVisor PC.
- The CVLAN client, which can be installed on the Avaya Computer Telephony server or a client workstation, provides client PCs with remote access to the switch (by way of the CVLAN server).

Avaya Computer Telephony provides CVLAN client packages for the following platforms:

- UnixWare
- Solaris x86
- Solaris Sparc
- IBM Advanced Interactive Executive (AIX)
- Windows

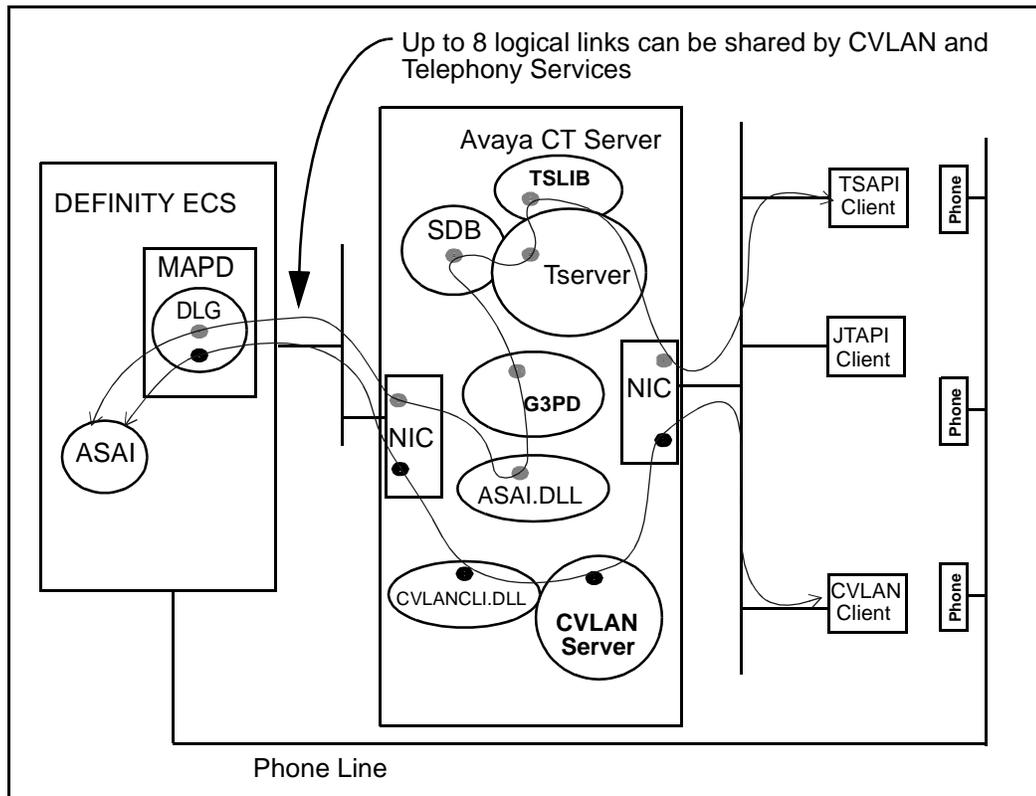
Implementing CVLAN and Telephony Services

Avaya Computer Telephony is an integrated software offer that includes two servers, Telephony Services Server (Tserver) and the CVLAN Server. By bundling the two software components, Avaya Computer Telephony enables you to effect an integrated installation of both applications. Keep these points in mind if you are implementing both applications.

- Up to eight CTI logical links can be shared between Telephony Services and CVLAN applications.
- Telephony Services and CVLAN rely on a common user interface, the G3 PBX DRIVER configuration utility, to administer links.
- Telephony Services and CVLAN applications can operate simultaneously on the same Windows-based server (Windows NT, Windows 2000 or Windows XP).
- CVLAN does not rely on the Telephony Services security database for client authentication. Instead, it authenticates clients based on the client IP address or the host name. See “Basic CVLAN Client Administration” on page -127.

Figure 5-1 depicts a coresident implementation of Telephony Services and CVLAN.

Figure 5-1: CVLAN and Telephony Services — Coresidency at a Glance



The CVLAN Server

If you follow the procedure Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software on page 70 , the CVLAN server is installed when the checkbox for "DEFINITY G3PBX Driver and CVLAN" is selected (it is selected by default).



CVLAN Administration Guidelines for Sharing Links

Keep the following information in mind if your CTI implementation supports both CVLAN and Tserver (Telephony Services Server) applications.

- **Link sharing.** CVLAN server and Telephony Services applications running concurrently can access switch CTI functionality via the same Tserver-to-Switch links.
- **Routing requests.** Tserver-to-Switch links are not sharable by CVLAN server and Telephony Services applications for receiving routing requests from the switch. That is, a CVLAN server application that handles route requests from the switch should not use a link that is shared with a Telephony Services application that also expects to receive its own routing requests.
- **Load balancing.** Consideration of load balancing by CVLAN server applications may be required for optimal link usage when CVLAN server and Telephony Services applications share Tserver-to-Switch links.
- **Link versions.** The first application to access a link will set that link's version level. Other applications that may share the link will not be able to negotiate a different link version. This may cause an application that requires particular link versions to fail to run because no available links offer an acceptable version. Avoid this problem by ensuring that the applications do not share a link.

For additional information about link sharing, handling routing requests, adjunct routing, load balancing, and checking link versions, see Chapter 2 of *Avaya Computer Telephony CVLAN Programmer's Reference* (CALLVISR.PDF).

Before You Administer CVLAN Clients

Before you administer CVLAN take the following precautions:

- Make sure that the G3PD is not loaded.

Refer to "Loading and Unloading PBX Drivers" (describes how you can load or unload the dynamic link libraries (DLLs) for the Tserver) in Chapter 8 of *Avaya Computer Telephony, Telephony Services Administration and Maintenance* (NETMANGD.PDF on the Avaya Computer Telephony CD ROM).

- Make sure the CVLAN service is stopped — See "Stopping CVLAN with the Telephony Services Controller" on page -135.

Basic CVLAN Client Administration

Use this section to familiarize yourself with a few basic tasks associated with administering CVLAN clients.

- adding a client
- editing a client
- removing a client

Adding a CVLAN Client

When you establish a link for communications between the Avaya Computer Telephony server and the switch you establish a communications path for CVLAN clients (links are shared between the CVLAN server and the Tserver).

Follow this procedure for adding a CVLAN client.

1. Click **Start**, point to **Programs, Avaya Computer Telephony, DEFINITY G3 PBX Driver**, and click on **G3 PBX Driver Configuration**.

Note:

If the G3PD or CVLAN client is running, the system displays a Warning box, with the following message, "Either the DEFINITY G3 PBX Driver or a CVLAN Client is running. Changes made to the configuration will not take effect until the next time the DEFINITY G3 PBX Driver is loaded. If you receive this warning message, click **OK**."

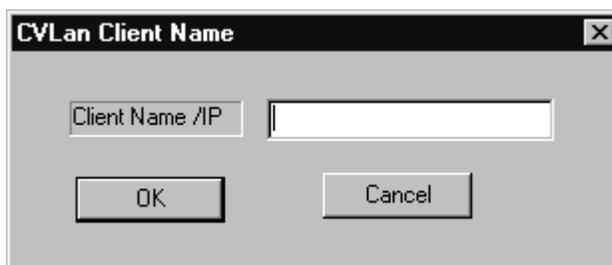
The system displays the G3PX Driver Configuration dialog box.

Link	Advertised Switch Name	IP Address or Hostname	CVLAN Clients
1:	AVAYA_ECS	192.168.25.10	Admin
2:			Admin
3:			Admin
4:			Admin
5:			Admin
6:			Admin
7:			Admin
8:			Admin

- For each link click **Admin** to add a CVLAN client.
The system displays the CVLAN client dialog box.



- Click **Add** to add a client.
The system displays the CVLAN Client name dialog box.



- Enter the IP address of your CVLAN client, based your configuration requirements and click **OK**.

Note:

You must enter an IP address in this dialog box. Client names (also referred to as Host Names) are not permitted.

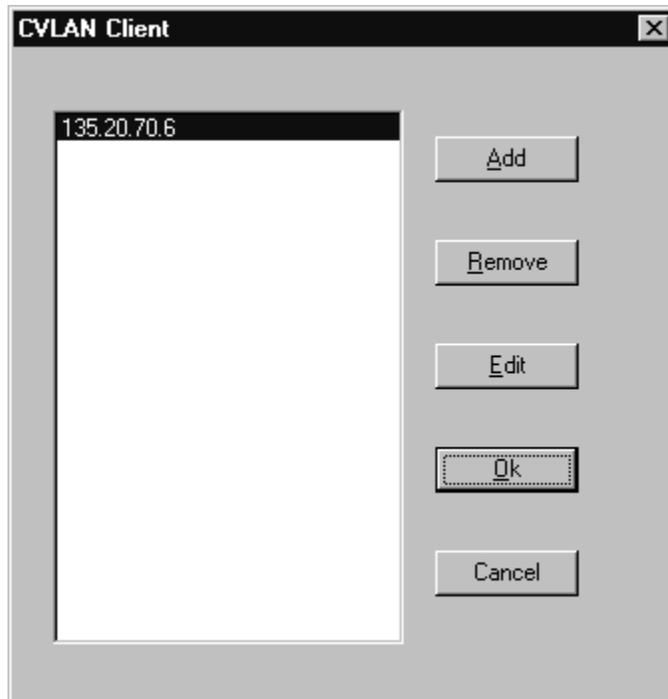
For guidelines about IP addresses, see [Implementing a Firewall Strategy](#) on page 34.

This completes the procedure to add a client.

Removing a CVLAN Client

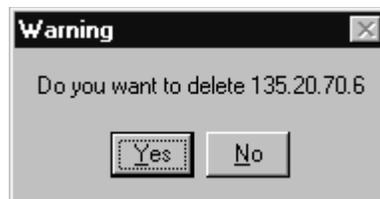
1. Follow Steps 1 through 5 of the procedure for Adding a CVLAN Client.

The system displays the CVLAN client dialog box.



2. Enter a new client name or IP address and click **Remove**.

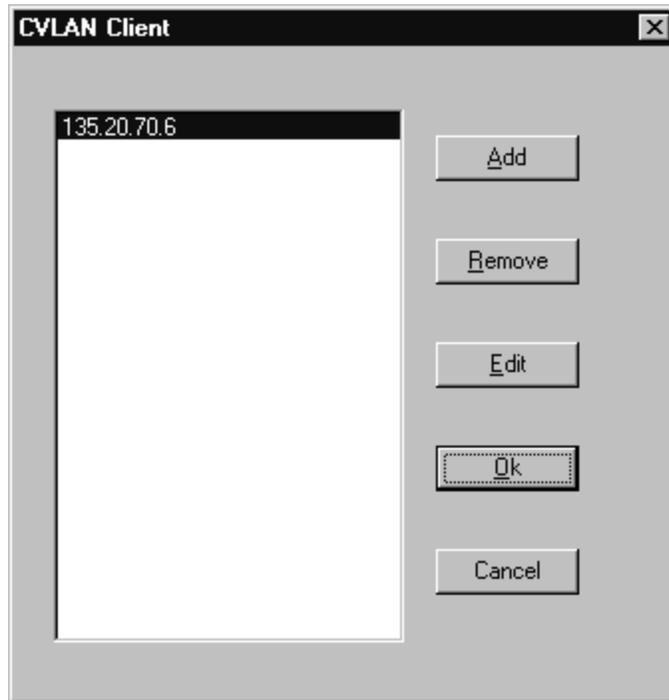
The system displays the Warning dialog box.



3. Verify that this is IP address of the client you want to delete, and click **Yes**.
4. This completes the procedure to remove a client.

Editing a Client

1. Follow Steps 1 through 5 of the procedure for Adding a CVLAN Client.
The system displays the CVLAN client dialog box.

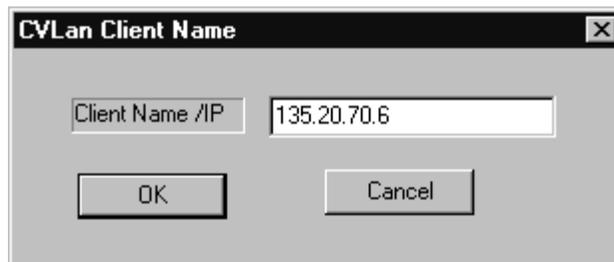


2. Enter the IP address of the CVLAN Client and click **Edit**

Note:

Recall from the Note on page -129 that CVLAN clients are specified by IP addresses only.

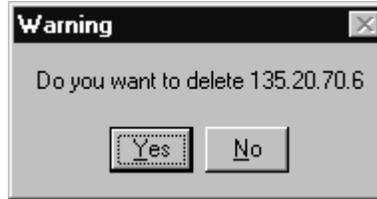
The system displays the CVLAN Client Name dialog box.



Using CVLAN

3. Select the current IP address (135.20.70.6), and overwrite it with the IP address you want to use. Click **OK**.

The system displays the Warning dialog box (overwriting deletes the previous client).



4. Verify that this IP address of the client that you want to edit and click **Yes**.

This completes the procedure to edit (and remove) a client.

Starting the CVLAN Server

This section describes the following methods for starting the CVLAN server:

- Starting CVLAN with the Telephony Services Controller — this procedure starts both the Telephony Services server (Tserver) and the CVLAN server. *This is the recommended method.*
- Starting CVLAN from the Windows operating system — this procedure starts the CVLAN server only. Use this method to start the CVLAN server independently of the Tserver.

Starting the CVLAN Server with the Telephony Services Controller

Follow these steps to start the CVLAN server from the Telephony Services controller (this procedure starts both the Tserver and the CVLAN server).

1. Click **Start**, point to **Programs, Avaya Computer Telephony**, and click **TS Controller**.



2. Click **Start** to start Telephony Services.

Telephony Services starts the Tserver and the CVLAN.

3. Click **OK** to dismiss the information box and return to the "Telephony Services Controller" dialog box.

On the Telephony Services controller dialog box, under "Status," the Telephony Services state is listed as "RUNNING."

4. Click **Close** to exit the Telephony Services Controller dialog box.

This completes the procedure to manually start Telephony Services software.

Starting the CVLAN Server from the Windows Operating System

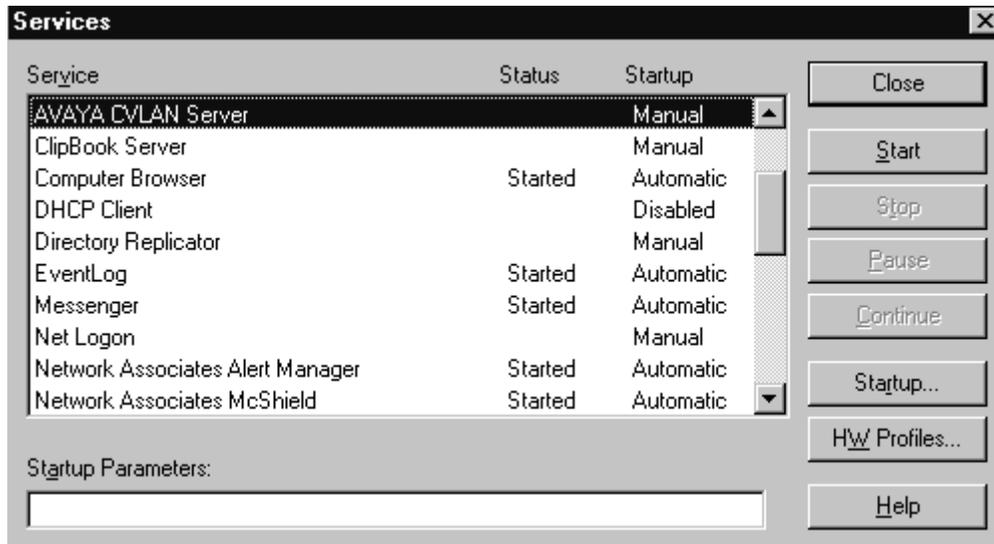
Use this method to restart the CVLAN server independently of the Tserver.

1. Follow a or b depending on your Windows operating system.
 - a. Windows NT — Click **Start**, point to **Settings**, then click **Control Panel**. Double-click **Services**.

Using CVLAN

- b. Windows 2000 and Windows XP — Click **Start**, point to **Settings**, then click **Control Panel**. Double-click **Administrative Tools**, and then double-click **Services**.

The system displays the Services dialog box.



2. From the Service list box, select AVAYA CVLAN Server and click **Startup**.

Stopping the CVLAN Server

This section describes the following methods for stopping the CVLAN server:

- Stopping the CVLAN server with the Telephony Services Controller— this procedure stops both the Telephony Services server (Tserver) and the CVLAN server. *This is the recommended method.*
- Stopping the CVLAN server from the Windows operating system — this procedure stops the CVLAN server only. Use this method if your Tserver is running and the CVLAN server does not seem to be operating.

Stopping CVLAN with the Telephony Services Controller

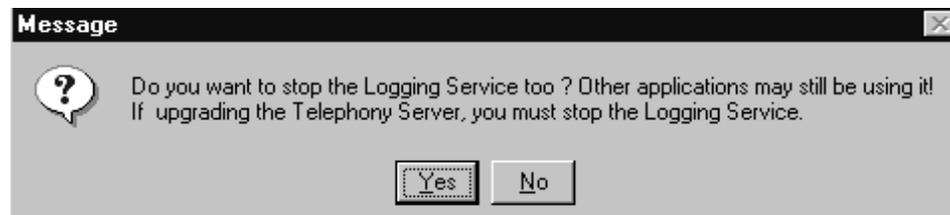
Follow this procedure to stop Telephony Services and the CVLAN server.

1. Click **Start**, point to **Programs, Avaya Computer Telephony**, and click **TS Controller**.
2. From the Telephony Services Controller dialog box, click **Stop**.
3. Select "Stop".

The Telephony Services and CVLAN server are stopped, and an Information box displays.

4. Click **OK**

The operating system displays a message box that prompts you to stop the Logging Service.



5. If you want to stop the Logging Service, Click **Yes**; otherwise, click **No**.
6. From the Telephony Services Controller dialog box, click **Close** to exit the Telephony Services Controller.

Stopping the CVLAN Service from the Windows Operating System

Use this method if your Telephony Server (Tserver) is running and the CVLAN server does not seem to be operating.

Follow this procedure to stop the CVLAN server from the Windows operating system.

1. Follow a or b, depending on your Windows operating system.
 - a. Windows NT — Click **Start**, point to **Settings**, then click **Control Panel**. Double-click **Services**.
 - b. Windows 2000 and Windows XP — Click **Start**, point to **Settings**, then click **Control Panel**. Double-click **Administrative Tools**, and then double-click **Services**.
2. From the Services dialog, select CVLAN Server and Click **Stop**.

CVLAN Client Hardware and Software Requirements

As a general guideline, if the operating system will load and run on an approved hardware platform, CVLAN client software will also. Our suggestion is to first choose a software platform and work with the Hardware Certification list provided with the Operating System.

CVLAN Client Software

CVLAN client software allows CallVisor PC applications to communicate with DEFINITY by way of the CVLAN Server.

CVLAN Client Platforms

The CallVisor PC Local Area Network (CVLAN) client software can be installed on the following client platforms:

Table 5-1: CVLAN Client Application Platforms

Client Platform	Operating System	Server Version
Windows	Windows NT 4.0 or Windows 2000	CVLAN 8.2
UnixWare	SCO UnixWare 2.1.3	CVLAN 8.2
	SCO UnixWare 2.1.2 (with UnixWare patch 32801) UnixWare 7	
Solaris SPARC™	Solaris SPARC 2.4, 2.5, 2.5.1, and 2.6	CVLAN 8.2
Solaris™ x86	Solaris x86 2.4, 2.5, and 2.51	CVLAN 8.2
IBM® AIX	AIX 4.3 or 5.1	CVLAN 8.2

Installing CVLAN Client Software

This section contains instructions for installing CVLAN client software on Windows NT, Windows 2000, Solaris SPARC, Solaris x86, and UnixWare client workstations.

Note:

See Table 5-1 on page -137 in for the list of supported CVLAN client platforms.

Installing Windows Client Software

The CVLAN client software can be installed on a Windows NT or Windows 2000 client workstation.

1. Insert the Avaya Computer Telephony CD into the CD-ROM drive (the Setup program runs automatically if you have not disabled the AutoRun feature).
Setup displays the Telephony Services Setup dialog box.
2. Click the **Client Software** button.



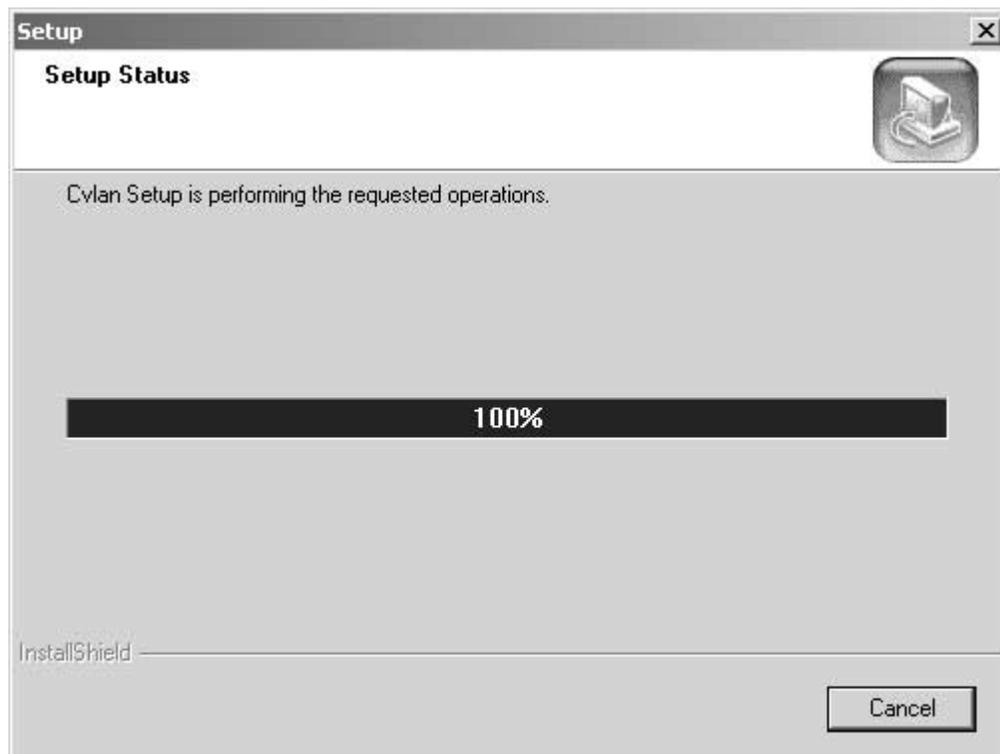
Setup displays the Client Setup dialog box



3. Click the **CVLAN** button.

Using CVLAN

Setup displays the Setup Status Screen



4. When you CVLAN Setup has finished executing, you will be asked if you want to view the Readme file now. Click Yes or No.
5. This installation is now complete.

Once you have completed the CVLAN installation, refer to the *Avaya Computer Telephony CVLAN Programmer's Reference* (CALLVISR.PDF) for more information, as follows.

- The utilities (itt, asai_test, and perf) are described in Chapter 10.
- Instructions for developing CVLAN applications are provided in Chapter 6.

Verifying Windows Client Software Installation

1. At the MS-DOS prompt, run "asai_test -m <server> <link number>" where <server> is the name or IP address of the CVLAN server and <link number> is the number of the link on that server.
2. It should respond with a "successful" message.

If it fails, check the TCP connectivity with ping, and the server link status by using the DEFINITY G3PD Administrator utility.

For details on using the Link Status command, see the "Link Status Command" section in Chapter 3 of *Avaya Computer Telephony G3 PBX Driver and CVLAN Administration and Maintenance* (DEFNETM.PDF).

Installing Solaris SPARC Client Software

The CVLAN client software can be installed on a Solaris SPARC client workstation.

Note:

In order to perform the installation, the Solaris Volume Manager *must* be running. Solaris runs the Volume Manager by default; however, if the Volume Manager has been shut off, the installation will fail.)

1. Become super-user (root): `su`
2. Enter the root password when prompted.
3. Insert the Telephony Services CD-ROM into your Solaris SPARC system CD-ROM drive.

Note:

Solaris File Manager users may find it more convenient to access the CD-ROM by double-clicking on the `cvlanxc1` icon in the File Manager's /`cdrom` folder.

4. At the command prompt, enter the `pkgadd` command.
The `pkgadd` command format is as follows:

```
pkgadd -d /cdrom/cdrom0/client/cvlan/sparc/cvlanxc1.sp1
```

Note:

For a detailed description of the `pkgadd` command, refer to your Solaris SPARC documentation.

The system now displays a list of the packages.

Using CVLAN

5. Select the **cvlanxcl** package.
6. Type **eject** to eject the CD from the CD-ROM drive.

After installation has completed, `asaidll.lib`, `asaidll.dll`, header files, and some utilities will have been installed.

Once you have completed the CVLAN installation, refer to the *Avaya Computer Telephony CVLAN Programmer's Reference* (CALLVISR.PDF) for more information, as follows.

- The utilities (`itt`, `asai_test`, and `perf`) are described in Chapter 10.
- Instructions for developing CVLAN applications are provided in Chapter 6.

Verifying Solaris SPARC Client Software Installation

1. At the command prompt, run "`asai_test -m <server> <link number>`" where `<server>` is the name or IP address of the CVLAN server and `<link number>` is the number of the link on that server.
2. It should respond with a "successful" message.

If it fails, check the TCP connectivity with ping, and the server link status by using the DEFINITY G3PD Administrator utility.

For information about using the Link Status command, see "Link Status Command" in Chapter 3 of *Avaya Computer Telephony G3 PBX Driver and CVLAN Administration and Maintenance* (DEFNETM.PDF).

Installing Solaris x86 Client Software

The CVLAN client software can be installed on a Solaris x86 client workstation.

Note:

In order to perform the installation, the Solaris Volume Manager *must* be running. Solaris runs the Volume Manager by default; however, if the Volume Manager has been shut off, the installation will fail.)

1. Become super-user (root): `su`
2. Enter the root password when prompted.
3. Insert the Telephony Services CD-ROM into your Solaris x86 system CD-ROM drive.

Note:

Solaris File Manager users may find it more convenient to access the CD-ROM by double-clicking on the `cvlanx1` icon in the File Manager's `/cdrom` folder.

4. At the command prompt, enter the `pkgadd` command.

The `pkgadd` command format is as follows:

```
pkgadd -d /cdrom/cdrom0/client/cvlan/solx86/cvlanxcl.spl
```

Note:

For a detailed description of the `pkgadd` command, refer to your Solaris x86 documentation.

The system now displays a list of the packages.

5. Select the `cvlanxcl` package.
6. Type `q` to quit the `pkgadd` command.

The installation is complete.

7. Type `eject` to eject the CD-ROM from the CD-ROM drive.

After installation has been completed, `asaidll.lib`, header files and some utilities will have been installed.

Once you have completed the CVLAN installation, refer to the *Avaya Computer Telephony CVLAN Programmer's Reference* (CALLVISR.PDF) for more information, as follows:

- The utilities (`itt`, `asai_test` and `perf`) are described in Chapter 10
- Instructions for developing CVLAN applications are provided in Chapter 6

Verifying Solaris x86 Client Software Installation

1. At the command prompt, run "`asai_test -m <server><link number>`" where `<server>` is the name or IP address of the CVLAN server and `<link number>` is the number of the link on that server.
2. It should respond with a "successful" message.

If it fails, check the TCP connectivity with ping, and the server link status by using the DEFINITY G3PD Administrator utility.

For information about using the Link Status command, see "Link Status Command" in chapter 3 of the *Avaya Computer Telephony G3 PBX Driver and CVLAN Administration and Maintenance* (DEFNETM.PDF).

Installing AIX CVLAN Client Software

The CVLAN client software can be installed on an AIX client workstation.

1. At the command prompt, enter `su` to have the system grant you super-user status. The system prompts you for the root password.
2. Enter the root password.
3. Insert the Avaya Computer Telephony CD-ROM into your AIX system CD-ROM drive.
4. Mount the CD-ROM.
5. At the command prompt, use the `installp` command to install the software (see Command Syntax).

Command Syntax

```
installp -ca -d /mntdir/client/cvlan/aix/cvlan_~1.bff cvlan_client
```

Substitute `mntdir` with the directory where you mounted the CD-ROM.

6. The system will perform the installation.

Installing UnixWare Client Software

The CVLAN client software for the UnixWare client workstation can be installed from the command line or from the CD.

Installing from the Command Line

The CVLAN client software for the UnixWare client workstation is installed from the command line via the UnixWare `pkgadd` command. To do this, you must be logged on as root. Desktop users should open a "Terminal" window.

Note:

For a detailed description of the `pkgadd` command, refer to your UnixWare documentation.

Installing from the CD

1. Become super-user (root): `su`
2. Enter the root password when prompted.
3. Insert the Telephony Services CD-ROM into your UnixWare system CD-ROM drive.
4. At the command prompt, mount the CD-ROM.

The mount command format is as follows:

```
mount -F cdfs -r /dev/cdrom/device/mountpoint
```

where *device* specifies the CD-ROM drive that contains the Telephony Services installation disk and *mountpoint* is the name of an existing directory (such as `/cdrom1` or `/CD-ROM_1`) on which to mount the CD-ROM. You can use the `ls` command to find the appropriate names for your system.

Note:

Desktop users may find it easier to mount the CD-ROM by double-clicking on the CD-ROM icon in the "Disks-etc." folder.

5. At the command prompt, enter the `pkgadd` command.

The `pkgadd` command format is as follows:

```
pkgadd -d /mountpoint/client/cvlan/unixware/cvlanxcl.spl
```

where *mountpoint* is the name of an existing directory (such as `/cdrom1` or `/CD-ROM_1`) on which to mount the CD-ROM. (Note that the full pathname, beginning with a '/', is required.)

6. The system now displays a list of the packages in the spool file. Press <Enter> to select the **cvlanxcl** package.
7. Unmount the CD-ROM.

The `umount` command format is as follows:

```
umount /dev/cdrom/device
```

where *device* specifies the CD-ROM drive that contains the Telephony Services installation disk. You may now remove the CD-ROM.

After installation has completed, `asaidll.lib`, `asaidll.dll`, header files, and some utilities will have been installed.

Once you have completed the CVLAN installation, refer to the *Avaya Computer Telephony CVLAN Programmer's Reference* (CALLVISR.PDF) for more information, as follows.

- The utilities (`itt`, `asai_test`, and `perf`) are described in Chapter 10.
- Instructions for developing CVLAN applications are provided in Chapter 6.

Verifying UnixWare Client Software Installation

1. At the command prompt, run "asai_test -m <server> <link number>" where <server> is the name or IP address of the CVLAN server and <link number> is the number of the link on that server.
2. It should respond with a "successful" message.

If it fails, check the TCP connectivity with ping, and the server link status by using the DEFINITY G3PD Administrator utility.

For information about using the Link Status command, see "Link Status Command" in Chapter 3 of *Avaya Computer Telephony G3 PBX Driver and CVLAN Administration and Maintenance* (DEFNETM.PDF).

Removing CVLAN Client Software

This section contains instructions for removing CVLAN client software from Windows NT, Windows 2000, Solaris SPARC and UnixWare client workstations.

Uninstalling Windows Client Software

Use the standard Windows removal procedure to uninstall the CVLAN client software.

1. From the desktop click **Start**, point to **Settings** and click **Control Panel**.
2. From the Control Panel, click **Add/Remove Programs**.

Windows displays the **Add/Remove Programs Properties** dialog box.

3. Select **Avaya Computer Telephony CVLAN client**, and click **Add/Remove**.

The uninstall program removes the software and displays an Information box indicating that the program and all of its components have been removed.

4. Click **Finish**.

This completes the procedure to remove a software program from a Windows machine.

Removing Solaris SPARC Client Software

If you want to remove the CVLAN client software from the Solaris SPARC client workstation:

1. Use the `pkgrm` command.
A list of installed packages is displayed.
2. Enter the number corresponding to the `cvlanxcl` package.
3. Select "Yes" to remove the package.
The software is uninstalled.
4. Type `q` to quit the `pkgrm` command.

Removing AIX Client Software

If you want to remove the AIX client software from the client workstation, type the command:

```
installp -u cvlan_client
```

Removing UnixWare Client Software

If you want to remove the UnixWare client software from the client workstation, as root type the command:

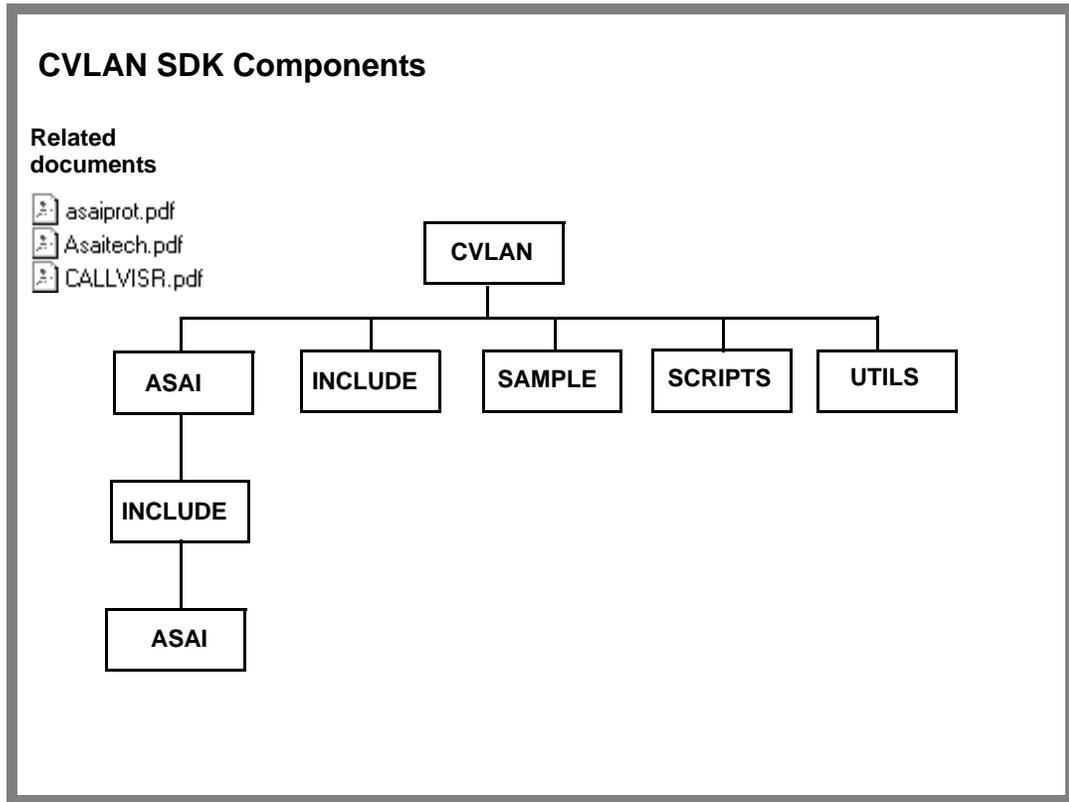
```
pkgrm cvlanxcl
```

CVLAN Software Development Kit

The CVLAN Software Development Kit (SDK) provides a software development environment for developing CVLAN applications for the adjunct (see Figure 5-2). The following documents, which are included on the Avaya Computer Telephony CD, supplement the tools in the SDK.

- *Avaya Computer Telephony CVLAN Programmer's Reference* (CALLVISR.pdf)
- *Avaya MultiVantage CallVisor ASAI Technical Reference* (Asaitech.pdf)
- *Avaya MultiVantage CallVisor ASAI Protocol Reference* (Asaiprot.pdf)

Figure 5-2: CVLAN SDK at a Glance





Chapter 6: Installing JTAPI Client Software

This chapter contains the following sections that describe the installation procedure for the JTAPI Client software.

- [JTAPI Client Packaging](#) on page 149
- [Installing the JTAPI Client Software in the Windows Environment](#) on page 151
- [Manually Installing the JTAPI Client Software \(Special Cases\)](#) on page 157

JTAPI Client Packaging

The JTAPI Client software is delivered as a collection of JAVA classes.

JTAPI comprises three software sets:

- SET 1, located in directory `\client\Jtapi\OS_Independent`, consists of the Avaya implementation of the JTAPI specification.
- SET 2, located in directory `\client\Jtapi\OS_Independent\all`, consists of the Avaya Computer Telephony implementation of JTAPI interfaces, bundled with Sun JTAPI 1.2 Early Access interfaces.
- SET 3, similar to SET 2 but also contains a special debug package located in `\client\Jtapi\OS_Independent\Debug`.

Use the guidelines provided in each section to determine which set is appropriate for your environment.

SET 1

Use this set of software only if Sun JTAPI interface classes are already in your client's CLASSPATH and you are concerned about download time from a web site:

- ECSJTAPI.ZIP — software in zip format for use by Netscape 3.x and other browsers, as well as Java applications.

Installing JTAPI Client Software

- ECSJTAPI.JAR — software in a signed jar format for use by Netscape 4.x and newer browsers as well as Java applications.
- ECSJTAPI.CAB — software in a signed cab format for use by Internet Explorer 4.x browsers.
The CLASSID is: {DDBB0340-3036-11d1-B2F7-006097B5344A}.

SET 2

This software set contains the Avaya JTAPI implementation bundled with the JTAPI interfaces. Use this set of software if you do not already have the JTAPI interface classes in your CLASSPATH:

- ECSJTAPIA.ZIP — software in zip format for use by Netscape 3.x and other browsers, as well as Java applications.
- ECSJTAPIA.JAR — software in a signed jar format for use by Netscape 4.x and newer browsers as well as Java applications.
- ECSJTAPIA.CAB — software in a signed cab format for use by Internet Explorer 4.x and newer browsers.
The CLASSID is: {5DC537F1-39BE-11d1-B301-006097B5325A}.

SET 3

This software set also has the Avaya JTAPI implementation bundled with the JTAPI interfaces. Additionally, it provides debugging capability. Use this set of software for developing an application or applet. Do not use this software in production mode; but instead use either Set 1 or 2.

- ECSJTAPID.ZIP — software in zip format for use by Netscape 3.x and other browsers.
- ECSJTAPID.JAR — software in a signed jar format for use by Netscape 4.x and newer browsers as well as Java applications.
- ECSJTAPID.CAB — software in a signed cab format for use by Internet Explorer 4.x browsers. The CLASSID for this is {278E9392-39B9-11d1-B301-006097B5325A}.

Installing the JTAPI Client Software in the Windows Environment

This section provides procedures for installing JTAPI Client software from the CD.

Note:

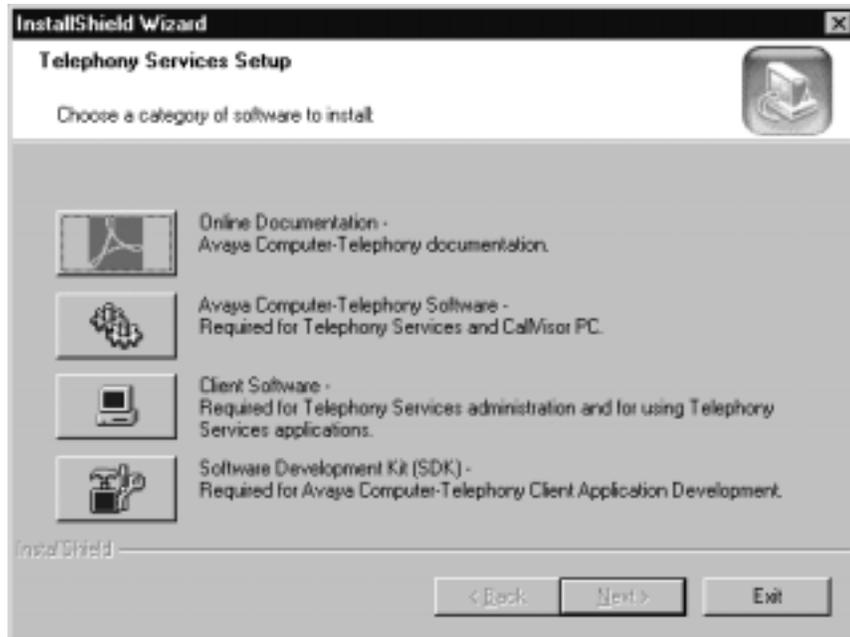
The Windows installation will create Windows Start Menu shortcuts using the Sun Microsystems Java Virtual Machine (JVM) if it is found. If Sun's JVM is not found it will use the Microsoft JVM (If not found, it will default to Sun's in the shortcut). If you wish to utilize another JVM and use the Windows Start Menu shortcuts for TSTest and ECSJtapiVersion you will have to change the shortcut properties to invoke the desired JVM.

Note:

The Windows installation will make an addition to your CLASSPATH system variable. CLASSPATH will contain the necessary files and paths to utilize the JTAPI client components. You may modify CLASSPATH to switch between the different JTAPI packaging provided.

1. Insert the CD into the CD-ROM drive (the Setup program runs automatically if you have not disabled the AutoRun feature).

Setup displays the Telephony Services Setup dialog box.



Installing JTAPI Client Software

2. Click on the **Client Software** button.

Setup displays the Client Setup dialog box.



3. Click on the Telephony Services JTAPI Client button.

Setup displays the Welcome Dialog for the Jtapi Client Install.



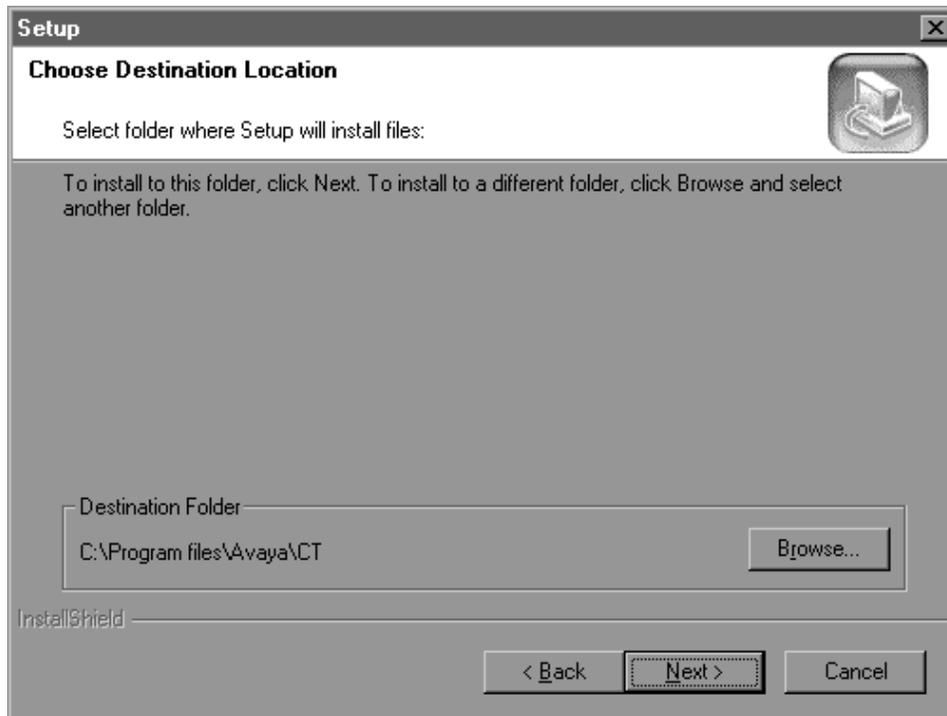
4. Click **Next**.

Installing JTAPI Client Software

Note:

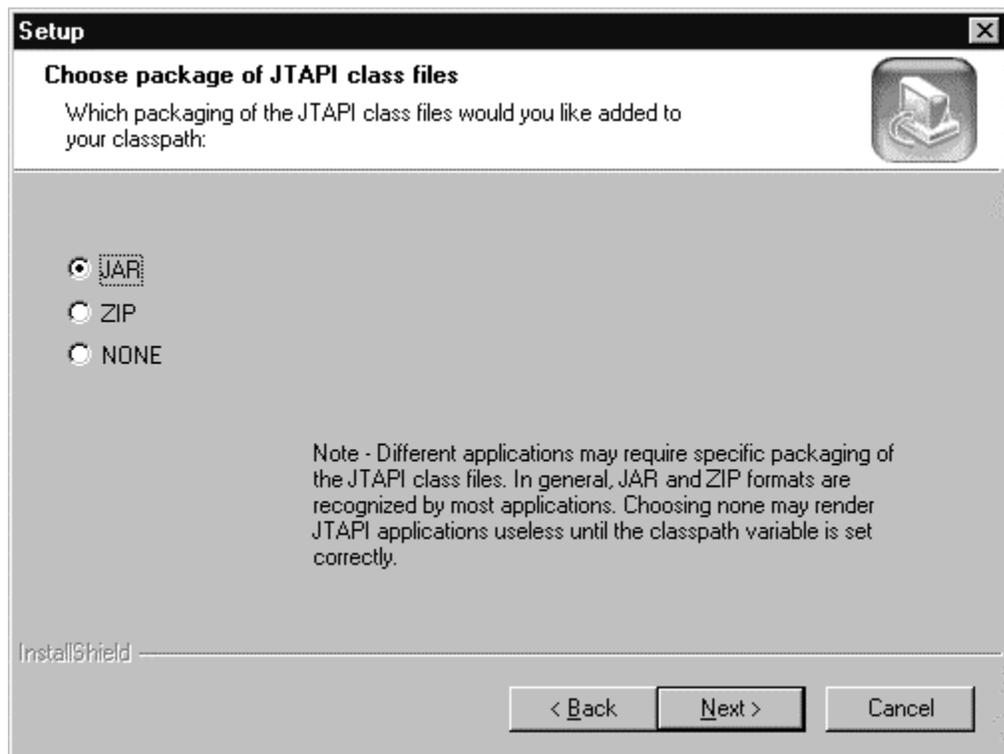
At this time a search for previous versions/components is conducted so processing may take a few minutes. If a previous version is found, a window displays asking you if you would like to continue with the installation. Having multiple versions installed is allowed and you may continue without uninstalling. It is recommended that you uninstall the previous version to avoid confusion. Uninstall directions are displayed.

If you continue with the installation procedure the Destination Location screen displays.



5. You can accept the default destination folder or browse to select another destination folder. Click **Next** to continue.

Setup displays the JTAPI class files dialog box.



6. Select the appropriate packaging and click **Next**.

A message is displayed asking if the packaging selected should be added to the user's classpath. Select **Yes** or **No**.

Installing JTAPI Client Software

Setup displays the TCP/IP Server Configuration dialog box.



7. Enter the appropriate Host Name or IP Address of your Telephony Server (or Avaya Computer Telephony Server) and click **Next**.

Once the appropriate files are copied, the installation is complete.

Test your JTAPI Client installation by making a call with the TSTest application from the Avaya Computer Telephony JTAPI Client section of the Windows Start Menu.

Manually Installing the JTAPI Client Software (Special Cases)

For Non-Windows operating systems and some special cases on a Windows Operating System a manual install may be necessary. Follow these directions as applicable to the specific situation. The required files should be copied manually and can be found on the Avaya Computer Telephony CD-ROM under this path:

`\client\jtapi\os_independent\`

Setup for Running JTAPI Applets or Applications on a Client

You must have a Java Virtual Machine (VM) that supports Java Development Kit (JDK) 1.02 or later on your client.

1. Copy the software from SET 2 and TSAPI.PRO files to the same directory<drive_letter>:<path>. (For example, C:\JTAPI.)
2. Set the CLASSPATH to include <drive_letter>:<path> and the files from SET 2. (For example, CLASSPATH=.;C:\JTAPI;C:\JTAPI\ECSTAPIA.ZIP.) On a Windows NT, Windows 2000 or Windows XP machine you can do this from the Control Panel, System, Environment dialog.
3. Edit the TSAPI.PRO file to include the TCP/IP addresses or hostnames of the Tservers that you will be using. The default port number is 450.

Setup for Running JTAPI Applets in a Browser from a Web Server

In this configuration, the clients that will access the web server do not need to install the JTAPI software.

1. Copy the software from SET 2 to the directory on your web site that will host your web page.

Note:

If SET 1 is used, it is assumed that clients already have the Sun JTAPI classes on their system and the path to them exists in the client's class path variable.

Installing JTAPI Client Software

2. Placement options for the TSAPI.PRO file for access in Netscape Communicator are as follows:
 - a. Copy the TSAPI.PRO file to the directory on your web site that will host your web page.
 - b. If the clients use different Tservers, then the information in the TSAPI.PRO file will be different for each client. Install a TSAPI.PRO file on each client and set the CLASSPATH to include the directory that contains the TSAPI.PRO file.
3. Placement options for the TSAPI.PRO file for access in Internet Explorer are as follows:
 - a. If the web page is using signed cabinets, such as ecsjtapia.cab, the files in the cab are extracted to the java library directory on the client and used from there. In this case the TSAPI.PRO file must be installed in the client's java library directory. (On a Windows NT, Windows 2000 or Windows XP machine this is the java\lib directory.)
4. Edit the TSAPI.PRO file to include the TCP/IP addresses or hostnames of the Tservers that you will be using. The default port number is 450.



Chapter 7: Using the JTAPI SDK

In addition to the Telephony Services software, the Avaya Computer Telephony CD ROM also includes a Java Telephony API (JTAPI) Software Development Kit (SDK), for developing Java-based computer-telephony applications.

This chapter contains the following sections which provides information for using the JTAPI SDK.

- [Related Documentation](#) on page 159
- [Components of the JTAPI SDK](#) on page 160
- [Installing the JTAPI SDK](#) on page 161
- [Private Data Versions Supported](#) on page 167
- [Java Client Hardware and Software Requirements](#) on page 168
- [Application Development Basics](#) on page 168
- [Running JTAPI Applets](#) on page 169
- [JTAPI Sample Applications \(SDK\Jtapi\OS_Independent\Samples\)](#) on page 171
- [The JTAPI Exerciser Application](#) on page 175
- [Obtaining Version Information](#) on page 176
- [JTAPI Online Support](#) on page 176

Related Documentation

The following related documents in PDF format can be found in the docs folder on the Avaya Computer Telephony CD-ROM.

- JTAPI Programmer's Reference (JTAPI.PDF)
- JTAPI for Avaya MultiVantage Programmer's Reference (JCLI.PDF)
- Installation Guide (INSTALL.PDF)
- Avaya MultiVantage Simulator User's Guide (SIMGUIDE.PDF)

Components of the JTAPI SDK

The JTAPI SDK is the Avaya Computer Telephony implementation of the JAVA Telephony API. With the JTAPI SDK you can develop JTAPI applications that access the DEFINITY system using Avaya Computer Telephony. Figure 7-1 depicts the following components of the JTAPI SDK.

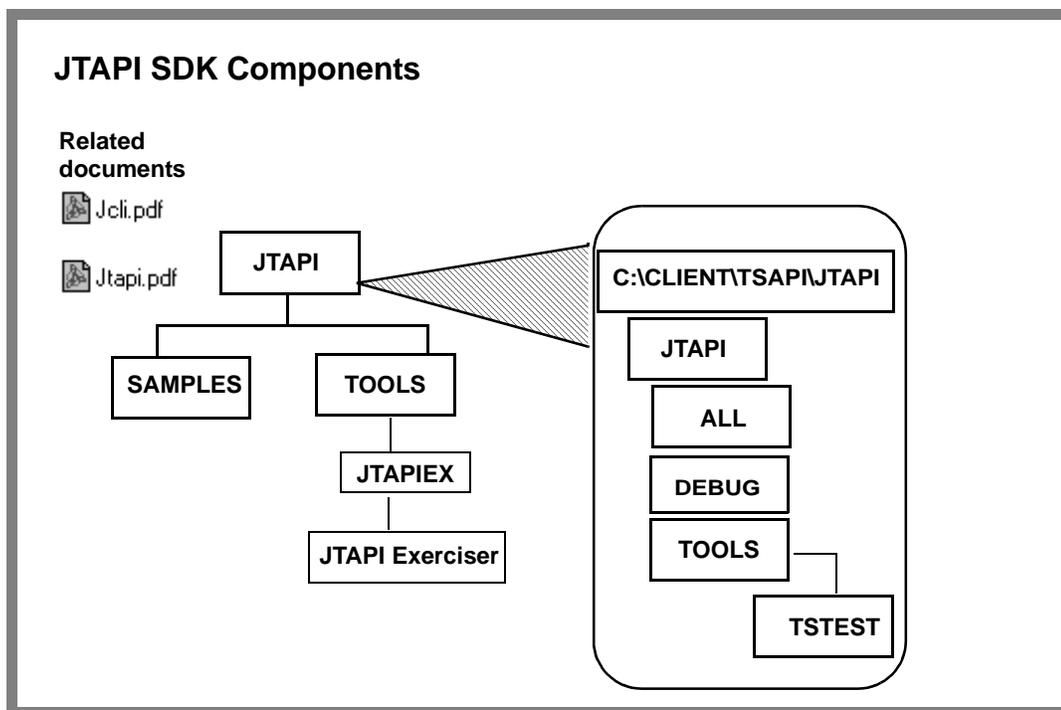
JTAPI Client - These are the JTAPI JAVA classes that you will need to build and execute your application. Several different packagings are provided. See the packaging descriptions in Chapter 6 to determine your needs.

Sample Code - Some sample JTAPI application source code.

JTAPI Exerciser - An API exerciser that allows you to create any JTAPI object and execute its methods without writing any code. A useful learning and testing tool.

DEFINITY G3 PBX Simulator - This simulates telephones as if they are connected to the telephone switch (PBX). You can test your JTAPI application without a DEFINITY ECS by using this simulator in conjunction with the Avaya Computer Telephony Server. When using the Simulator, there will be no audible phone rings. You can see the events that represent phone rings by using the Simulator Console, which is supplied with the Simulator.

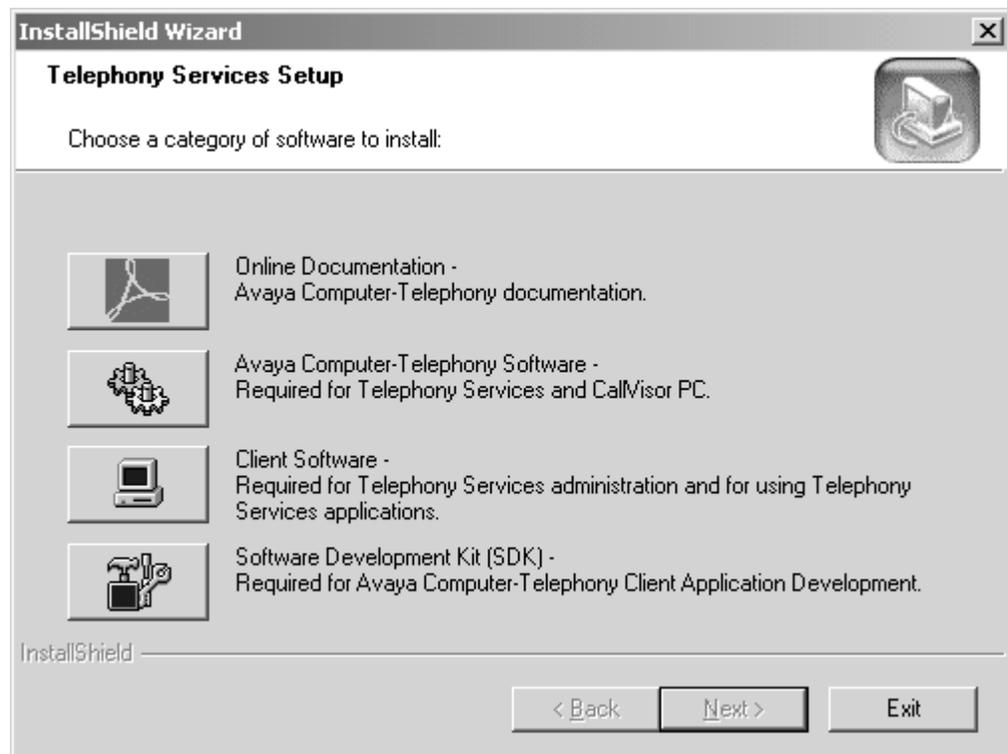
Figure 7-1: JTAPI SDK at a Glance



Installing the JTAPI SDK

1. Insert the CD into the CD-ROM drive (the Setup program runs automatically if you have not disabled the AutoRun feature).
2. Setup displays the Telephony Services Setup dialog box.

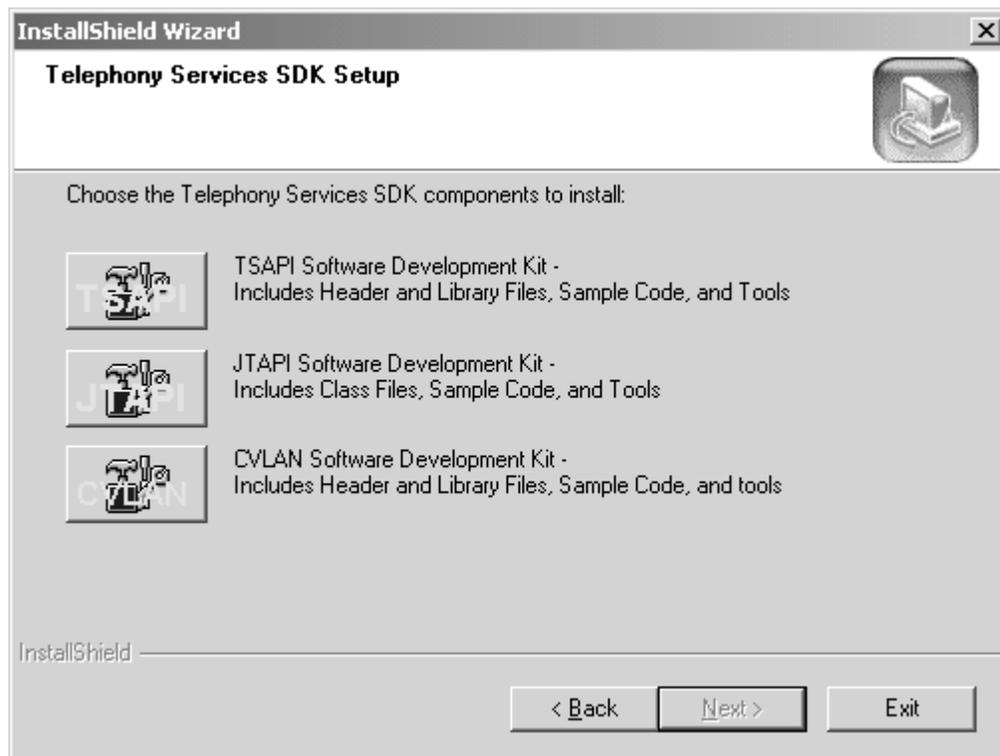
Figure 7-2: Telephony Services Setup Screen



3. Click on the **Software Development Kit (SDK)** button.

Using the JTAPI SDK

The Telephony Services SDK Setup screen displays



4. Click on the **JTAPI Software Development Kit** button.

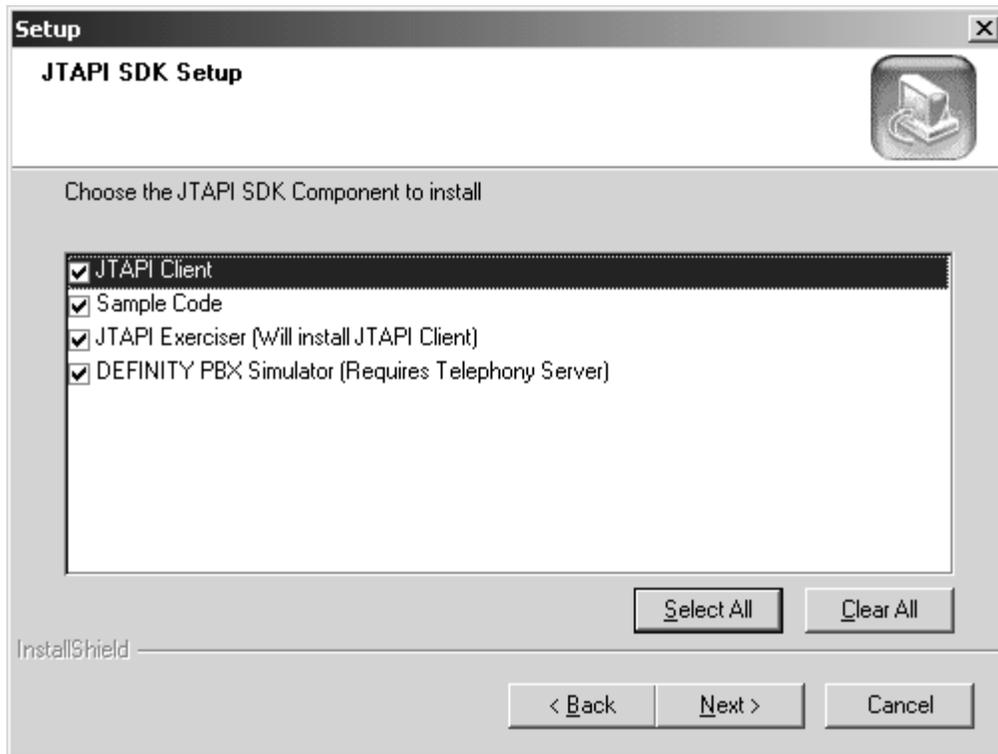
The Welcome screen displays.



Using the JTAPI SDK

5. Click **Next** to continue with the installation.

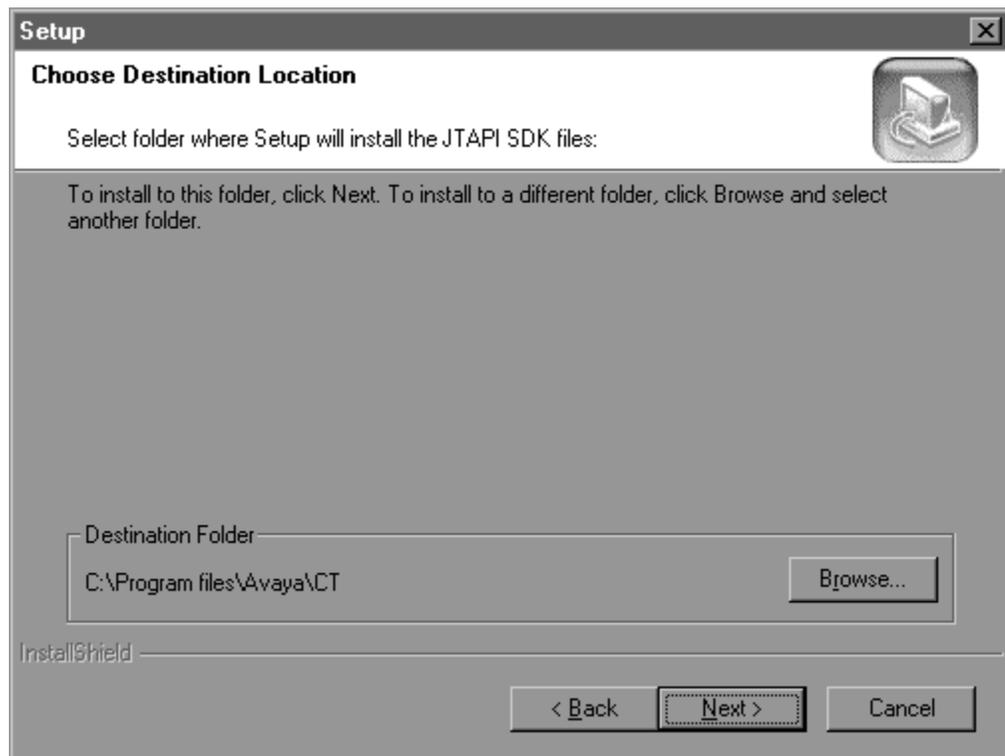
The JTAPI SDK Setup screen displays.



6. Check the appropriate components to install then click **Next**.

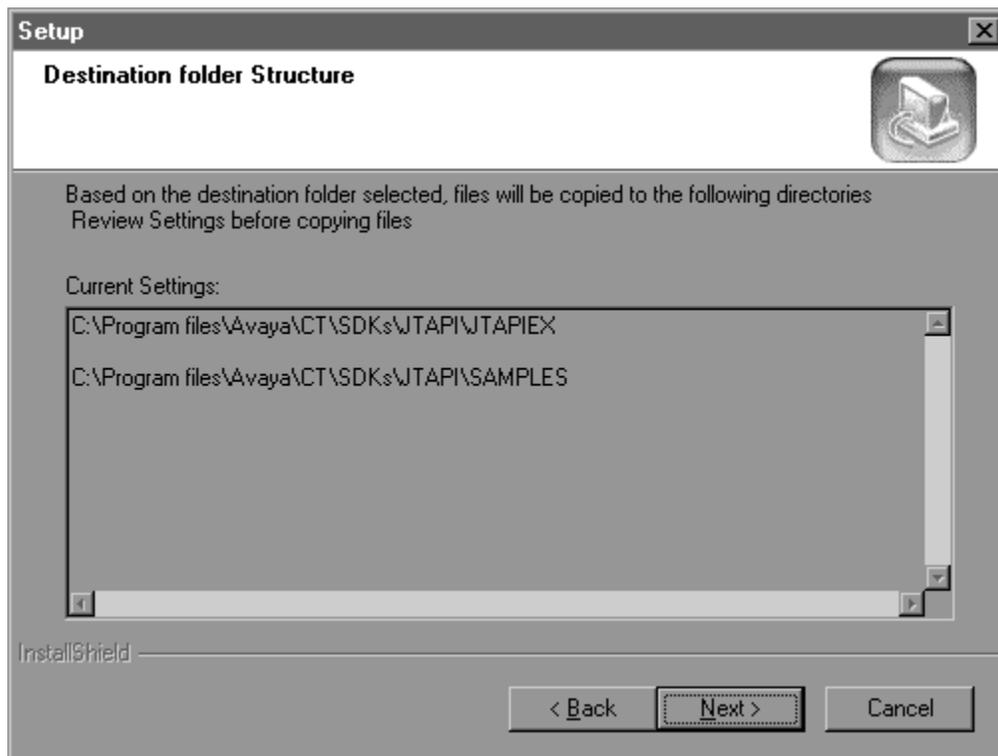
If you have selected the JTAPI Client then the JTAPI Client Welcome Dialog displays. Refer to "Installing the JTAPI Client Software in the Windows Environment" on page - 151 for more information.

The Choose Destination Location screen displays.



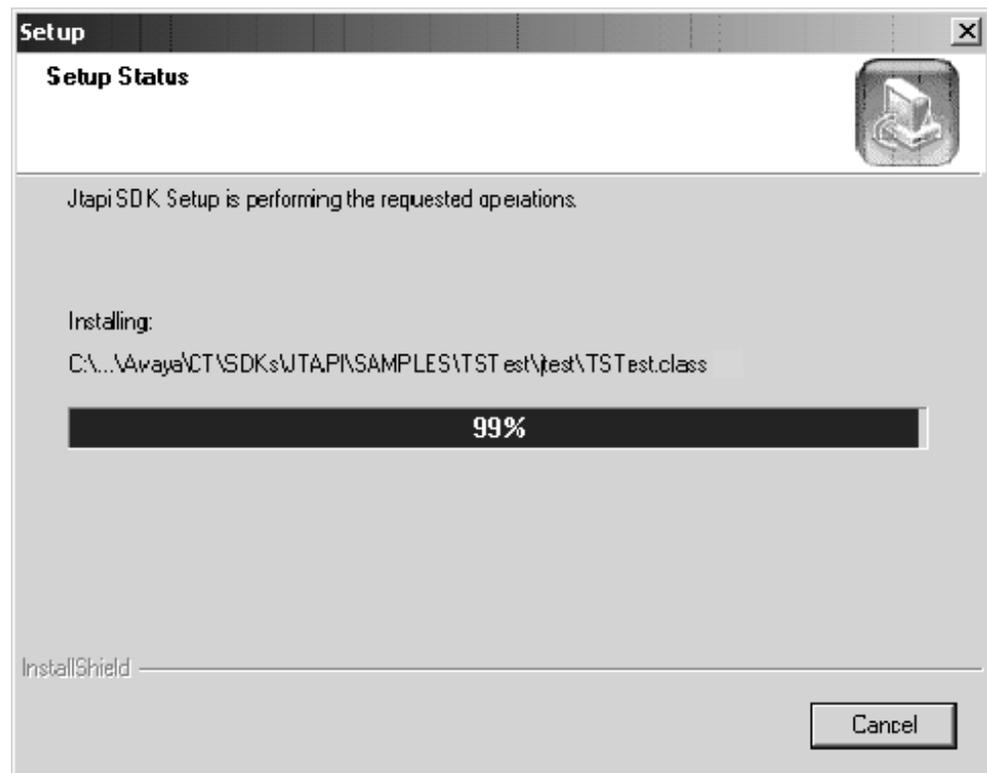
7. Accept the default destination folder or use the browse button to select a different destination location. Click **Next**.

The Destination Folder Structure screen displays.



8. Click **Next**.

The Installation Status screen displays.



The installation is complete.

Private Data Versions Supported

The Avaya Computer Telephony JTAPI client platform supports DEFINITY Private Data Version up to Private Data Version 6.

For more information see, [Table 1-1: Avaya Computer Telephony Client Platforms - Private Data Version Compatibility.](#)

Java Client Hardware and Software Requirements

See Table 7-1 for the Java Client Hardware and Software requirements.

Table 7-1: Java Client Hardware and Software Requirements

CPU	Any platform that supports Java Virtual Machine (VM)
RAM	Platform-dependent
Disk Space	2 MB
Operating System	Java VM ¹ Netscape Navigator 3.x or later or Internet Explorer 4.x or later

1. Any Java Virtual Machine (VM) compatible with the Sun Microsystems Java specification, Version 1.02 or later.

Application Development Basics

1. Obtain a JtapiPeer object using the JtapiPeerFactory class. The TsapiPeer class represents the Avaya JTAPI implementation.

For example:

```
jtapiPeer = JtapiPeerFactory.getJtapiPeer("com.avaya.jtapi.tsapi.TsapiPeer")
```

2. Obtain a list of available tlinks by using the getServices() method of the JtapiPeer class.

For example:

```
String[] tlinks = jtapiPeer.getServices();
```

3. Obtain a Provider object using the getProvider() method of the TsapiPeer class. Specify Tserver TLINK name and Tserver login and password.

For example:

```
provider = tsapiPeer.getProvider("avaya#cstaserv#csta#myserver;" + "login=user1;" + "passwd=user1pass;")
```

Note:

The Simulator TLINK name will be "avaya#cstaserv#csta#<your tserver>" where <your tserver> is the name of the Windows NT, Windows 2000 or Windows XP server that the Tserver is installed on. The login and password are the user's Windows NT, Windows 2000 or Windows XP login and password.

4. The methods that return addresses (such as `getAddresses()` on `Provider` and `getRouteableAddresses()` on `CallCenterProvider`) will always return an address for the special string `ALL_ROUTE_ADDRESS`, which is defined in `RouteAddress`. However, an application will be able to successfully register a route for the address only if the user, on behalf of whom the application is making the request, is administered in the SDB with the Routing Services Access Group set to 'Any Device'.
5. If your application will run against a Definity EAS switch you can use the `addAgent` method on the `javax.callcenter.AgentTerminal` interface to log in an EAS agent, just let the `ACDAddress` field be null.

Running JTAPI Applets

The following instructions describe how to run applets in the popular internet browsers.

Running Applets in Netscape Communicator

Follow these guidelines when running applets in Netscape Communicator.

1. Make sure the `ECSJTAPID.JAR` file is in the same directory as your HTML web page.
2. Make sure there is a line in the web page for your java applet to access `ECSJTAPID.JAR`, as in `<APPLET archive="ECSJTAPID.JAR" code=TsTest>`
3. Make sure the `ECSJTAPID.JAR` is signed with a Verisign Class 3 certificate, so users who access the web page will be prompted to allow additional privileges.

Running Applets in Internet Explorer

Follow these guidelines when running applets in Internet Explorer.

1. Make sure the ECSJTAPID.CAB file is in the same directory as your HTML web page.
2. Make sure there are lines in the web page for your java applet to access ECSJTAPID.CAB, as in

```
<OBJECT  
    CLASSID="clsid:278E9392-39B9-11d1-B301-006097B5325A"  
    CODEBASE="ECSJTAPID.CAB">  
</OBJECT>
```

Additionally, if your applet is in a signed cab such as TSTEST.CAB, make sure there are lines in the web page to access TSTEST.CAB, as in

```
<OBJECT  
    CLASSID="clsid:2EDB26E1-39B7-11d1-B301-006097B5325A"  
    CODEBASE="tstest.cab">  
</OBJECT>  
<APPLET CODE=tstest/TSTest>
```

3. If the web page is using signed cabinets, such as ECSJTAPIA.CAB, the security settings for Internet Explorer on clients must be set to "Medium" or lower.
4. ECSJTAPIA.CAB is signed with a Verisign Class 3 certificate, so users who access the web page will be prompted to allow additional privileges.

Note:

When running applets in Internet Explorer 3.x you may only access a Tserver that is co-located with the web server which hosts the web page for your applet. However, if you apply Microsoft's Java SDK 2.0 to Internet Explorer this restriction does not apply.

JTAPI Sample Applications (SDK\Jtapi\OS_Independent\Samples)

With this product, four sample JTAPI applications/applets have been included to help you get started.

- ACD Applet
- CallLog Application
- TSTest Applet/Application
- Route Applet

Each directory contains both the source and the executable files. Examine the source files -- *.java and *.html -- for details on the JTAPI interfaces used.

Below, you will find a high-level description of these applications and how to configure your system to run them. We will be using the ecsjapid.jar file included on the CD. Also, we will be using Sun appletviewer included in the Java Development Kit (JDK) available from JavaSoft at Sun.

ACD Applet

This applet demonstrates the use of the JTAPI Call Center package. It gets the ACDAddresses known to the provider, and the agents logged-in at those ACD splits. It tries to log-in two agents specified as parameters in the acd.html file.

To run:

1. CLASSPATH must be modified to include ecsjtapid.jar, and the directory containing the tsapi.pro file.
2. Modify the tsapi.pro file to include the IP address or hostname of your Tserver. If you are setting up Avaya Computer Telephony in a Network Address Translation (NAT) environment, use the IP address administered in the NAT table as the outside address of the Telephony Server.
3. Modify the acd.html file to customize it for your environment.

You will need to change the following applet parameters:

- SERVICENAME — Advertised name of the CTI link
 - LOGIN — NT/Telephony Server user login
 - PASSWORD — NT user password
 - ACD — Split extension for an ACD administered on your
 - PBX
 - AGENT1 — Agent for split specified (logged-off)
 - AGENT2 — Agent for split specified (logged-off)
4. From the command prompt, type
appletviewer acd.html

CallLog Application

This application uses JTAPI along with some of the Avaya Computer Telephony extensions to the API to access functionality specific to the DEFINITY G3 PBX.

This application has these purposes:

- Observe a terminal to log all incoming and outgoing calls to/from the specified device. It also displays UserToUser information, if any, associated with the call.
- The ability to make calls and send UserToUser information along with the call
- The ability to send DTMF through an active call

- The ability to disconnect active call

To run:

1. CLASSPATH must be modified to include ecsjtapid.jar, and the directory containing the tsapi.pro file.
2. Modify the tsapi.pro file to include the IP address or hostname of your Tserver.
3. From the command prompt, type
start java CallLog

TSTest Applet/Application (in the TSTest directory)

Use TSTest to make a call in order to test the installation of the JTAPI client software. It may be executed as an applet or a stand-alone Java application. Use TSTest to make a call in order to test the installation of the JTAPI client software. It may be executed as an applet or a stand-alone Java application.

1. CLASSPATH must be modified to include ECSJTAPID.JAR, and the directory containing the TSAPI.PRO file.
2. Modify the TSAPI.PRO file to include the IP address or hostname of your Tserver.
3. To run as a standalone java application, from the command prompt, change directory to TSTest and :start java tstest/TSTest
4. To run TSTest as an applet:
 - for Netscape -
 - a. Copy the TSTest directory and the ECSJTAPID.JAR file to the web server.
 - b. Access the web page navtestd.html to run the applet.
 - for IE -
 - c. Copy the IE4Test directory and the ECSJTAPIA.CAB file to the web server.
 - d. Copy the modified TSAPI.PRO file to the client's java library directory. (On a Windows NT, Windows 2000 or Windows XP machine this is the java\lib directory.)
 - e. Access the web page ietstesta.html to run the applet.

Route Applet

This applet demonstrates the use of the JTAPI Call Center package. It is a routing application which registers the VDN specified in the route.html for routing. When a call is received by the VDN, the applet requests a route destination. When the route destination is entered, the call is routed to that destination.

Using the JTAPI SDK

To run:

1. CLASSPATH must be modified to include ecsjtapid.jar, and the directory containing the tsapi.pro file.
2. Modify the tsapi.pro file to include the IP address or hostname of your Tserver.
3. Modify the route.html file to customize it for your environment. You will need to change the following applet parameters:
 - SERVICENAME — Advertised name of the CTI link
 - LOGIN — NT/Telephony Server user login
 - PASSWORD — NT user password
 - VDN — VDN administered for routing to CTI link
4. From the command prompt, type
appletviewer route.html

The JTAPI Exerciser Application

The JTAPI Exerciser is a Java application that allows you to create JTAPI objects and invoke their methods interactively.

Manually Installing and Running the JTAPI Exerciser

For Non-Windows operating systems and some special cases on a Windows operating system a manual install may be necessary. The required files should be copied manually and can be found on the CD-ROM under this path: `\sdk\jtapios_independent\`. The JTAPI client classes can be found at this path: `\client\jtapios_independent\`. For specific system configuration issues see the JTAPI Client readme file.

Follow these steps to manually install and run the JTAPI Exerciser.

1. Copy `jtapiex.jar` from `SDK\Jtapi\OS_Independent\Tools\Jtapiex` to a local directory.
2. (Microsoft VM) Unzip the Jtapi class file (`ecsjtapia.zip` or debug version `ecsjtapd.zip`) in the `%SystemRoot%\java\lib` directory. Also, copy the edited `Tsapi.pro` to the same directory.
3. (Microsoft VM) Unjar the `Jtapiex.jar` file in the `%SystemRoot%\java\lib` directory.
4. (All other VMs) Copy Jtapi class files and the edited `Tsapi.pro` to any directory in the CLASSPATH environment variable:
(Netscape 4.x) `ecsjtapia.jar`, `ecsjtapid.jar`
(all others) `ecsjtapia.zip`, `ecsjtapid.zip`
5. From the command prompt, type:

```
start java jtapiex/Jtapiex (Sun JDK)
```

```
start jview jtapiex/Jtapiex (Microsoft VM)
```

Obtaining Version Information

To obtain version information of the JTAPI client software, execute the following command from the command prompt:

```
java ECSJtapiVersion
```

Or in the Windows environment run the application from the JTAPI SDK start menu shortcut.

JTAPI Online Support

Up to date information, including patches and Frequently Asked Questions are available at the following URL:

<http://www.avaya.com/support/>

■ ■ ■ ■ ■ ■

Chapter 8: Using the TSAPI SDK

This chapter contains the following sections which provide information for using Telephony Services Application Programming Interface (TSAPI) Software Development Kit (SDK), which is included on the Avaya Computer Telephony CD-ROM.

- [Overview](#) on page 177
- [SDK Online Support](#) on page 178
- [Avaya Computer Telephony Installation Instructions for Using the SDK on Windows](#) on page 178
- [High Level View of the TSAPI SDK](#) on page 179
- [Installing the TSAPI SDK](#) on page 180
- [TSAPI Programming Environment](#) on page 186
- [TSAPI Programming Notes](#) on page 187
- [Windows NT, Windows 2000 and Windows XP PBX Driver Development Information](#) on page 188
- [TSAPI Sample Code](#) on page 192

Overview

The TSAPI SDK is intended for programmers who are developing Computer Telephony Integration (CTI) applications in a simulated environment.

The Avaya Computer Telephony SDK provides a programming environment (including a switch simulator) that enables you to develop the following.

- TSAPI-compliant applications on Win32, and UnixWare
- TSAPI-compliant PBX drivers under Windows NT, Windows 2000 or Windows XP

Note:

The SDK does not provide you with a Driver Authorization file (the G3PD License File). If you intend to access live PBX resources you must obtain the DEFINITY Driver Authorization File (G3PD License).

SDK Online Support

Up to date information, including patches and Frequently Asked Questions are available at the following URL:

<http://support.avaya.com/>

Under "CTI", select "**Avaya Computer Telephony SDK Support**".

Avaya Computer Telephony Installation Instructions for Using the SDK on Windows

From the master Avaya Computer Telephony Installer install the product documentation and the Avaya Computer Telephony Software. Do not install the DEFINITY G3 PBX Driver and CallVisor PC software. At the "Server Setup" screen, clear the "DEFINITY G3 PBX Driver and CallVisor PC" checkbox. After installing the Telephony Server and Security Database use the master Avaya Computer Telephony Installer to install the TSAPI SDK components.

Related Documentation

The TSAPI for Avaya MultiVantage Programmer's Reference Guide contains syntax for private data versions 2 - 6. The format title of the document is: *Avaya Computer Telephony, Telephony Services Application Programming Interface (TSAPI) for Avaya MultiVantage, Programmer's Reference Guide* (DEFPROG.PDF in the \doc directory of the CD-ROM)

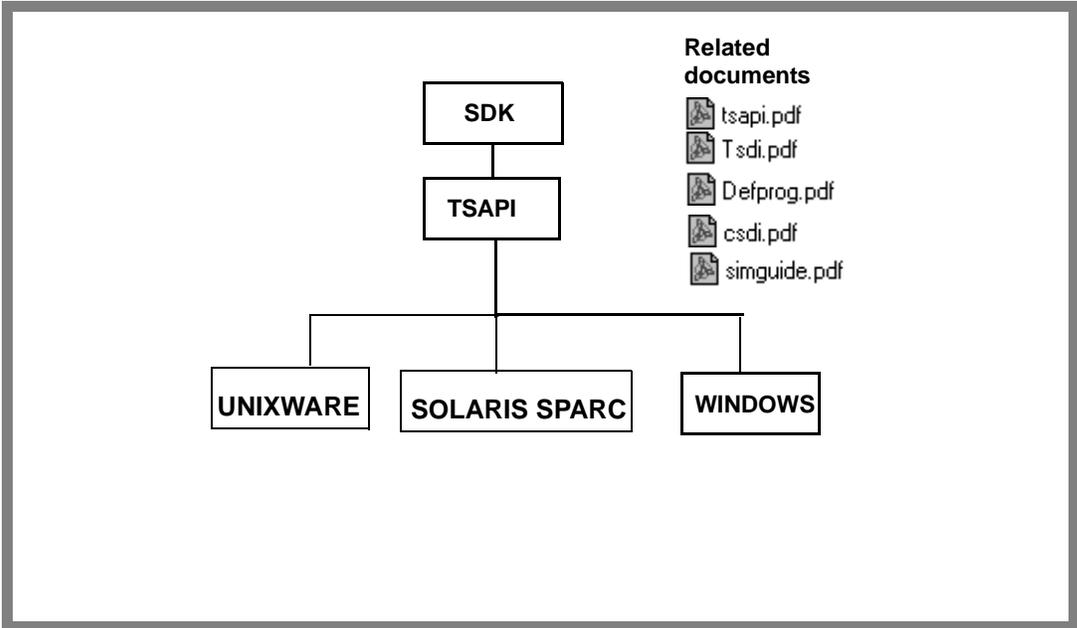
Telephony Services Driver developers should refer to the following documentation for detailed information about the Telephony Services Driver Interface:

Telephony Services PBX Driver Interface Specification (TSDI.PDF).

High Level View of the TSAPI SDK

The TSAPI SDK provides a development environment for programming TSAPI applications and developing PBX drivers. Figure 8-1 shows the components included in the TSAPI SDK.

Figure 8-1: SDK at a Glance

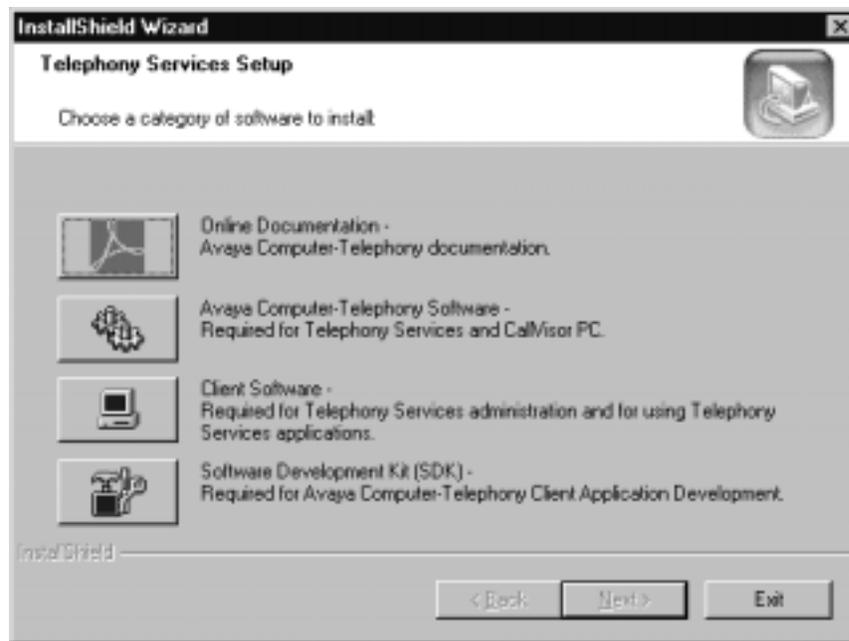


Installing the TSAPI SDK

Installing in the Windows Environment

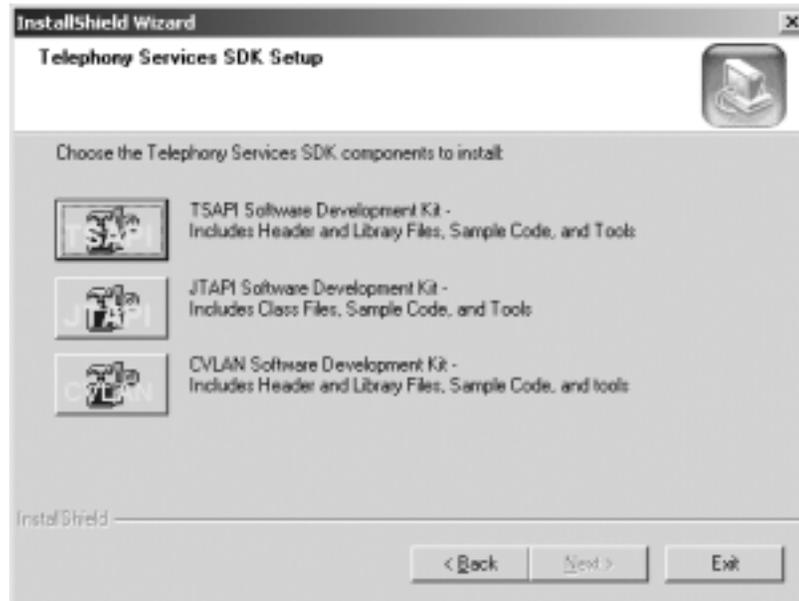
1. Insert the CD into the CD-ROM drive (the Setup program runs automatically if you have not disabled the AutoRun feature).
2. Setup displays the Telephony Services Setup dialog box.

Figure 8-2: Telephony Services Setup Screen



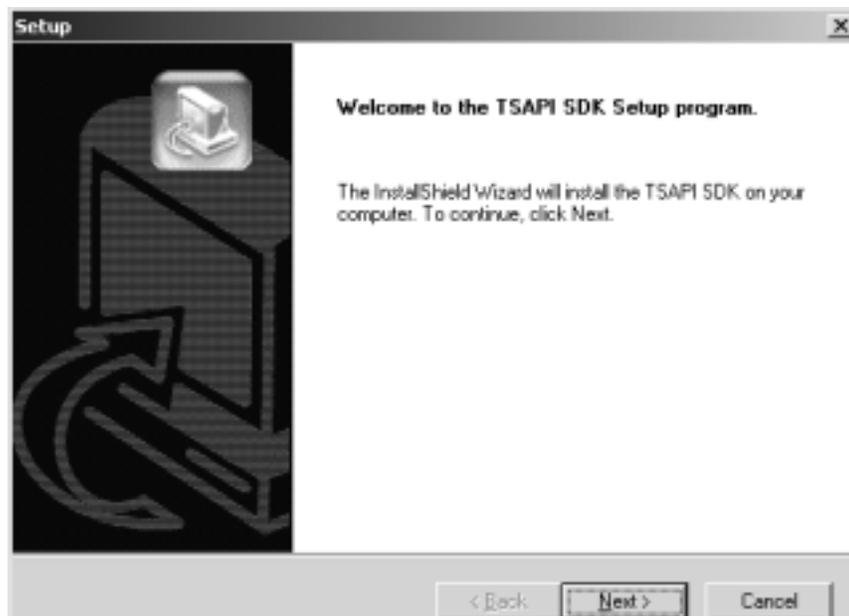
3. Click on the **Software Development Kit (SDK)** button.

Figure 8-3: Telephony Services SDK Setup Screen



4. Click on the **TSAPI Software Development Kit (SDK)** button.

Figure 8-4: Welcome Screen



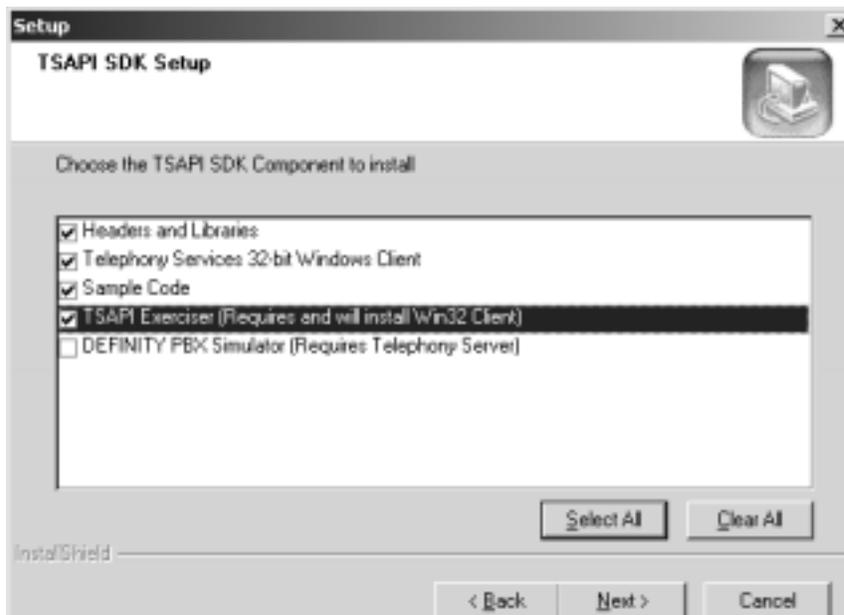
5. Click **Next**.

Note:

At this time a search for previous versions/components is conducted so processing may take a few minutes. If a previous version is found, a message displays asking you if you would like to continue with the installation. Having multiple versions installed is allowed and you may continue without uninstalling. It is recommended that you uninstall the previous version to avoid confusion. Uninstall directions are displayed.

If you continue with the installation procedure the following screen displays.

Figure 8-5: TSAPI SDK Setup Screen



6. Check the appropriate components to install then click **Next**.

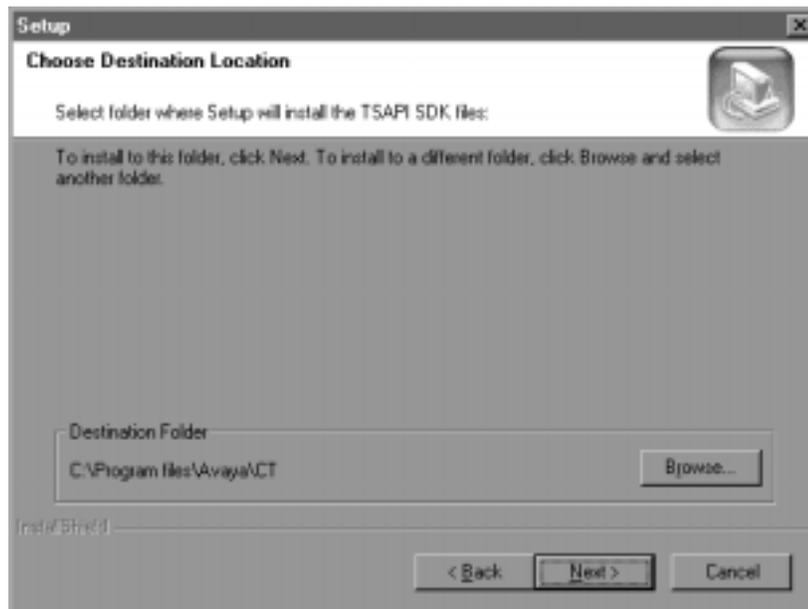
Note:

If the Telephony Services 32-bit Windows client was selected to be installed, the Setup screen displays. Refer to “Installing the Windows Client Software” on page -101 for more information.

If the Definity PBX Simulator was selected to be installed, the Setup screen displays. Refer to Specialized Installations in Chapter 3 for more information about installing the Definity PBX Simulator.

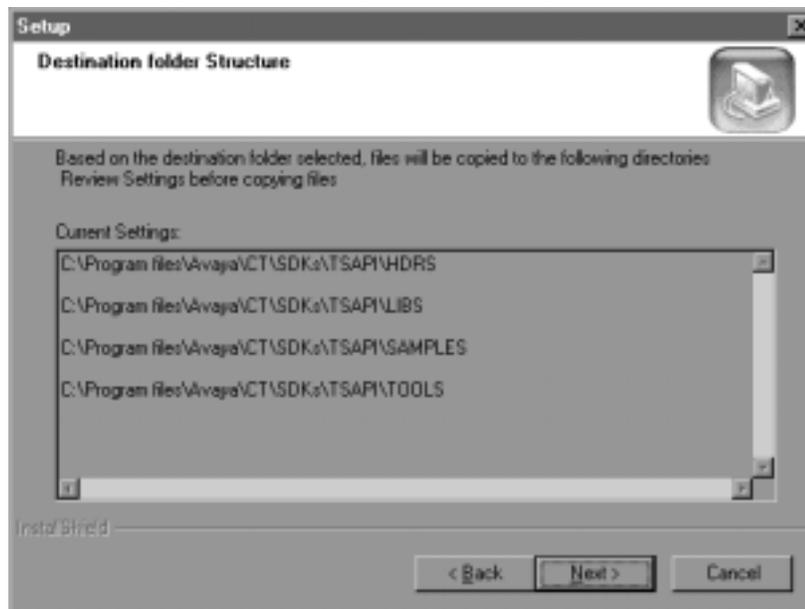
The installation of the TSAPI SDK continues.

Figure 8-6: Destination Location Screen



7. Accept the default destination location and click **Next** to continue.

Figure 8-7: Destination Folder Structure Screen



8. Review settings and click **Next**.

The Installation is now complete.

Installing in the Unixware Environment

Installing from the CD:

1. Become super-user (root): `su`
2. Enter the root password when prompted.
3. Insert the Telephony Services CD-ROM into your workstation CD-ROM drive.
4. At the command prompt, mount the CD-ROM as follows:

```
mount -F cdfs -r /dev/cdrom/device /mountpoint
```

where `device` specifies the CD-ROM drive that contains the Telephony Services installation disk and `mountpoint` is the name of an existing directory (such as `/cdrom1` or `/CD-ROM_1`) on which to mount the CD-ROM. You can use the `ls` command to find the appropriate name for your system.

Desktop users may find it easier to mount the CD-ROM by double-clicking on the CD-ROM icon in the "Disks-etc" folder.

5. At the command prompt, enter the `pkgadd` command as follows:

```
pkgadd -d /mountpoint/sdk/tsapi/unixware/nwtssdk.spl
```

where `mountpoint` is as described above. (Note: the full pathname, beginning with a `'`, is required.)

6. Select package to install.

The system now displays a list of the packages on the CD-ROM.

Press `<Enter>` to select the **nwtssdk** package.

7. Read the Telephony Services SDK "readme" file.

The `pg` command displays the Telephony Services SDK "readme" file, `tslib.readme`. This file contains information about changes that were made after the manuals were completed. Read this information until you reach the end of the file.

8. The installation is complete. Unmount the CD-ROM as follows:

```
umount /dev/cdrom/device
```

where `device` is the same as in Step 3.

You may now remove the CD-ROM.

Installing in the Solaris Environment

1. At the command prompt, enter the `pkgadd` command as follows:
`pkgadd -d /cdrom/cdrom0/SDK/tsapi/sparc/tsapisdk.spl`
2. At the *enter path to package base directory* prompt, enter
`/usr/include/nts` (or the directory of your choice)

Installing in the HP-UX Environment

3. Become super-user (root): `su`
4. Enter the root password when prompted.
5. Insert the Telephony Services CD-ROM into your workstation CD-ROM drive.
6. At the command prompt, mount the CD-ROM as follows:
`mount -F cdfs -r /dev/cdrom/device /mountpoint`
where *device* specifies the CD-ROM drive that contains the Telephony Services installation disk and *mountpoint* is the name of an existing directory (such as `/cdrom1` or `/CD-ROM_1`) on which to mount the CD-ROM. You can use the `ls` command to find the appropriate name for your system.
7. Desktop users may find it easier to mount the CD-ROM by double-clicking on the CD-ROM icon in the "Disks-etc" folder.
8. At the command prompt, enter the `swinstall` command as follows:
`swinstall -s/<mountpoint>/SDK/TSAPI/HPUX/TSSDK.TAR\;1`

TSAPI Programming Environment

This section summarizes the contents of the SDK\TSAPI subdirectories.

"Hdrs" Directory (SDKs\TSAPI\HDRS)

This directory contains header files for the TSAPI SDK. Two files are of particular importance, "attppriv.h" and "attpdefs.h," which are for the DEFINITY G3(ATT)private data version 6 SDK.

About the Private Data Version Files

If your current TSAPI applications were written against earlier versions of the SDK they will not handle DEFINITY G3 private data correctly if they are simply recompiled with this version of the SDK. Here are some guidelines for upgrading your application.

- If you want to recompile your existing applications using this version of the SDK, search in attppriv.h and attpdefs.h for the string "ATTV5."
- Typedefs and constants that have been changed in support of private data version 6 have been preserved with the preface "ATTV5."
- Your application will have to be upgraded if you wish to continue to use these typedefs and constants.

Libs (SDKs\TSAPI\LIBS)

This directory contains the CSTA32.LIB and ATTPRIV32.LIB import libraries. These are private data version 6 files.

Samples (SDKs\TSAPI\SAMPLES)

This directory contains samples of complete applications that demonstrate how to program to TSAPI.

Tools (SDKs\TSAPI\TOOLS)

This directory contains the Tsapi Exerciser program.

Win32 (SDKs\TSAPI\Windows)

This directory contains the CSTA32.LIB and ATTPRIV32.LIB import libraries. These are private data version 6 files.

TSAPI Programming Notes

Closing Streams Before Exit

Your application must close all open streams -- preferably by calling `acsAbortStream()` -- before exiting.

`acsCloseStream()`

You must retrieve the `ACSCloseStreamConfEvent` by calling `acsGetEventBlock()` or `acsGetEventPoll()` if you use `acsCloseStream()`. Unless your application needs to see the `ACSCloseStreamConfEvent`, e.g. the PBX driver sends private data with the close confirmation in which you are interested, you should use `acsAbortStream()` instead.

DEFINITY Private Data Name Change

DEFINITY Private Data is the name of the software formerly called AT&T Private Data. All functions formerly contained in AT&T Private Data are provided by DEFINITY Private Data and the file names are the same.

Version Negotiation

When opening a stream, an application may negotiate with a PBX driver to agree upon the version of private data protocol to be used (as described in "Private Data Version Control" in the TSAPI for Avaya MultiVantage Programmer's Guide). It is also important that the DEFINITY private data library can support this protocol. To ensure this and to assist in the construction of a proper version string, the `attMakeVersionString()` API may be used.

This function accepts a string containing the numerical range of versions supported by the application, e.g., "1-3", and returns (in a caller-supplied buffer) a "filtered" string to be passed in the version negotiation, e.g., "AT&T Definity G3#2".

This string includes the vendor name, and represents the intersection of those versions supported by both the application and the DEFINITY private data library. Upon success, the function returns the length of the output string (not including terminating NULL). The function may fail with return value `ACSERR_BADPARAMETER` if the input string is ill-formed, or, if no requested version is supported by the library, may return `ACSERR_APIVERDENIED`.

Windows NT, Windows 2000 and Windows XP PBX Driver Development Information

This section contains important information for developers creating TSAPI client applications and Telephony Services PBX drivers.

Linkage Notes

- The TDI.LIB import library was generated by Microsoft Visual C++. If your development system does not support the Microsoft library format, you must consult its documentation to determine how to create an equivalent import library from TDI.DLL.

Alternatively, you can dynamically import the TSDI via `LoadLibrary ()` and `GetProcAddress ()` or use some other symbol import method.

- We recommend Microsoft Visual C++ for developing PBX Drivers.

Avaya Computer Telephony R11.1 V1 requires that you use Microsoft Visual C++ 6.0 for developing PBX drivers and Windows .EXE applications.

PBX Driver Installation

Telephony Services for NT installs INSTTSDR.DLL, a utility library for PBX driver installation.

INSTTSDR.DLL exports a function called `installTelephonyServicesDriver()`. Your PBX driver's installation routine may call this function in order to add the driver's name to the Tserver's list of drivers.

The INSTTSDR.H header file specifies the C-language interface to the functions in INSTTSDR.DLL.

`installTelephonyServicesDriver()` is a convenience routine so that the user does not have to manually add the driver to the Tserver's list of administered drivers via TSA.

You may not include INSTTSDR.DLL with your PBX driver; rely on the Telephony Server to provide this file.

Sample Code

Figure 8-8: Sample Code on page 190 provides sample code for using the `installTelephonyServicesDriver()` function with a popular installer, `InstallShield3`.

Figure 8-8: Sample Code

```
prototype INSTTSDR.installTelephonyServicesDriver
                                (BYREF STRING, NUMBER);

InstallAsTserverDriver:
// Add the driver.dll to the tservers registry entry
// as a driver and have it auto loaded when
// Tserver restarts.
nRc = UseDLL(WINSYSDIR^"INSTTSDR.DLL");
if (nRc < 0) then
// Couldn't load the insttsdr dll...
// Tserver probably wasn't installed...
sprintfBox(WARNING, "Install Problem",
"Installation was unable to enter the driver.dll "+
"in the Telephony Services list of drivers "+
"(Possibly because the Telephony Services "+
"product is not installed yet). "+
"You will have to perform this function manually "+
"through the Telephony Services Administrator "+
"application.");
else
svDriverName = "driver.dll";
nRc = installTelephonyServicesDriver
                                (svDriverName, TSDR_AUTOLOAD);

// Only put up the warning if it wasn't success
// and it wasn't a duplicate entry.
if (nRc < TSDR_DUPLICATE) then
sprintfBox( WARNING, "Install Problem",
"Installation was unable to enter the driver.dll "+
"in the Telephony Services list of drivers "+
"(Possibly because the Telephony Services product"+
"is not installed yet). "+
"You will have to perform this function "+
"manually through the Telephony Services "+
"Administrator application.");
endif;
UnUseDLL(WINSYSDIR^"INSTTSDR.DLL");
endif;
```

CSTA Server

The CSTA Server DLL provides an alternate PBX driver interface, called the CSTA Services [PBX] Driver Interface (CSDI), for use in passing CSTA request, response, and event messages between a PBX Driver and the Telephony Server.

The CSTA Server is always loaded by the Telephony Server. CSDI compliant drivers do not need to load any additional software to load their drivers.

Driver Debugging Strategies

The Tserver runs as an NT Service which makes debugging PBX drivers difficult. This SDK includes an executable version of the Tserver (TSRVSDK.EXE) which may be useful in developing and debugging your PBX Driver. This executable still requires all of the supporting DLLs as does the Service version of the Tserver (TSRV.EXE). A good way to install TSRVSDK.EXE is to place it in the same directory as TSRV.EXE.

Note:

TSRVSDK.EXE does not call `tdiStopDriver()`, the Driver's unload function. You must test your PBX driver with TSRV.EXE running as a service to test your unload routine.

To test PBX driver unload, stop the TSAPI Telephony Services Service from the Services control panel. If an error occurs indicating that the Tserver did not respond to the stop request, verify that nothing in the Driver's `tdiStopDriver()` function is hanging. Look in the Tserver Error Log for an entry "UNLDDRV: Freeing the library <drivername.dll>". This entry indicates that the Tserver called the Driver's `tdiStopDriver()` function and received a successful result (TRUE) from the Driver. If this message is not in the Error Log then the Driver is hung somewhere in its unload function. The Tserver will not finish unloading until the Driver does.

Note:

The Driver must not return from the `tdiStopDriver()` function until it has completely stopped all of its threads and cleaned up all of its resources. If the Driver still has something running after it returns from `tdiStopDriver()`, TSRV.EXE will abnormally terminate because the Tserver frees the driver library upon a successful return from `tdiStopDriver()`. If the Driver tries to access memory after it has been freed, abnormal termination will occur.

TSAPI Sample Code

In a Windows installation, the sample code can be located through the Avaya Computer Telephony TSAPI SDK entry in the Start menu. The TSAPI samples provided are complete applications that demonstrate how to program to TSAPI. Each of these samples builds on the next, with each one implementing more TSAPI functionality than the previous one. These samples were all written in C++ and built using the Microsoft Developer Studio and the Microsoft Foundation Classes (MFC). The makefiles (*.MDP and *.MAK) provided with this sample are specific to that development environment. However, no complex C++ or MFC techniques were used and there are comments explaining the MFC code to non-MFC folks.

Porting this code to other platforms will require modifications to event notification.

These samples build on each other in the following order:

1. TSAPIOUT - TSAPI Outgoing Call Handling

1 device, 1 call Shows basic outgoing call handling for a single device and a single call with no redirection, conferencing, transferring, etc. Includes making a call and hanging up the call.

2. TSAPIIN - TSAPI Incoming Call Handling

1 device, 1 call Adds incoming call handling to sample 1. Still no redirection, conferencing, etc. It demonstrates differentiating between incoming calls and outgoing calls. Includes answering calls.

3. TSAPIMUL - TSAPI Multiple Call Handling

1 device, many calls Adds multiple call handling to sample 2. It demonstrates how to keep track of multiple calls at the same device. Includes holding and retrieving calls. Also includes redirection as a bonus.

4. TSAPICNF - TSAPI Conference Call Handling

1 device, many calls Adds conference/transfer handling to sample 3. Includes tracking of many connections on a single call.

The following files are common to all of the samples:

TSAPI.CPP

TSAPI.H

helper classes for tracking devices and calls and routines for retrieving TSAPI events from the CSTA DLL

OPENTSRV.CPP

OPENTSRV.H

supports the Open Tserver dialog; authorizes the user, opens the TSAPI stream and registers the selected device with the TSAPI helper classes.

SAMPLDLG.CPP

SAMPLDLG.H

supports the main application dialog; all call-related control is here: making calls, answering calls, call event handling, etc.

STDAFX.CPP

STDAFX.H

MFC files that do not contain any interesting code for the purposes of TSAPI-code demonstration

RESOURCE.H

resource IDs for the application

The following files contain similar functionality in each sample, but are named unique to each sample:

TSAPIOUT.CPP

TSAPIOUT.H

TSAPIOUT.RC

initialization and resources for sample 1

TSAPIIN.CPP

TSAPIIN.H

TSAPIIN.RC

initialization and resources for sample 2

TSAPIMUL.CPP

TSAPIMUL.H

TSAPIMUL.RC

initialization and resources for sample 3

TSAPICNF.CPP

TSAPICNF.H

TSAPICNF.RC

initialization and resources for sample 4

For More Information

For more information about the TSAPI SDK, see the TSAPI SDK Readme file (SDK Readme (<DriveID>:\Readmes\TSAPI SDK Readme.txt))

■ ■ ■ ■ ■ ■

Appendix A: Avaya Computer Telephony Installed Files

This appendix lists the files that Avaya Computer Telephony installs. It lists files associated with the following components.

- Avaya CT Server
- G3PBX Driver
- Win 32 Client
- UnixWare Client
- HP-UX Client

Drive designations in the Tables A-1 through A-4 are depicted as "C:\" by convention. This drive designation can vary according to the requirements of your system.

Avaya CT Server

When Avaya CT server software is installed, the files listed in Table A-1 are copied to your server's hard drive.

Table A-1: Telephony Server Files

File Name	Destination Directory
Uninstsrc.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tsconfig.exe	C:\Program Files\Avaya\CT\tsrv\Program
Tsctrl.exe	C:\Program Files\Avaya\CT\tsrv\Program
Cserver.dll	C:\Program Files\Avaya\CT\tsrv\Program
Migrate.exe	C:\Program Files\Avaya\CT\tsrv\Program
Server Readme.txt	C:\Program Files\Avaya\CT\tsrv
Tsstart.exe	C:\Program Files\Avaya\CT\tsrv\Program
Tssdb.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tsrvbtrv.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tslogin.exe	C:\Program Files\Avaya\CT\tsrv\Program
Tslogsrv.exe	C:\Program Files\Avaya\CT\tsrv\Program
Tsrv.exe	C:\Program Files\Avaya\CT\tsrv\Program
Trafcop.exe	C:\Program Files\Avaya\CT\tsrv\Program
TSTraf.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tsusr.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tsvl.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tsauth.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tsadv.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tsevtlog.dll	C:\Program Files\Avaya\CT\tsrv\Program
Tsconfig.hlp	C:\Program Files\Avaya\CT\tsrv\Program
Tsmapped.dll	C:\Winnt\system32
Tapiinst.dll	C:\Winnt\system32
Tdi.dll	C:\Winnt\system32

Table A-1: Telephony Server Files

File Name	Destination Directory
Tslog.dll	C:\Winnt\system32
Insttsdr.dll	C:\Winnt\system32
Tsmi.dll	C:\Winnt\system32

G3PBX Driver Files

When G3PBX Driver is installed, the files listed in Table A-2 and Table A-3 are copied to your server's hard drive.

Table A-2: G3PBX Driver Files

File Name	Destination Directory	
attprv32.dll	C:\Winnt\system32	Used by CVLAN and G3PBX Driver
asaidll.dll	C:\Winnt\system32	The private data encoding/decoding library needed for the G3PD to run.
g3pd.dll	C:\Winnt\system32	The G3 PBX Driver (G3PD)
g3instal.dll	C:\Program Files\Avaya\CT\G3PD	
G3lc.exe	C:\Program Files\Avaya\CT\G3PD	
g3trace.exe	C:\Program Files\Avaya\CT\G3PD	
g3peek.exe	C:\Program Files\Avaya\CT\G3PD	
cvlan.exe	C:\Program Files\Avaya\CT\G3PD	
esai_trace.exe	C:\Program Files\Avaya\CT\G3PD	
asai_trace.exe	C:\Program Files\Avaya\CT\G3PD	
ASAISRVC.exe	C:\Program Files\Avaya\CT\G3PD	
api.msg	C:\Program Files\Avaya\CT\G3PD	
G3pd.lic	C:\Program Files\Avaya\CT\G3PD	G3pdlic is created when you install the license.
Server Readme.txt	C:\Program Files\Avaya\CT\G3PD	

Table A-3: G3PBX Driver Configuration Files

File Name	Destination Directory
data1.cab	C:\Program Files\Avaya\CT\G3PD\g3config
data1.hdr	C:\Program Files\Avaya\CT\G3PD\g3config
data2.cab	C:\Program Files\Avaya\CT\G3PD\g3config
ikernel.ex	C:\Program Files\Avaya\CT\G3PD\g3config
layout.bin	C:\Program Files\Avaya\CT\G3PD\g3config
Setup.exe	C:\Program Files\Avaya\CT\G3PD\g3config
Setup.ini	C:\Program Files\Avaya\CT\G3PD\g3config
setup.inx	C:\Program Files\Avaya\CT\G3PD\g3config
tools.ico	C:\Program Files\Avaya\CT\G3PD\g3config

Win32 Client Files

When Win32 Telephony Services Client is installed, the files listed in Table A-4 are copied to your client's hard drive.

Table A-4: Files Copied to Win32 Client

File Name	Destination Directory	Installation Conditions
ATTPRV32.DLL	Windows System directory	
CSTA32.DLL	Windows System directory	
TSINST32.DLL	C:\Program Files\Avaya\CT\TS Win32\Program	
TSSPY32.EXE	C:\Program Files\Avaya\CT\TS Win32\Program	
TSA32.EXE	C:\Program Files\Avaya\CT\TS Win32\Program	Administrator only
TSA32.HLP	C:\Program Files\Avaya\CT\TS Win32\Program	Administrator only
TSM32.HLP	C:\Program Files\Avaya\CT\TS Win32\Program	Administrator only
TSM32.EXE	C:\Program Files\Avaya\CT\TS Win32\Program	Administrator only
TSTEST32.EXE	C:\Program Files\Avaya\CT\TS Win32\Program	
WG3OAM.EXE	C:\Program Files\Avaya\CT\TS Win32\Program	Administrator only
WG3OAM.HLP	C:\Program Files\Avaya\CT\TS Win32\Program	Administrator only
TSLIB.INI	Windows directory	
Client Readme.txt	C:\Program Files\Avaya\CT\TS Win32\Program	

UnixWare Client

When Telephony Services is installed on a UnixWare client, the files listed in Table A-5 are copied to your client's hard drive.

Table A-5: Files Copied to UnixWare Client

File Name	Destination
/usr/lib/attpriv.so	Client hard drive
/usr/lib/libcsta.so	Client hard drive
/usr/lib/tslibrc	Client hard drive
/usr/lib/tstest	Client hard drive
/usr/lib/ tslib.readme	Client hard drive

HP-UX Client

When Telephony Services is installed on a HP-UX client, the files listed in Table A-6 are copied to your client's hard drive.

Table A-6: Files Copied to HP-UX Client

File Name	Destination
/usr/lib/attpriv.sl	Client hard drive
/usr/lib/libcsta.sl	Client hard drive
/usr/lib/tstest	Client hard drive
/usr/lib/tslibrc	Client hard drive

JTAPI Client

When the JTAPI Client software is installed, the files in the following table are copied to the client's hard drive.

File Name	Destination Directory
Ecsjtapi.zip	C:\Program Files\Avaya\CT\Jtapi
Ecsjtapi.cab	C:\Program Files\Avaya\CT\Jtapi
Ecsjtapi.jar	C:\Program Files\Avaya\CT\Jtapi
Jtapi Client Readme.txt	C:\Program Files\Avaya\CT\Jtapi
Simsdb.txt	C:\Program Files\Avaya\CT\Jtapi
Ecsjtapi.zip	C:\Program Files\Avaya\CT\Jtapi\All
Ecsjtapi.cab	C:\Program Files\Avaya\CT\Jtapi\All
Ecsjtapi.jar	C:\Program Files\Avaya\CT\Jtapi\All
Ecsjtapi.zip	C:\Program Files\Avaya\CT\Jtapi\Debug
Ecsjtapi.cab	C:\Program Files\Avaya\CT\Jtapi\Debug
Ecsjtapi.jar	C:\Program Files\Avaya\CT\Jtapi\Debug
tstest.cab	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest
tstext.html	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest
AppletFrame\$SymWindow.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest
AppletFrame.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest
TraceFrame\$SymComponent.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest
TraceFrame\$SymWindow.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest
TraceFrame.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest
TSTest\$SymAction.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest
TSTest\$SymFocus.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest

Avaya Computer Telephony Installed Files

File Name	Destination Directory
TSTest\$SymItem.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest
TSTest\$SymKey.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest
TSTest.class	C:\Program Files\Avaya\CT\Jtapi\Tools\Tstest\jtest

JTAPI SDK

When the JTAPI SDK software is installed, the files in the following table are copied to the client's hard drive.

File Name	Destination Directory
Jtapi SDK Reame.txt	C:\Program Files\Avaya\CT\SDKs\Jtapi
jtapiex.jar	C:\Program Files\Avaya\CT\SDKs\Jtapi\Jtapiex
AppletFrame.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\TSTest
TraceFrame.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\TSTest
tstest.html	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\TSTest
TSTest.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\TSTest
MyRouteCallback.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
MyTextArea.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
MyTextArea.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
Route\$SymComponent.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
Route.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
route.html	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
Route.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
RoutetoDialog\$SymAction.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
RoutetoDialog\$SymComponent.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
RoutetoDialog\$SymFocust.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route

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File Name	Destination Directory
RoutetoDialog\$SymKey.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
RoutetoDialog\$SymWindow.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
RoutetoDialog.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
RoutetoDialog.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Route
CallLog\$SymAction.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
CallLog\$SymComponent.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
CallLog\$SymItem.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
CallLog\$SymWindow.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
CallLog.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
CallLog.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
DTMFDialog\$SymAction.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
DTMFDialog\$SymFocus.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
DTMFDialog\$SymKey.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
DTMFDialog\$SymWindow.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
DTMFDialog.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
DTMFDialog.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
LoginDialog\$SymAction.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
LoginDialog\$SymFocus.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
LoginDialog\$SymKey.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog

File Name	Destination Directory
LoginDialog\$SymWindow.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
LoginDialog.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
LoginDialog.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
MakeCallDialog\$SymAction.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
MakeCallDialog\$SymFocus.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
MakeCallDialog\$SymKey.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
MakeCallDialog\$SymWindow.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
MakeCallDialog.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
MakeCallDialog.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
MyTextArea.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
MyTextArea.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
QuitDialog\$SymAction.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
QuitDialog\$SymWindow.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
QuitDialog.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
QuitDialog.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\CallLog
ACD\$SymComponent.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Acd
ACD.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Acd
acd.html	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Acd
ACD.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Acd

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File Name	Destination Directory
MyACDObserver.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Acd
MyTextArea.class	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Acd
MyTextArea.java	C:\Program Files\Avaya\CT\SDKs\Jtapi\Samples\Acd

TSAPI SDK

When the TSAPI SDK software is installed, the files in the following table are copied to the client's hard drive.

File Name	Destination Directory
TSAPI SDK Readme.txt	C:\Program Files\Avaya\CT\SDKs\TSAPI
Acs.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Acsdefs.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Acslimit.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Attpdefs.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Attppriv.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Cdi.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Csta.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Cstadevs.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Drvrvdefs.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Insttsdr.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Sdb.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
sdbdefs.hTdi.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Tdrvrs.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
Tsplatfm.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Hdrs
ATTPRV32.lib	C:\Program Files\Avaya\CT\SDKs\TSAPI\Libs
Csta32.lib	C:\Program Files\Avaya\CT\SDKs\TSAPI\Libs
Opentsrv.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Opentsrv.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Resource.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Sampldlg.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf

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File Name	Destination Directory
Sampldlg.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Stdafx.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Stdafx.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Tsapi.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Tsapi.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Tsapicnf.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Tsapicnf.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Tsapicnf.mak	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Tsapicnf.rc	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf
Tsapicnf.exe	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf\De bug
Tsapicnf.ico	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf\R es
Tsapicnf.rc2	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapicnf\R es
Opentsrv.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Opentsrv.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Resource.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Sampldlg.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Sampldlg.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Stdafx.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin

File Name	Destination Directory
Stdafx.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Tsapi.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Tsapi.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Tsopicnf.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin
Tsapiin.exe	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin\De bug
Tsapiin.ico	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin\Re s
Tsapiin.rc2	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiin\Re s
Opentsrv.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Opentsrv.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Resource.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Sampldlg.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Sampldlg.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Stdafx.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Stdafx.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Tsapi.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Tsapi.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Tsopicnf.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul
Tsapimul.exe	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul\ Debug

Avaya Computer Telephony Installed Files

File Name	Destination Directory
Tsapimul.ico	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul\ Res
Tsapimul.rc2	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapimul\ Res
Opentsrv.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Opentsrv.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Resource.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Sampldlg.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Sampldlg.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Stdafx.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Stdafx.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Tsapi.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Tsapi.h	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Tsapicnf.cpp	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout
Tsapiout.exe	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout\D ebug
Tsapiout.ico	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout\R es
Tsapiout.rc2	C:\Program Files\Avaya\CT\SDKs\TSAPI\Samples\Tsapiout\R es

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Appendix B: Administering CTI Links for Definity G3PD

Each Basic Rate Interface (BRI) line that connects the DEFINITY G3 switch to a LAN card installed in the Telephony file server must be properly administered.

The ports on the DEFINITY LAN Gateway are BRI ports, which is why ASAI terminals can be assigned to them. Use the `add station` or `change station` command to administer each ASAI link.

CTI Link Settings

The following table summarizes the correct DEFINITY G3 settings for DEFINITY LAN Gateway connections.

Table B-1: CTI Link Station Administration

Field Name	Required/Optional	Contents
Extension:	Required	Whatever fits your dial plan
Type:	Required	ADJLK
Port:	Required	Port that connects ASAI line
Name:	Optional	Whatever you like, room #, etc.
Event Minimization:	Required	n
Fixed TEI:	Required	y
TEI:	Required	3
MIM Support:	Required	n
CRV Length:	Required	2

DEFINITY LAN Gateway Multi- Function Board (MFB) and Multi-Application for DEFINITY Board (MAPD)

The DEFINITY LAN Gateway system is composed of a system assembly and a software application. The system assembly is a DEFINITY Multi-Function Board (MFB) (TN2208) and an Alarm Board (TN2170) inserted into a DEFINITY carrier. The DEFINITY LAN Gateway system can also run using a Multi-Application for DEFINITY (MAPD) board. The software application serves as an ISDN brouter (a combination of bridge and router) of ASAI messages through a TCP "tunnel" via 10BASE-T Ethernet.

The DEFINITY LAN Gateway application may be administered using a terminal or terminal emulator with the RS-232 console (serial) port, or using a terminal emulator that supports TCP connectivity using the LAN port. Initial administration, or administration to configure or diagnose LAN access on the MFB (or MAPD), should be performed using a serial port. Ongoing administration may be performed using either the serial or LAN port.

Administration is supported using a full-screen menu-based application provided on the MFB (or MAPD) and accessed via login and password. Administration screen categories are as follows:

- Login/Password Administration — Allows administrators to add and delete user logins. Also allows users to change their passwords.
- TCP/IP Administration — Provides access to all administrable network data: network name and IP address of the DEFINITY LAN Gateway Multi-Function Board (or MAPD) the user is accessing, all locally known hosts, and all network routing information.
- Brouter Administration — Provides access to a screen for viewing, adding, and deleting brouter clients (see Chapter 7, "DEFINITY LAN Gateway Protocol" in the DEFINITY Communications System CallVisor Protocol Reference 555-230-221).
- Maintenance — Provides access to backup and restore functions, loading of a new system from tape, and the ability to view error and security logs.
- Port Status/Control — Provides access to port status and control data. Port status can be viewed and client connections can be terminated.

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Appendix C: Migrating your Security Database

This appendix describes the procedure for migrating your Security Database from a Netware Server to a Windows Server.

Migrating from a NetWare Server to a Windows NT, Windows 2000 or Windows XP Server

To migrate from a NetWare telephony server to a Windows NT, Windows 2000 or Windows XP telephony server, you need to convert the Telephony Services Security Database (SDB) to a format understood by the Windows NT, Windows 2000 or Windows XP server. This can be easily accomplished using the Bulk Administration feature. This appendix describes the basic procedure for performing this conversion. Additional information about the Bulk Administration feature can be found in Chapter 6 of *Avaya Computer Telephony 1.2, Telephony Services Administration and Maintenance* (NETMANGD.PDF).

Bulk Administration allows you to create an ASCII file containing all the information stored in your SDB. Each file in the file is separated by commas so it can be viewed using any standard spreadsheet. You can make any modifications you want with the spreadsheet. (Be sure to import information into the spreadsheet as text, not as numbers.) When you are done, you must copy this file to your Windows NT, Windows 2000 or Windows XP server and use it to populate the SDB on this server.

Note:

Before beginning this procedure, install Telephony Services software on the Windows NT, Windows 2000 or Windows XP machine.

Converting the Security Database

To convert the Telephony Services Security Database to a Windows NT, Windows 2000 or Windows XP compatible format, follow these steps:

Back up the NetWare Security Database and create the flat file using one of the following methods:

Using TSA32:

1. From the "Admin" menu of the TSA32, select "Bulk Admin," then select "Back Up SDB."

The "Create Flat File From SDB" dialog box prompts you for the name of a flat file and any comments that are to be placed in the header of the flat file.

2. Click "OK" when you are ready to create the file.

Using NWAdmin:

1. From NWAdmin, double-click on the icon for the Tserver, then select the "Bulk Admin" page.
2. Select the Bulk Admin option "Back Up SDB (Create Flat File from SDB)." Enter the name for the flat file, the NDS context of the Security Database, and any comments that are to be placed in the header of the flat file.
3. Click "OK" when you are ready to create the file.

Note:

If your Telephony Services users exist in more than one NDS context, you will have to repeat this procedure for each context.

Table C-1 illustrates an example of the format of the conversion file. (This example represents only a subset of the file; it does not show all of the information in the file.) This portion of the file contains a line for each device, worktop, and user record in your SDB.

Table C-1: Security Database Conversion File Example

INFORM1	16	500	501
INFORM2	Tlink	Tlink Name	TSDI Size
ADD	16	NOVELL#TSRV_OAM#OAM#EAGLE.SDB.P WCTI.ACME	1500000
ADD	16	NOVELL#NSRV#NSRV#EAGLE.SDB.PWCTI. ACME	1500000

Table C-1: Security Database Conversion File Example

INFORM1	4	300	301	302	303
INFORM2	device	Device ID	Device type	Tlist	Location
ADD	4	401.sales.ny.ac me	PHONE	ANY PBX	NYC
ADD	4	402.sales.ny.ac me	PHONE	ANY PBX	NYC
ADD	4	403.svc.ny.acm e	PHONE	ANY PBX	NYC
ADD	4	404.svc.ny.acm e	PHONE	ANY PBX	NYC
INFORM1	workt op	200	201	202	203
INFORM2	2	Worktop Name	Device ID	IPX address	IP address
ADD	2	W401.sales.ny.a cme	401.sales.ny.a cme	00000666 ...	
ADD	2	W402.sales.ny.a cme	402.sales.ny.a cme	00000777 ...	
ADD	2	W403.svc.ny.ac me	403.svc.ny.ac me	00000888 ...	
ADD	2	W404.svc.ny.ac me	404.svc.ny.ac me	00000889 ...	
INFORM1	1	100	101	102	103
INFORM2	user	Login	User name	Worktop name	Dev dev list
ADD	1	John.sales.ny.a cme	John Rostov	W401.sal es.ny.	Any Device
ADD	1	Mary.sales.ny.ac me	Mary Ferraro	W402.sal es.ny.	Any Device
ADD	1	Tom.svc.ny.acm e	Tom Chen	W403.sal es.ny.	Any Device
ADD	1	Sue.svc.ny.acm e	Sue Jones	W404.sal es.ny.	Any Device

4. Copy the SDB backup file (that you created in step) to the Windows NT, Windows 2000 or Windows XP telephony server.

Migrating your Security Database

The SDB backup file can be found in the "SYS:\SYSTEM\TSRV\SDB\BULK_ADD" directory on your NetWare telephony server. You must put the file in the "\Program Files\Telephony Services\tsrv\sdb\bulk_add" directory on your Windows NT, Windows 2000 or Windows XP telephony server.

Some changes need to be made to the data in your conversion file. MIGRATE.EXE makes most of these changes for you.

MIGRATE.EXE:

Removes existing Tlink objects. New ones are added for you automatically when you start up Telephony Services on your Windows NT, Windows 2000 or Windows XP telephony server.

Removes the tserv object. Telephony Services for Windows NT, Windows 2000 or Windows XP stores this information in the Registry, not the SDB.

Removes the NDS context (if present) from primary keys in each object record.

5. Run MIGRATE.EXE on your SDB backup file from the \Program Files\Avaya\CT\tsrv\program directory on your Windows NT, Windows 2000 or Windows XP machine.

The Migrate NetWare SDB to Windows NT dialog box appears. See Figure C-1.

Figure C-1: Migrate NetWare SDB to Windows NT Dialog Box



- a. Enter the name of your conversion file and the name of the output file that is to be created.
 - b. Click on "Begin conversion" to convert the data.
6. If the file already exists in the bulk_add directory, you are asked if you want to overwrite the contents of the file. You cannot use the same name for both the backup and conversion file.
 7. Once you have completed the conversion step, you may choose to make some bulk changes to your SDB data before you install it in your Windows NT, Windows 2000 or Windows XP Telephony Services SDB.
 - a. Update Tlink Group and Admin Access Group Data.

- If your NetWare SDB contained Tlink groups or Admin Access Groups, these group objects remain, but they will no longer contain any Tlinks. You will need to add the new Tlink names to these groups.
 - You may add Tlink members to your Tlink groups and Admin Access Groups by editing the conversion file. However, it will probably be easier to make these changes using the TSA or TSA32 applications after you have loaded the conversion file into your SDB.
- b. Convert IPX addresses to IP addresses.
- If you plan to use the "Extended Worktop Access" feature and you are migrating from an IPX network to an IP network, you need to convert the network addresses in each worktop record. You do not need to remove the IPX information in the conversion file. You can let Telephony Services fill in the IP Address or IP host name (depending on your choice in the "TCP Preferred Naming Format" field).
 - If you check the "Enable Automatic Administration of LAN Addresses" field (available on the "Options" tab of the "Tserver Properties" dialog box in the TSA32), Telephony Services will save the IP address/host name of each client worktop when it opens its first connection to Telephony Services. In this case, no further changes to the conversion file are required.
 - If you are using the "Extended Worktop Access" feature but do not want to enable the automatic LAN administration, you can either enter the IP address or host name for each worktop in the conversion file, or you can make these changes using the TSA32 applications after you have loaded the conversion file into your SDB.
- c. Enable system-level features:

Use the "Tserver Options" dialog box (available through "Admin" menu of the TSA32) to set the following parameters:

- Extended Worktop Access — When this feature is enabled, the Telephony Server checks the Security Database for a worktop with the same LAN address as the workstation where the user is working. If a match is found, then the user is given call control and device/device monitoring permissions for any of the devices associated with that worktop.

Note:

In NetWare Telephony Services, this feature is known as "Restrict User Access to Home Worktop." Enabling the "Extended Worktop Access" feature in Telephony Services running in Windows is equivalent to disabling the "Restrict User Access to Home Worktop" feature in NetWare Telephony Services.

- Enable Automatic Administration of LAN Addresses — If the LAN address is not already assigned for the user's worktop and you enable this feature, the Tserver automatically fills in the LAN address information the next time the user logs on.

Migrating your Security Database

(LAN addresses are only necessary if you are using the "Extended Worktop Access" feature.)

8. Start Telephony Services on your Windows NT, Windows 2000 or Windows XP server and bring up TSA32.
 - a. Select the "Bulk Admin" option from the "Admin" menu. This time, select the "Upgrade SDB" option.
 - b. In the "Flat File Name" field, enter the name of the conversion file you created in step 5. Click "OK."

Your SDB should now contain all the information that was previously on your NetWare server.

Note:

Telephony Services for Windows NT, Windows 2000 or Windows XP added some SDB checking that was not implemented for NetWare Telephony Services. These new checks could cause some records that were valid for NetWare Telephony Services to be rejected for Telephony Services for Windows NT, Windows 2000 or Windows XP. For example, the IP host name and IP address for each workstation must be unique.

9. When the upgrade has completed, you should check the "errorsdb.txt" file, in the same bulk_add directory for any errors that may have occurred during the conversion process. See Chapter 11 of *Avaya Computer Telephony 1.2, Telephony Services Administration and Maintenance* (NETMANGD.PDF) for information on resolving these errors.

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Appendix D: Pre-Release 11 Link Administration Instructions

The following instructions apply to a Release 10 or earlier switch.

Introduction

This appendix describes DEFINITY-based tasks that must be performed to implement communications between the DEFINITY switch and the Avaya Computer Telephony server.

Scope of this appendix

Refer to Figure D-1 as you read this section. The scope of this appendix includes the DEFINITY switch and the communications interface to the Avaya CT server. The affected components are as follows.

- **The DEFINITY switch** (DEFINITY ECS, DEFINITY PROLOGIX, or DEFINITY ONE)
- **DEFINITY LAN Gateway** (DLG) on either a Multi-Application Platform for DEFINITY (MAPD) or a DEFINITY ONE.

Note:

Hardware Platforms that accommodate the DLG software are:

- **TN800 series MAPD**, which is used in a DEFINITY ECS or DEFINITY PROLOGIX.
- **TN795 Processor Card (PROCR)**, which is used in the DEFINITY ONE. The PROCR accommodates the DLG. Also, in some configurations, the TN795 card (with DLG resident) relies on the TN799 Control LAN (C-LAN) card for LAN isolation.

Using the Information in this appendix

This appendix makes two basic assumptions — that you have a DEFINITY switch, with the DEFINITY LAN Gateway (DLG) system already installed, and that you have a TCP/IP based LAN that is capable of isolating your server-based functions from your client-based functions.

The type of DEFINITY switch you have determines how you use this appendix.

- If you use a DEFINITY ECS or DEFINITY PROLOGIX, complete the tasks described in "DEFINITY ECS and DEFINITY PROLOGIX Administration" on page -224.
- If you use a DEFINITY ONE, complete the tasks described in "DEFINITY ONE Administration" on page -237.

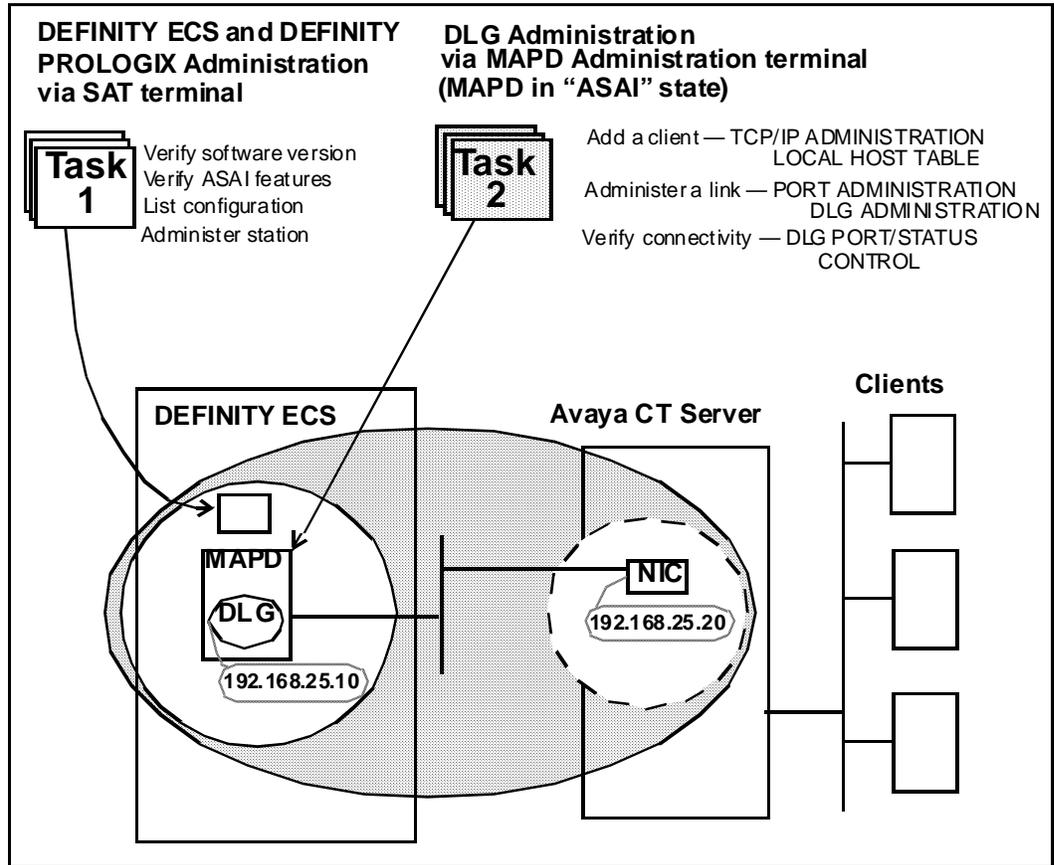
DEFINITY ECS and DEFINITY PROLOGIX Administration

This section describes DEFINITY ECS and DEFINITY PROLOGIX administrative tasks you must complete before you can install Avaya CT (see Figure D-2 for an overview of the tasks).

- Task 1: DEFINITY ECS and DEFINITY PROLOGIX Administration on a DEFINITY System Administration Terminal (SAT)
- Task 2: MAPD and DLG Administration via a MAPD Administration Terminal

Once you complete these tasks, review the checklist at the end of this appendix and proceed with [Chapter 3: Installing Avaya Computer Telephony Server Software](#).

Figure D-1: DEFINITY ECS/DEFINITY PROLOGIX and MAPD/DLG Administration at a Glance



DEFINITY ECS and DEFINITY PROLOGIX Administration — Setting Up Your LAN for Avaya CT

Before you administer the DEFINITY switch (including the DLG), make sure that you have determined how your LAN is set up.

Server LAN Segment (connectivity to the switch)

Server LAN segment functions are in the DLG administrative domain. For server-to-switch functions follow these guidelines.

- The DLG must be connected to the LAN that the Avaya CT server uses (the Avaya CT server communicates with the switch via the DEFINITY G3 PBX Driver).

- The DLG should be on its own separate LAN segment. To effect this, you will need two Network Interface Cards (NICs) in the Avaya CT Server, one for client access and one for the connection between the DLG and the DEFINITY G3 PBX Driver.

IP Addresses

It is strongly recommended that you use at least two IP addresses.

- IP address for the DLG.

Make certain that you have the IP address or the DLG or its host name (if host names are used instead of IP addresses). See the DEFINITY switch administrator.

If you are using a separate LAN for your DLG (recommended) and all links go to a single switch, then you can use the default IP address, which is 192.168.25.10.

- IP Address for the DEFINITY G3 PBX Driver,

Verify that you have a local IP address for the DEFINITY G3 PBX Driver on your Telephony Server. You will need this IP address for installing the DEFINITY G3 PBX Driver. You may obtain this address from the network administrator or you may use the default address provided in the installation program (192.168.25.20) if you have a private LAN (as recommended) between the Telephony Server and the DEFINITY ECS switch. This local IP address should be different from the IP address used for the Avaya CT server, as recommended.

Client LAN Segment

See [Chapter 4: Installing Avaya Computer Telephony TSAPI Client Software](#) for more information about client-based Avaya CT requirements.

Guidelines for Setting Up a Private LAN

Follow these guidelines for implementing a private LAN for Avaya CT.

- Use IP addresses within the following ranges:
 - 10.0.0.0 — 10.255.255.255
 - 172.16.0.0 — 172.31.255.255
 - 192.168.0.0 — 192.168.255.255

If You Intend to Use Host Names

You have the option of using host names, instead of IP addresses, when administering the DEFINITY LAN Gateway and the DEFINITY G3 PBX Driver. If you use host names instead of IP addresses, each entry in the HOSTS file provides information about one host on the IP network. The DEFINITY LAN Gateway link connection is considered a host.

The DLG has a default set of administered parameters that correspond to the defaults provided in the Avaya CT DEFINITY G3 PBX Driver installation. If you implement private addressing you will have to change these settings on the G3PBX Driver Configuration Dialog Box (see Procedure for Initial, Default Installation of Avaya Computer Telephony Server Software, in Chapter 3.)

Task 1: DEFINITY ECS and DEFINITY PROLOGIX — Administering a Link

The objective of Task 1 is administering a link. From the DEFINITY SAT, follow these steps to complete Task 1.

Note:

Whenever you use the **change** form of a DEFINITY SAT command, you must log out for the changes to take effect.

1. Log in to the DEFINITY switch.
2. Type `display system-parameters customer-options`

The OPTIONAL FEATURES screen appears.

```

change system-parameters customer-options                               Page  2 of  7
                                OPTIONAL FEATURES

Abbreviated Dialing Enhanced List? y                                CAS Branch? n
                                Analog Trunk Incoming Call ID? y      CAS Main? n
                                A/D Grp/Sys List Dialing Start at 01? n  Change COR by FAC? n
Answer Supervision by Call Classifier? n                            Cvg Of Calls Redirected Off-net? n
                                ARS? y                                DCS (Basic)? n
                                ARS/AAR Partitioning? y              DCS Call Coverage? n
                                ARS/AAR Shortcut Dialing? n          DCS with Rerouting? n
                                ASAI Interface? y                    DEFINITY Network Admin? n
                                ASAI Proprietary Adjunct Links? y    Digital Loss Plan Modification? n
                                                                DS1 MSP? n

```

3. Check ASAI Proprietary Adjunct Links? and make sure it is set to `y`, (page 2 of the OPTIONAL FEATURES screen in the example above). This setting indicates that DEFINITY is capable of communicating with an adjunct.

4. Type `list configuration software-versions`

The SOFTWARE VERSIONS screen appears.

```
list configuration software-versions

                SOFTWARE VERSIONS
                SPE_A                SPE_B

SOFTWARE VERSION
Memory Resident: G3V8c.00.0.507.0
```

5. Check the SOFTWARE VERSION to verify that the correct DEFINITY software version is running on the switch. The following versions are appropriate: G3V4, or later.

Note:

G3V4 requires a field maintenance release.

6. Type `list config all` to determine what ports are available on the MAPD for adding a station.

The SYSTEM CONFIGURATION screen appears. Under Assigned Ports, each u represents an available or *unassigned* port.

```
list configuration all
Page 1

-----
                SYSTEM CONFIGURATION

Board
Number      Board Type      Code      Vintage      Assigned Ports
1A01      EXPANSION INFF      TN776      000001
1A02      EXPANSION INFF      TN776      000001
1A03
1A04      RESERVED LGATE      TN801      MAPD          u u u u u u u u
1A05      RESERVED LGATE      TN801      MAPD          u u u u u u u u
1A06      MAPD BOARD          TN801      000001        01 u u u u u u u u
                                     u u u u u u u u
                                     u u u u u u u u
                                     u u u u u u u u
```

7. Choose a port associated with the MAPD board to add a station to the DLG (on the MAPD).

8. Type `add station`

The STATION screen appears.

Note:

For newer versions of the switch, the STATION screen may contain more options. Only the options in Steps a through i are relevant to Avaya CT.

```

add station 1008                                     Page 1 of 2  SPE A
-----
                                STATION

Extension: 1008
Type: ADJLK____
Port: 1a0602____
Name: _____
                                Hunt-to Station: ____

STATION OPTIONS

BRI OPTIONS
      XID? n      Fixed TEI? y  TEI: 1_
MIM Support? n      CRV Length: 2
  
```

9. Follow Steps a through i to add an ASAI-enabled station. Completing the STATION screen administers an adjunct IP link between DEFINITY and a Avaya CT server.
 - a. In the `Extension:` type any valid extension on the dial plan (for example, **1008**).
 - b. In the `Type:` field, type **ADJLK**
 - c. In the `Port:` field, type an available port number
 - d. In the `Name:` field, type the name of the Avaya CT server
 - e. In the `XID:` field, accept the default (**n**)
 - f. In the `Fixed TEI:` field, type **y**
 - g. In the `MIM Support:` field, accept the default (**n**)
 - h. In the `CRV Length:` field, type **2**
 - i. In the `Event Minimization:` field, accept the default (**n**)

All other fields on the **Station** screen use the default values.

This completes Task 1: DEFINITY Administration. Proceed to [Task 2: DLG Administration](#).

Task 2: DLG Administration

The objective of Task 2 is to establish connectivity between DEFINITY and your Avaya CT server, by way of the DLG. Task 2 assumes that the DLG is already installed and administered. For more information see *DEFINITY ECS and CallVisor ASAI Applications over MAPD (555-230-136)*.

From the MAPD administrative terminal, follow these steps to complete Task 2.

1. Log in to the MAPD system

The Main Menu appears.

Main Menu

1. Login/Password Administration
2. TCP/IP Administration...
3. Port Administration...
4. Maintenance...
5. DLG Port Status/Control

If both the DLG and CVLAN applications are on the MAPD this Main Menu appears. 3. Port Administration... is for access to DLG and CVLAN.

Main Menu

1. Login/Password Administration
2. TCP/IP Administration...
3. DLG Administration
4. Maintenance...
5. DLG Port Status/Control
6. Exit

If only the DLG application is on the MAPD this Main Menu appears. 3. DLG Administration for access to DLG.

This line is used to provide abbreviated help on the currently selected field.

EXIT REFRESH ENTER [] HELP [] [] []

2. From the Main Menu, select 2. **TCP/IP Administration.**

3. From the TCP/IP Administration screen select **1. This Host**

The TCP/IP Administration This Host screen appears (This Host refers to the MAPD itself).

4. Verify (or make a note of) the Host Name and IP address of the MAPD.

- The Host Name is the name that you assign to the MAPD.
- The Host IP Address is the IP address required when you perform G3 PBX Driver link administration on the Avaya CT Server.

```

                                TCP/IP Administration
                                This Host

                                Host Name:      j1oe-d
                                Host IP Address: 135.17.65.46
                                Subnet Mask:     255.255.255.0

specify the host name of this machine

CANCEL REFRESH ENTER CLEAR                HELP
```

5. Once you have noted this information, select **CANCEL** to return to the Main Menu.

Pre-Release 11 Link Administration Instructions

6. From the Main Menu, select **2. TCP/IP Administration**.

The TCP/IP Administration screen appears.

TCP/IP Administration

1. This Host
2. Local Host Table
3. Network Routing Information...
4. Exit

This line is used to provide abbreviated help on the currently selected field.

EXIT	REFRESH	ENTER		HELP			
------	---------	-------	--	------	--	--	--

7. From the TCP/IP Administration screen select **2. Local Host Table**, which enables you to view, add, or delete hosts. *The host, in this case, is the Avaya CT Server.*

The TCP/IP Administration Local Host Table screen appears.

Pre-Release 11 Link Administration Instructions

- From the Main Menu, select **3. Port Administration...**

The Port Administration screen appears.

Port Administration

- Application Port Assignment
- DLG Administration
- CV/LAN Administration
- Exit

This line is used to provide abbreviated help on the currently selected field.

EXIT	REFRESH	ENTER		HELP			
------	---------	-------	--	------	--	--	--

- From the Port Administration screen, select **2. DLG Administration**

The DLG Administration screen appears.

- Follow steps a through c to complete the DLG Administration screen.

DLG Administration

Port	Client Name or IP Address	Client Link	Client Status
---	-----	---	-----
---	-----	---	-----
---	-----	---	-----
---	-----	---	-----
---	-----	---	-----
---	-----	---	-----
---	-----	---	-----

This line is used to provide abbreviated help on the currently selected field.

CANCEL	REFRESH	ADD	DELETE	HELP		UPDATE	
--------	---------	-----	--------	------	--	--------	--

- a. In the `Port` field, type the port number of the DEFINITY station administered for the link to the Avaya CT server (see Task 1, Step 8a)
 - b. In the `Client Name` or `IP Address` field, type the IP address or name assigned to the G3PBX Driver on the Avaya CT server. This Client Name or IP Address refers to the IP address you used in Step 8b.
(The default is 192.168.25.20).
 - c. In the `Client Link` field, type a number from 1 to 8 for the link assigned to the Avaya CT server.
12. Return to the Main Menu, and from the Main Menu, select
5. DLG Port/Status Control.
- The DLG Port/Status Control screen appears.
13. From the DLG Port Status/Control screen follow these steps.

Port	DEFINITY Port State	TCP/IP Connection State	DLG Service State	Messages to DEFINITY	Messages from DEFINITY	Message Period (minutes)
---	-----	-----	-----	---	---	---
---	-----	-----	-----	---	---	---
---	-----	-----	-----	---	---	---
---	-----	-----	-----	---	---	---
---	-----	-----	-----	---	---	---
---	-----	-----	-----	---	---	---
---	-----	-----	-----	---	---	---
---	-----	-----	-----	---	---	---

This line is used to provide abbreviated help on the currently selected field.

CANCEL	REFRESH		MSGPER	HELP	STATE	UPDATE	DROP
--------	---------	--	--------	------	-------	--------	------

- a. Verify that the port number you administered in Step 11a appears under `Port`.
- b. Verify that `REACHABLE` appears under `TCP/IP Connection State`.

This completes the DLG/MAPD administrative tasks.

See "Checklist — DEFINITY ECS and DEFINITY PROLOGIX" on page -236 to verify that you have completed the DEFINITY and DLG/MAPD administrative tasks.

Checklist for DEFINITY ECS and DEFINITY PROLOGIX with DLG/MAPD — Before You Install Avaya CT

Use this checklist to make sure you have completed these tasks before you attempt to install the Avaya CT software.

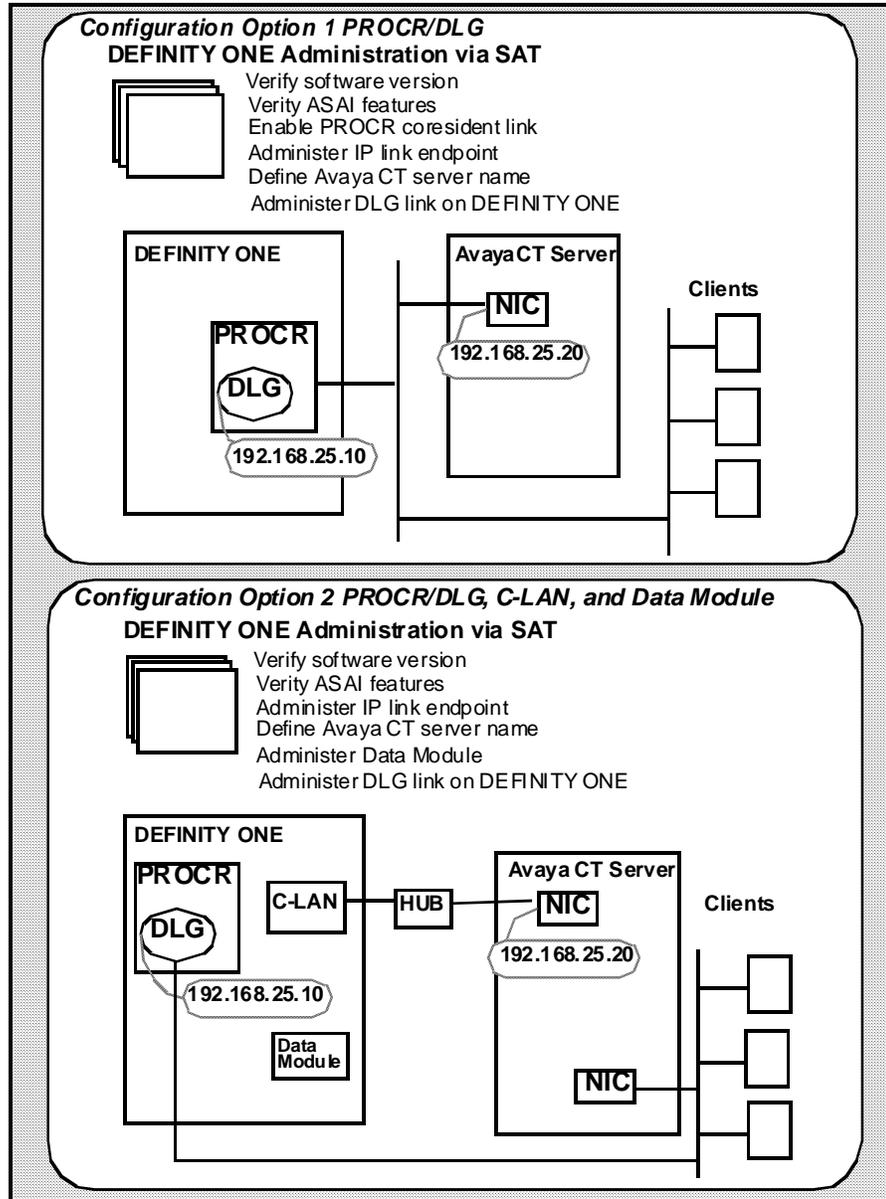
Table D-1: Checklist — DEFINITY ECS and DEFINITY PROLOGIX

Task	Administrative Interface	See...
Verify that ASAI Proprietary Adjunct Link option is installed and enabled on the switch (system-parameters customer-options screen)	DEFINITY SAT	Task 1, Step 2
Verify that the correct DEFINITY software version is running on the switch	DEFINITY SAT	Task 1, Step 4
Determine what ports are available for adding a station	DEFINITY SAT	Task 1, Step 6
Choose a port associated with MAPD to add a station	DEFINITY SAT	Task 1, Step 7
Administer the Adjunct IP link.	DEFINITY SAT	Task 1, Step 8
Verify MAPD Host Name and IP Address	MAPD Terminal	Task 2, Step 4
Add or verify Avaya CT IP Address and Host Name	MAPD Terminal	Task 2, Step 8
Administer a Port, Client Name (or IP Address) for the Avaya CT Server	MAPD Terminal	Task 2, Step 11
Verify that communications are established between MAPD and Avaya CT server	MAPD Terminal	Task 2, Step 13

DEFINITY ONE Administration

DEFINITY ONE administrative tasks are done from the DEFINITY SAT (see Figure D-1). DEFINITY ONE administration refers to administering DEFINITY for Avaya CT, as opposed to DEFINITY site administration.

Figure D-2: DEFINITY ONE Administration at a Glance



DEFINITY ONE Pre-Administration

— Setting Up Your Avaya CT Configuration

Use this section to ensure that you know the requirements of your configuration before you administer DEFINITY ONE for Avaya CT.

Basic Switch Requirements

These are the basic switch requirements.

- The CTI interface requires DEFINITY ONE R2, or later.
 - The ASAI Proprietary Adjunct Link option must be enabled on the switch (system-parameters customer-options screen).
-

Connectivity — Switch to Avaya CT Server

The DEFINITY ONE must be connected to the LAN that the DEFINITY G3 PBX Driver will be using. Keep in mind that there are two basic configurations, which are described in the next two sections.

Configuration Option 1: PROCR/DLG

If you do not require a separate, secure LAN segment for communications to DEFINITY ONE and the telephony server, connectivity is established via the TN795 processor card (PROCR) and the telephony server. In this arrangement, you will need only one NIC.

Configuration Option 2: PROCR/DLG, C-LAN and Data Module

If you require a separate, secure LAN connection from the G3PBX Driver to the DEFINITY ONE, the telephony server will require its own separate LAN card. This means that you will need two Network Interface Cards (NICs) in the Telephony Server, one for client access and one for the connection between the DEFINITY ONE and the DEFINITY G3 PBX Driver. Connectivity is established to DEFINITY ONE via the Control LAN (C-LAN) board (TN799) and a Data Module.

IP Address of DEFINITY G3 PBX Driver on Avaya CT Server (Applies to Either Configuration Option)

Verify that you have a local IP address for the DEFINITY G3 PBX Driver on your Telephony Server. You will need this IP address for installing the DEFINITY G3 PBX Driver. You may obtain this address from the Network Administrator or you may use the default address provided in the installation program (192.168.25.20) if you have a private LAN (as recommended) between the Telephony Server and the DEFINITY ONE. This local IP address should be different from the IP address used for the G3PBX Driver on the Avaya CT server.

Procedure for Setting Up TN795 PROCR to DEFINITY ONE (Option 1)

If you are connecting to a DEFINITY via a PROCR running the DLG, follow this procedure.

Note:

Whenever you use the **change** form of a DEFINITY ONE SAT command, you must log out for the changes to take effect.

1. Log in to the DEFINITY ONE switch.
2. Type `list configuration software-versions`

The SOFTWARE VERSIONS screen appears.

```

SOFTWARE VERSIONS
SPE_A                SPE_B
SOFTWARE VERSION
Memory Resident: G3V8c.00.0.507.0

```

3. Check the SOFTWARE VERSION, to ensure that the correct DEFINITY ONE software version is running on the switch. The following version is appropriate: G3V8c, or later.

4. Type `display system-parameters customer-options`

The OPTIONAL FEATURES screen appears.

```
change system-parameters customer-options                               Page 2 of 7
                               OPTIONAL FEATURES

Abbreviated Dialing Enhanced List? y                                CAS Branch?
                                                                    CAS Main?
      Analog Trunk Incoming Call ID? y                                Change COR by FAC?
A/D Grp/Sys List Dialing Start at 01? n                            Cvg Of Calls Redirected Off-net?
Answer Supervision by Call Classifier? n                            DCS (Basic)?
                                                                    DCS Call Coverage?
      ARS? y                                                         DCS with Rerouting?
      ARS/AAR Partitioning? y                                        DEFINITY Network Admin?
      ARS/AAR Shortcut Dialing? n                                  Digital Loss Plan Modification?
      ASAI Interface? y                                           DS1 MSP?
      ASAI Proprietary Adjunct Links? y                            Emergency Access to Attendant?
```

5. Check ASAI Proprietary Adjunct Links? and make sure it is set to `y`, (page 2 of the OPTIONAL FEATURES screen in the example above). If it is set to `n`, use the `change system-parameters customer-options` command and set the following feature:

ASAI Proprietary Adjunct Links? `y`

6. Type `display system-parameters customer-options`

The OPTIONAL FEATURES screen appears.

```
Link Terminal Help
system-parameters customer-options                               Page 3 of 7
                               OPTIONAL FEATURES

      Hospitality (Basic)? 
Hospitality (G3U3 Enhancements)? n
      H.323 Trunks? n                                Processor and System MSP? n
      IP Stations? n                                  Private Networking? n
      ISDN Feature Plus? n                            Processor Ethernet? y
      ISDN-DPT Trunks? n                            Restrict Call Forward Off Net? "
```

7. Check Processor Ethernet? and make sure it is set to `y` (page 3 of the OPTIONAL FEATURES screen in the example above).

This setting enables the processor card coresident link. If it is set to `n`, use the `change system-parameters customer-options` command and set the following feature: ASAI Proprietary Adjunct Links? `y`

8. Type `add station`

The STATION screen appears.

```

Connect Edit Terminal Help
add station next                                     Page 1 of
                                                    STATION
Extension: 3000                                     BCC: 0
Type: ADJLK                                         TN: 1
Port: X                                             COR: 1
Name: CVCT Server                                  COS: 1
                                                    Hunt-to Station:

STATION OPTIONS
Loss Group: 3

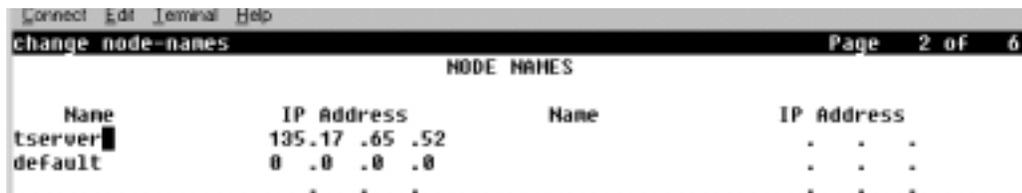
BRI OPTIONS
XID? y      Fixed TEI? y   TEI: 1
MIM Support? n
CRV Length: 2
    
```

9. Follow steps a through i to complete the STATION screen and administer the IP Link endpoint.

- a. In the `Extension:` field, type any valid extension on the dial plan (for example, 3000).
- b. In the `Type:` field, type `ADJLK`
- c. In the `Port:` field, type an available port number
- d. In the `Name:` field, type the name of the Avaya CT server
- e. In the `XID:` field, accept the default (`n`)
- f. In the `Fixed TEI:` field, type `y`
- g. In the `MIM Support:` field, accept the default (`n`)
- h. In the `CRV Length:` field, type `2`
- i. In the `Event Minimization:` field, accept the default (`n`)

10. Type `change node-names`

The NODE NAMES screen appears.

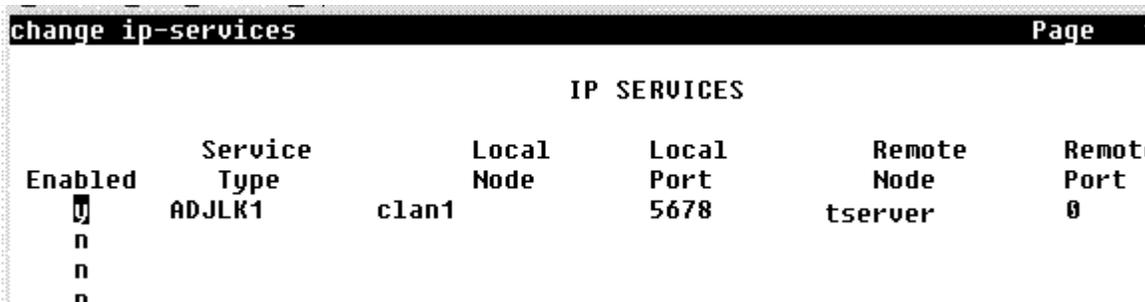


11. Follow steps a and b to complete the NODE NAMES screen and define the Avaya CT server's name and address.

- a. In the `Name :` field, type the name you want to assign to the Avaya CT server (free-form field)
- b. In the `IP Address :` field, type the IP address of the G3PBX Driver (default is 192.128.25.20)

12. Type `change ip-services`

The IP SERVICES screen appears.



13. Follow Steps a through e to complete the IP SERVICES screen and administer the DLG link on a DEFINITY ONE system.

- a. In the `Service Type :` field, type `ADJLK1` (DEFINITY ONE uses link 1 only)
- b. In the `Local node-option :` field, type `procr`
- c. In the `Local port :` field, type `5678`
- d. In the `Remote node :` field, type the name you assigned to the Avaya CT server on the NODE NAMES screen.
- e. In the `Remote port :` field, type `0` (zero). Remote port is always set to zero.

This completes the procedure for setting up PROCR connectivity to DEFINITY ONE. For a checklist of these administrative tasks, see Table D-2 on page -247.

Procedure for Setting Up TN799 C-LAN to DEFINITY ONE (Option 2)

If you are connecting to a DEFINITY ONE via a C-LAN (running the DLG), a PROCR, and Data Module follow this procedure.

Note:

Whenever you use the **change** form of a DEFINITY ONE SAT command, you must log out for the changes to take effect.

1. Log in to the DEFINITY ONE switch.
2. Type **list configuration software-versions**

The SOFTWARE VERSIONS screen appears.

```
list configuration software-versions
                                     SOFTWARE VERSIONS
                                     SPE_A                               SPE_B
SOFTWARE VERSION
Memory Resident: G3V8c.00.0.507.0
TRANSLATION DATE
Memory Resident: 10:38 am  MED JAN 26, 2000
Disk Resident: 10:38 am  MED JAN 26, 2000
```

3. Check the SOFTWARE VERSION, to ensure that the correct DEFINITY ONE software version is running on the switch. The following version is appropriate: G3V8c, or later.
4. Type **display system-parameters customer-options**

The OPTIONAL FEATURES screen appears.

```
change system-parameters customer-options                                     Page 2 of 7
                                OPTIONAL FEATURES
Abbreviated Dialing Enhanced List? y                                     CAS Branch? n
                                Analog Trunk Incoming Call ID? y         CAS Main? n
                                A/D Grp/Sys List Dialing Start at 01? n    Change COR by FAC? n
Answer Supervision by Call Classifier? n                                Cvg OF Calls Redirected Off-net? n
                                ARS? y                                     DCS (Basic)? n
                                ARS/AAR Partitioning? y                 DCS Call Coverage? n
                                ARS/AAR Shortcut Dialing? n            DCS with Rerouting? n
                                ASAI InterFace? y                       DEFINITY Network Admin? n
                                ASAI Proprietary Adjunct Links? y      Digital Loss Plan Modification? n
                                                                DS1 HSP? n
```

5. Check ASAI Proprietary Adjunct Links? and make sure it is set to **y**, (page 2 of the OPTIONAL FEATURES screen in the example above). If it is set to **n**, use the **change system-parameters customer-options** command and set the following feature:

ASAI Proprietary Adjunct Links? y

6. Type `add station`

The STATION screen appears.

```

-----
add station next                                     Page
                                                    STATION

Extension: 3000                                     E
  Type: ADJLK                                       (
  Port: X                                           (
  Name: CUCT Server                                 (

                                                    Hunt-to Station:

STATION OPTIONS
  Loss Group: 3
    
```

```

BRI OPTIONS
  XID? y      Fixed TEI? y      TEI: 1
  MIM Support? n
  CRV Length: 2
    
```

7. Follow steps a through i to complete the STATION screen and administer the IP Link endpoint.

- a. In the `Extension:` field, type any valid extension on the dial plan (for example, 3000).
- b. In the `Type:` field, type `ADJLK`
- c. In the `Port:` field, type an available port number
- d. In the `Name:` field, type the name of the Avaya CT server
- e. In the `XID:` field, accept the default (`n`)
- f. In the `Fixed TEI:` field, type `y`
- g. In the `MIM Support:` field, accept the default (`n`)
- h. In the `CRV Length:` field, type `2`
- i. In the `Event Minimization:` field, accept the default (`n`)

8. Type `change node-names`

The NODE NAMES screen appears.

```

Connect Edit Terminal Help
change node-names Page 2
                                NODE NAMES

Name          IP Address          Name          IP Address
tserver      135.17 .65 .52      . . .
default      0 .0 .0 .0         . . .
              . . .
  
```

9. Follow steps a and b to complete the NODE NAMES screen and define the Avaya CT server's name and address.

- a. In the `Name :` field, type the name you want to assign to the Avaya CT server (free-form field)
- b. In the `IP Address :` field, type the IP address of the G3PBX Driver (default is 192.128.25.20)

10. Type `add data-module modname` (substitute `modname` with the name of your data module. For example `modul02`).

The DATA MODULE screen appears.

```

data-module modul02 Page 1
                                DATA MODULE

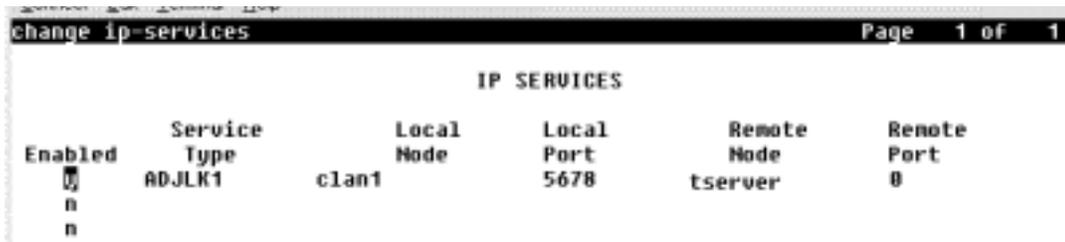
Extension: 20000          Name: clan interface
Type: ethernet
Port: 01A1017
Link: 1
  
```

11. Follow steps a through e to complete the DATA MODULE screen.

- a. In the `Data Extension :` field, type any valid extension on the dial plan (for example, `20000`).
- b. In the `Type :` field, type `ethernet`
- c. In the `Port :` field, type `01A1017`, where:
 - `01A10` is for the C-LAN board slot (in this example)
 - `017` is the port (must always be port 17)
- d. In the `Link :` field, type any number from `1` to `25`
- e. In the `Name :` field, type the name you want to assign to the Avaya CT server (free-form field)

12. Type `change ip-services`

The IP SERVICES screen appears.



13. Follow steps a through e to complete the IP SERVICES screen, and administer the DLG link as a DEFINITY ONE system.

a. In the `Service Type:` field, type `ADJLK1` (DEFINITY ONE uses link 1 only)

b. In the `Local node:` field, type `clan1`

c. In the `Local port:` field, type `5678`

d. In the `Remote node:` field type the name you assigned to the Avaya CT server in Step 8a (NODE NAMES screen).

e. In the `Remote port:` field type `0` (zero). Remote port is always set to zero.

This completes the procedure for setting up C-LAN connectivity to DEFINITY ONE. For a checklist of these administrative tasks, see Table D-3 on page -247.

Checklists for DEFINITY ONE — Before You Install Avaya CT

The checklists in this section enable you to verify that you have completed the switch-based tasks on DEFINITY ONE. Use the checklist that is appropriate for your configuration.

- Checklist for DEFINITY ONE with TN795 PROCR (Option 1)
- Checklist for DEFINITY ONE with TN799 C-LAN (Option 2)

Checklist for DEFINITY ONE with TN795 PROCR (Option 1)

If you have a DEFINITY one with a TN795 PROCR, make sure you have completed these tasks before you install Avaya CT.

Table D-2: Checklist — DEFINITY ONE with TN795 PROCR — Option 1

Task	See....
Verify that DEFINITY ECS switch software supports the CTI interface.	Steps 2 and 3 in "Procedure for Setting Up PROCR Connectivity to DEFINITY ONE"
Verify that ASAI Proprietary Adjunct Link option is installed and enabled on the switch (system-parameters customer-options screen).	Steps 4 and 5 in "Procedure for Setting Up PROCR Connectivity to DEFINITY ONE"
Verify that you have enabled the PROCR coresident link.	Step 6 and 7 in "Procedure for Setting Up PROCR Connectivity to DEFINITY ONE"
Administer the Adjunct IP link.	Steps 8 and 9 in "Procedure for Setting Up PROCR Connectivity to DEFINITY ONE"
Define the Avaya CT server's name and address.	Step 10 and 11 in "Procedure for Setting Up PROCR Connectivity to DEFINITY ONE"
Make sure that the DLG link is administered on the DEFINITY ONE system.	Steps 12 and 13 in "Procedure for Setting Up PROCR Connectivity to DEFINITY ONE"

Checklist for DEFINITY ONE with TN799 C-LAN (Option 2)

If you implemented a configuration with DEFINITY ONE and a TN799 C-LAN, make sure you have completed the tasks in the checklist below before you install Avaya CT.

Table D-3: Checklist — DEFINITY ONE with TN799 C-LAN — Option 2

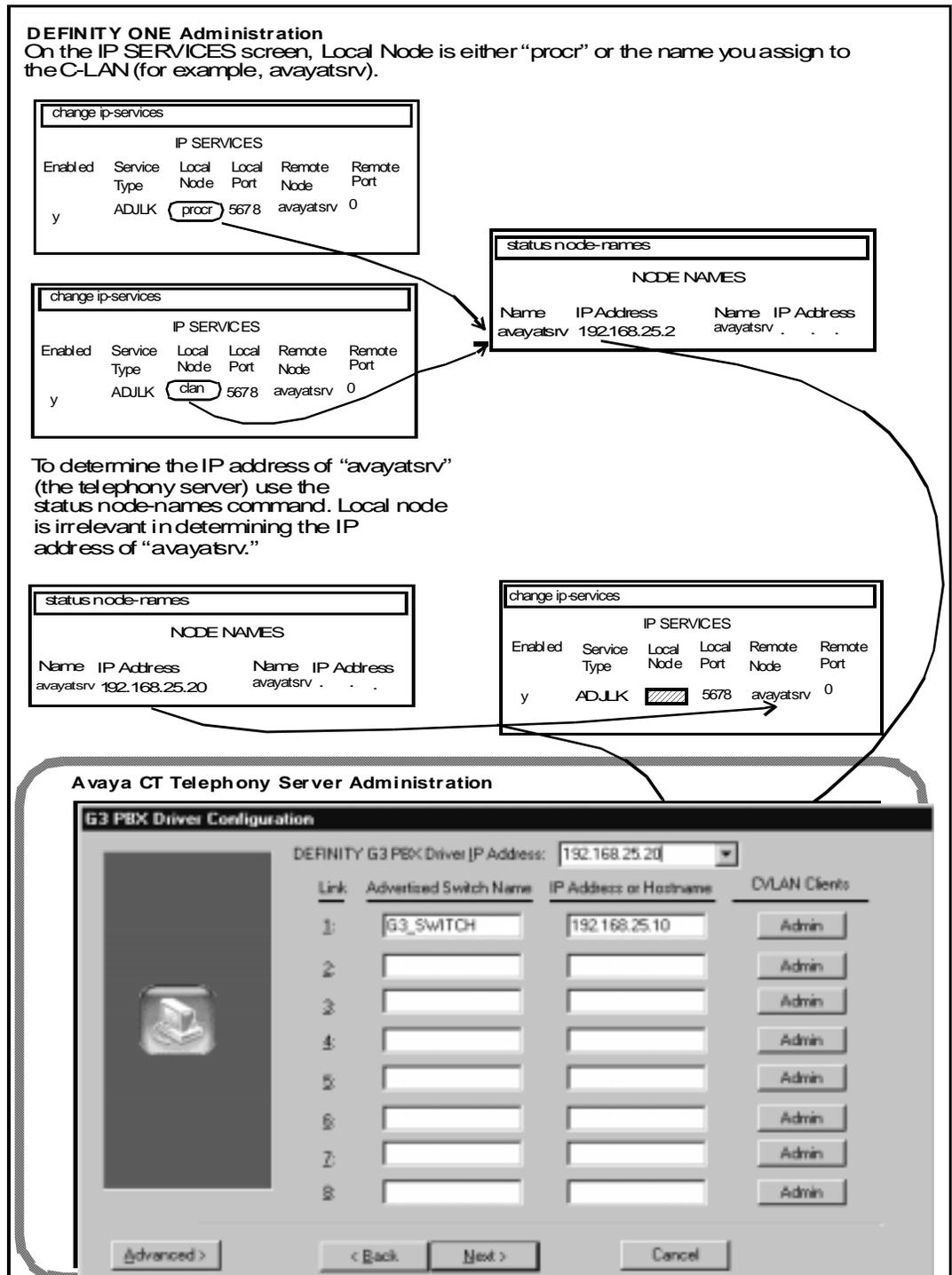
Task	See....
Verify that DEFINITY ECS switch software supports the CTI interface.	Steps 2 and 3 in "Procedure for Setting Up C-LAN Connectivity to DEFINITY ONE"
Verify that ASAI Proprietary Adjunct Link option is installed and enabled on the switch (system-parameters customer-options screen).	Steps 4 and 5 in "Procedure for Setting Up C-LAN Connectivity to DEFINITY ONE"
Administer the Adjunct IP link.	Steps 6 and 7, in "Procedure for Setting Up C-LAN Connectivity to DEFINITY ONE"

Task	See....
Define the Avaya CT server name and IP address	Steps 8 and 9 in "Procedure for Setting Up C-LAN Connectivity to DEFINITY ONE"
Make sure the Data Module has been administered.	Steps 10 and 11 in "Procedure for Setting Up C-LAN Connectivity to DEFINITY ONE"
Make sure the DLG link is administered as a DEFINITY ONE system.	Steps 12 and 13 in "Procedure for Setting Up C-LAN Connectivity to DEFINITY ONE"

Configuring DEFINITY ONE and Avaya CT

Figure depicts configuration settings on DEFINITY ONE and the Avaya CT Server (DEFINITY G3 PBX Driver). The "DEFINITY G3PBX Driver IP Address" corresponds to the IP address of the NIC on the Avaya CT server and the "Link... "IP Address or Hostname" refers to the IP address of the DLG. The DLG IP address can be associated with either a C-LAN (TN799) or a PROCR (TN795).

Figure D-3: DEFINITY ONE Administration v. Avaya CT Server Administration



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