**Ethernet
10/100 Switch Card for GigaHUB™**

XM542

INSTALLATION
AND
USER GUIDE

TABLE OF CONTENTS

INTRODUCTION

The NBase XM542 Ethernet switch card and the EM541/FO extension module provide Ethernet switching capabilities and high-speed 100Base-T backbone connectivity for the GigaHUB™ system. Based on highly-integrated ASIC technology, coupled with the GigaHUB MatrixBus™ backplane, the XM542 has the capability to increase network performance more than tenfold. By offering both end station and high-speed server/backbone connections, this high performance 10/100Mbps work-group switch enables a cost-effective deployment of switching technology throughout the enterprise.

Description

The XM542 occupies one slot of the GigaHUB™ chassis and features 16 switched 10Base-T Ethernet ports, as well as the following high-speed extensions:

a. Internal Fast Ethernet MatrixBus™ connection (Half/Full Duplex)

b. External 10/100 Mbps UTP port (Half/Full Duplex) **OR**

c. Slot for EM541/FO, 100Base-FX port module (Half/Full Duplex)
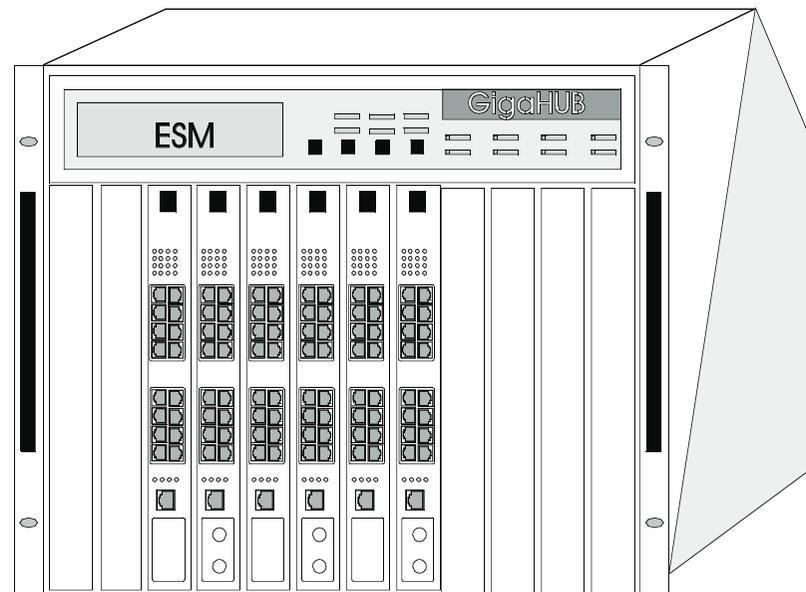
Figure 1: General View XM542 in GigaHUB™ System

Features

Versatility	Sixteen switched 10Base-T Ethernet ports, one built-in 10/100 Mbps UTP port
High-Speed Connectivity	Internal Fast Ethernet MatrixBus™ connection and optional 100Base-FX module
Performance	Wire speed filtering and forwarding rate of 650Kpps
Transmission	Up to 110 km with singlemode 100Base-FX ports
Management	SNMP by MegaVision, NBase's comprehensive NMS
Port Mirroring	Allows monitoring of switch traffic from any port

APPLICATIONS

Configuring Your Network

The XM542 combines switched 10Mbps Ethernet and Fast Ethernet technology in a seamless integration of regular Ethernet and the IEEE 802.3u 100Base-TX standard. As an essential component of the GigaHUB™architecture, the XM542 is the ideal workgroup switched solution for bandwidth-hungry networks requiring high-speed connectivity to local servers and corporate backbones.

The 10Base-T ports can connect directly to end users to provide up to 20Mbps of dedicated Full Duplex bandwidth. The result is a highly efficient utilization of each segment's allocated 10Mbps of bandwidth.

The external 10/100Mbps port can be connected to a local high-performance server, while attachment to the internal MatrixBus would provide connectivity to the enterprise backbone through the XM59x Fast Ethernet switching cards.

A 100Base-FX module enables a direct connection to a switched Fast Ethernet backbone.

Typical Configurations

Typical network applications for the XM542 would include:

- Driving high bandwidth applications where dedicated 10Mbps links (H/F Duplex) are needed

- Interlinking Ethernet and Fast Ethernet networks

- Connection to Fast Ethernet servers in Full/Half Duplex mode

- Aggregating workgroup traffic to Fast Ethernet switch module
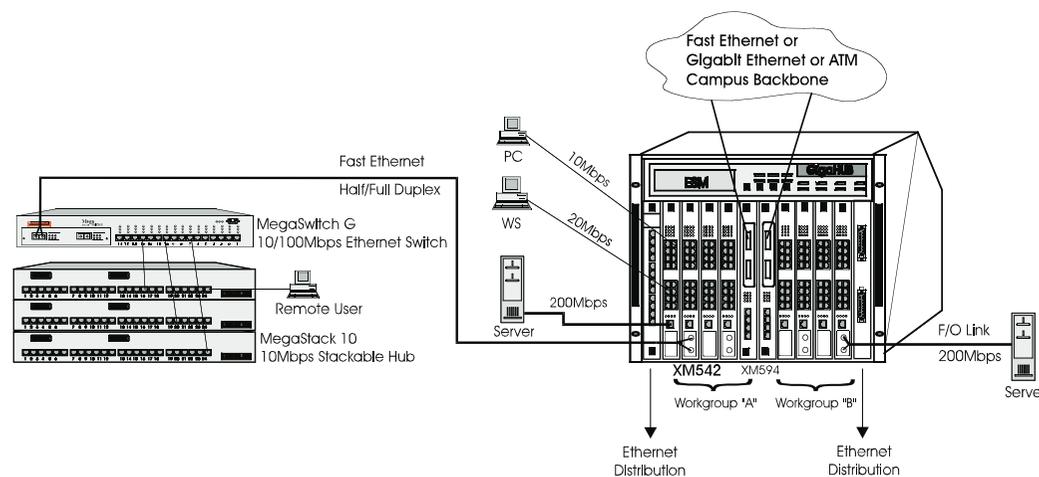
Figure 2: Various application possibilities of the XM542

Understanding the Backplane Connections

The XM542 switch operates in the MatrixBus topology of the MegaHUB platform. By connecting to other MegaHUB cards, the XM542 helps streamline a company's network. The following cards can be connected to the XM542 through the MatrixBus backplane:

XM542   Back-to-back connection for switched Ethernet port density

XM59x   A variety of applications through attachment to the XM59x family for achieving a high density of 10/100 connectivity (See *Configuring Your Network* above)
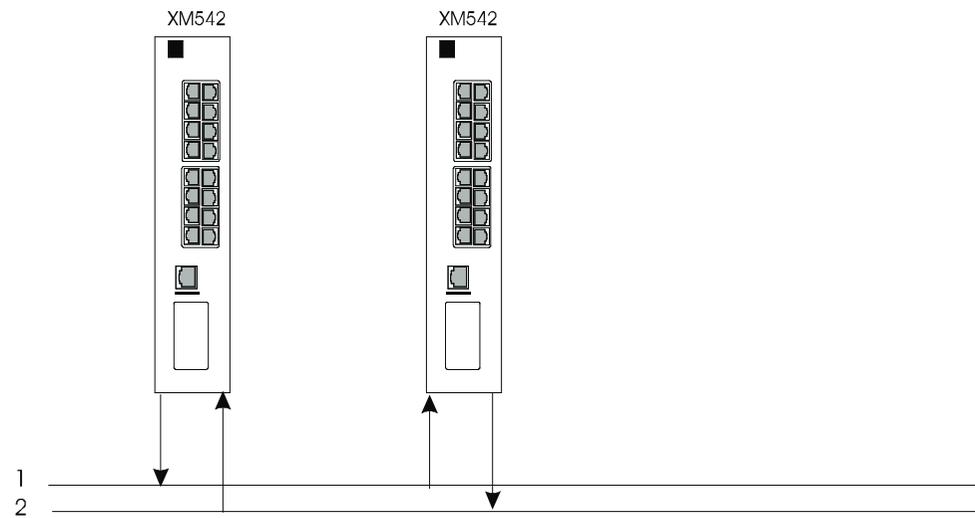
Figure 3: Two XM542 cards in a back-to-back connection
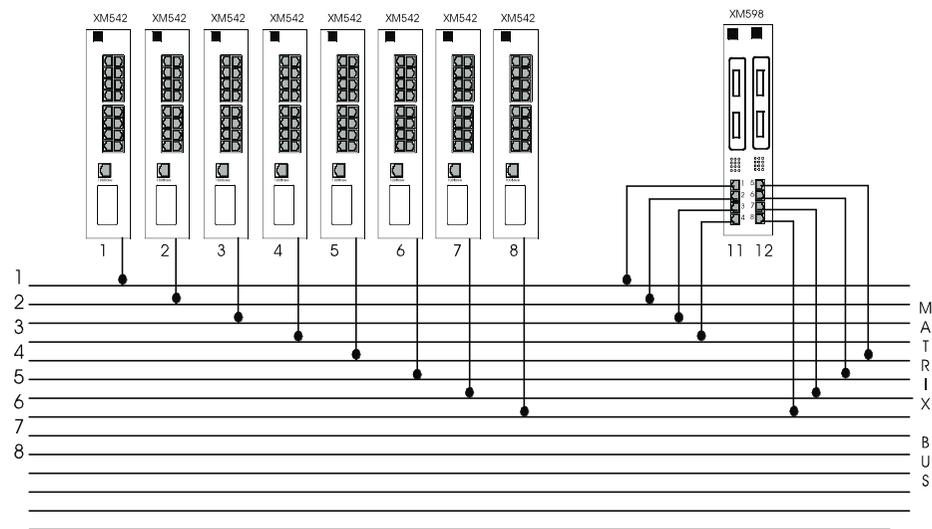
Figure 4: XM542 connected to XM59x

3

INSTALLATION and SETUP

Unpacking and Inspection

Upon receiving the XM542, inspect the carton for visible external damage. If the carton is damaged, request that the carrier's agent be present during unpacking and do not destroy the shipping carton.

After removing the XM542, examine it for obvious physical damage such as dents or dislodged components. In case of damage, notify the carrier and follow his instructions for damage claims. In addition, inform your NBase representative immediately, providing specific details of the damage. The representative will arrange for repair or replacement. If necessary, retain the carton and packing material for return shipment.

XM542 Front Panel and Card

The XM542 card is illustrated below in Figure 5. The table describes the functions of its various components and LED indications.
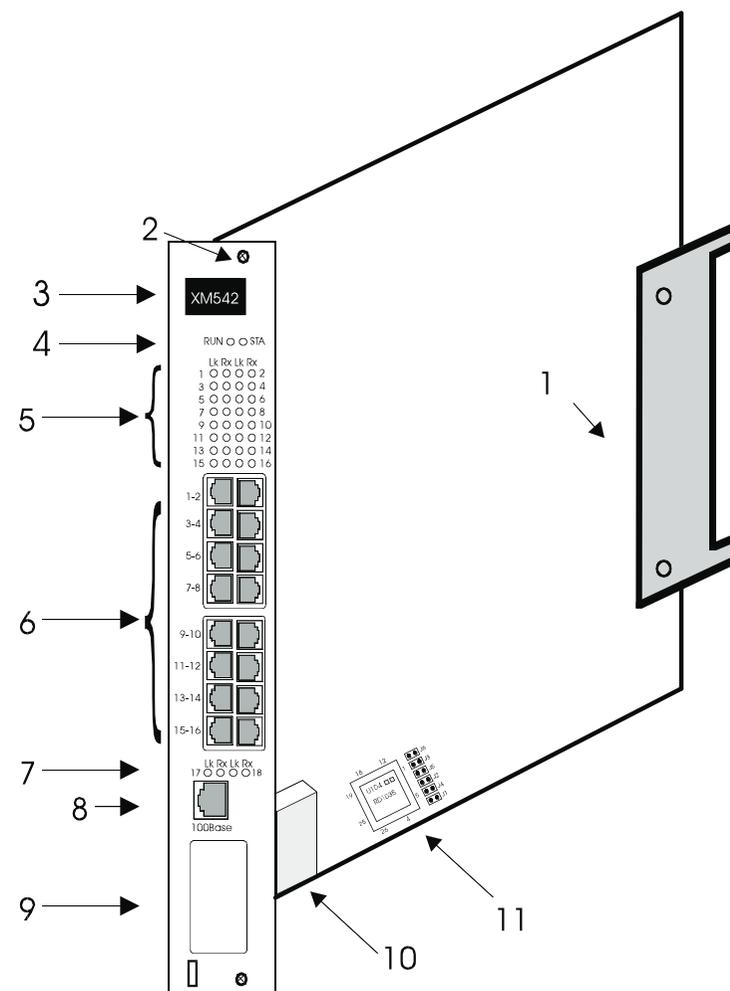
Figure 5: Detailed View XM542

XM542 Front Panel and Card

1	**Backplane Connector**	Connects XM542 to GigaHUB backplane
2	**Captive Screw**	Secures the XM542 card in the GigaHUB chassis
3	**Extractor/Handle**	Used for inserting the XM542 card into the GigaHUB chassis
4	**Global LEDs**	See *Installing the XM542* for these two LED indications
5	**10Base-T port LEDs**	

LK	**Green ON** indicates link connection
RX	**Green ON** indicates port receive activity

| 6	**10Base-T Ports**	Group of 16 RJ-45 switched Ethernet ports for 10Mbps connection
7	**High-speed Port LEDs**	As Item 5 above
8	**High-speed Port**	RJ-45 port for 10/100 Mbps connection
9	**Uplink Panel**	High-speed interface slot to house 100Base-FX uplink module (EM541/FO)
10	**Uplink Connector**	Connects extension module (EM541/FO)
11	**Jumpers**	Set of 6 jumpers for configuring Ports 17 and 18

Installing the XM542

The XM542 is installed in a single slot of the GigaHUB™ System and is hot-swappable. Please refer to Figure 5 during the mounting procedure.

The following tools are required to correctly mount the XM542 switch card:

- 6" flat-tip screwdriver
- 6" Phillips screwdriver

The mounting procedure is as follows:

1. Hold the XM542 by the two extractors/handles and insert it into its allocated slot in the GigaHUB. Upon reaching the GigaHUB backplane, push the extractors/handles towards each other to secure the XM542.

2. Tighten the two captive screws on the XM542 panel, and gently push the extractors away from each other.

3. The self-test diagnostics for the XM542 will run for about one minute.

   The **RUN** and **STA** LEDs turn ON at Power UP and stay ON for the duration of the diagnostic cycle. Upon the successful completion of the self-test, the **STA** LED turns OFF.

   If the **RUN** LED turns OFF but the **STA** LED is turned ON, the self-test has failed.

   During normal operation, **RUN** ON and **STA** ON indicates a global error.

Self-test Diagnostics:	**RUN**	**STA**	
	ON	ON	Self-test in progress
	ON	OFF	Normal Mode
	OFF	ON	Self-test failed
	ON	ON	Global Error

4. On the GigaHUB LCD, open the Expanded Card Commands window to verify that the XM542 appears, indicating that the GigaHUB has identified it.

Network Connections

10Base-T Ports

All ports are external connections over UTP/STP Category 5 or 3 cable (100m max length), through RJ-45 connectors.

Internal Connection

The internal Fast Ethernet port provides connectivity to the XM59x Fast Ethernet switching modules, or a back-to-back connection to another XM542 card.

10/100 UTP Port

The external 10/100 UTP port transmits over Category 5 or 3 cables through RJ-45 connectors to local servers or to other modules such as the LC372 or XM53x.

EM541/FO Extension Module

The optional EM541/FO Extension Module features an external fiber optic port for direct attachment to high-speed networks. This 100Base-FX connection provides a link distance of up to 2km over multimode fiber through DSC connectors. When installed, the EM541/FO disables the operation of the built-in 10/100 UTP port.

Connecting the Ethernet Devices

For optimum performance, the Ethernet segments connected to the XM542 must be configured carefully. Generally, the segments should be configured so that machines on a given port communicate primarily among themselves; i.e. most traffic does not need to cross the switch. However, there are situations for which this is not the best configuration.

Connecting an Ethernet device to a 10Base-T or 100Base-TX port

The 10Base-T and 100Base-TX ports on the XM542 are designed to be connected directly to a hub, using a standard straight-through patch cable. In order to connect a workstation to the switch, either there must be a hub between them or a crossover cable must be used.

RJ-45 PIN	Function
1	TX +
2	TX -
3	RX +
6	RX -

SWITCH

RJ-45 PIN	Function
1	RX +
2	RX -
3	TX +
6	TX -

HUB
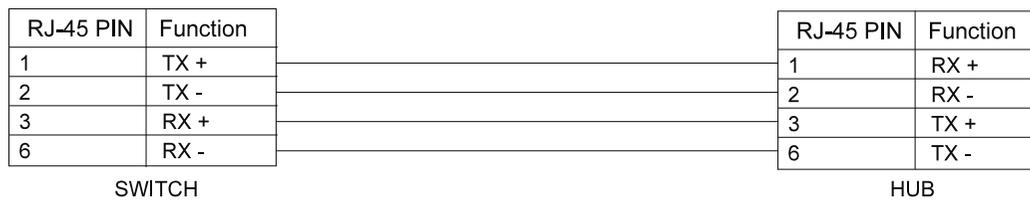
Figure 6: Straight cable connection between an XM542 and a hub

RJ-45 PIN	Function
1	TX +
2	TX -
3	RX +
6	RX -

SWITCH

RJ-45 PIN	Function
1	TX +
2	TX -
3	RX +
6	RX -

PC (NIC)
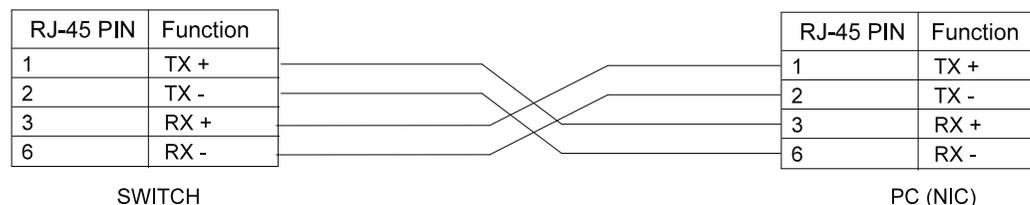
Figure 7: Crossover cable connection between an XM542 and a server/PC

Port Configurations

Each 10Base-T port can be configured in Half Duplex mode for shared networks, or as a dedicated Full Duplex link running at up to 20Mbps. Ports can also be configured for auto polarity detection and correction. Front panel LEDs display each port's link and receive status.

Default Configuration

The XM542 is shipped from the factory in the following configuration:

10Base-T ports	10, half duplex
10/100Base port	100, half duplex
MatrixBus™ connection	100, full duplex

Jumpers

Ports 17 and 18 must be configured through jumpers to determine the duplex mode, the rate and auto-negotiation. The settings depend upon whether the ports are used as 10Mbps or 100Mbps conncetions.

Jumpers 1 -3 control Port 18, which is an external connection. Jumpers 4-6 control Port 17, which is a backplane connection.

The default configuration at Power Up is: J1 is closed, all the other jumpers are open. In order to make changes, remove the XM542 card from the GigaHUB chassis, reconfigure and then reinstall.
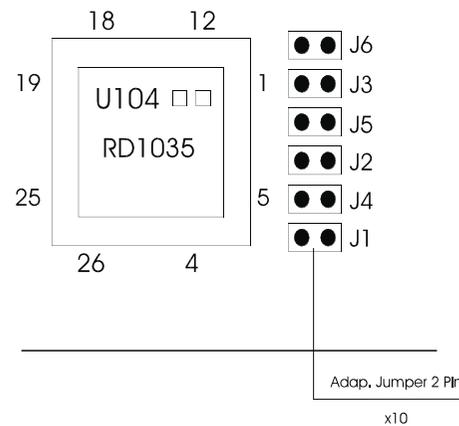
	Jumper	Open/Closed	Duplex	Rate	Auto Neg	Type of Port
Port 17	J4	Open	Full			10/100Mbps
		Closed	Half			10/100Mbps
	J5	Open		100Mbps		100Mbps
		Closed		10Mbps		100Mbps
	J6	Open			Enabled	100Mbps
		Closed			Disabled	100Mbps
Port 18	J1	Open	Full			10/100Mbps
		Closed	Half			10/100Mbps
	J2	Open		100Mbps		10/100Mbps
		Closed		10Mbps		10/100Mbps
	J3	Open			Enabled	10/100Mbps
		Closed			Disabled	10/100Mbps

THE XM542 and NETWORK MANAGEMENT SYSTEMS

The XM542 card complies fully with GigaHUB's management architecture for local or remote access and downloading of firmware updates, enabling the SNMP Manager (InterView NMS) to perform all the management functions provided by the GigaHUB. Front panel LEDs display current status for simplified installation and maintenance.

The XM542 can also be managed locally via the GigaHUB's LCD. Details are provided in *GigaHUB Management.*

GigaHUB Management

The operational status of the XM542 can be monitored on the card's front panel LEDs and on the GigaHUB LCD. See *Installing the XM542* for details of card status LEDs, and *Front Panel* for details of port status LEDs.

GigaHUB LCD

Card Status/Commands Window

This window is used for comprehensive XM542 monitoring. Access to it is described in the GigaHUB User's Manual, Part B, Extended System Manager, Section 5.4.

The status parameters of the XM542 are described in the window as the curser is moved across the LEDs. The description for a LED is true if the LED (circle) is filled black; otherwise, the complementary possibility is true. The descriptions are summarized in Table 1 below, which shows the LEDs, Channels and LED functions.

Table 1: XM542 Status using GigaHUB Card/Stat/Cmds Window LEDs

Giga HUB Chan.	GigaHUB Card Status/Commands Window LEDs											
	1	2	3	4	5	6	7	8	9	10	11	12 - 15
1	P 1 LINK OK	P 1 Detach	P 1 FDplx	Spare	P 2 LINK OK	P 2 Detach	P 2 FDplx	Spare	P 3 LINK OK	P 3 Detach	P 3 FDplx	Spare
2	P 4 LINK OK	P 4 Detach	P 4 FDplx	Spare	P 5 LINK OK	P 5 Detach	P 5 FDplx	Spare	P 6 LINK OK	P 6 Detach	P 6 FDplx	Spare
3	P 7 LINK OK	P 7 Detach	P 7 FDplx	Spare	P 8 LINK OK	P 8 Detach	P 8 FDplx	Spare	P 9 LINK OK	P 9 Detach	P 9 FDplx	Spare
4	P 10 LINK OK	P 10 Detach	P 10 FDplx	Spare	P 11 LINK OK	P 11 Detach	P 11 FDplx	Spare	P 12 LINK OK	P 12 Detach	P 12 FDplx	Spare
5	P 13 LINK OK	P 13 Detach	P 13 FDplx	Spare	P 14 LINK OK	P 14 Detach	P 14 FDplx	Spare	P 15 LINK OK	P 15 Detach	P 15 FDplx	Spare
6	P 16 LINK OK	P 16 Detach	P 16 FDplx	Spare	Spare	Spare	Spare	Spare	Spare	Spare	Spare	Spare
7	P 17 LINK OK	P 17 Detach	P 17 FDplx	P 17 Speed	P 18 LINK OK	P 18 Detach	P 18 FDplx	P 18 Speed	MOP	MOP	Module Enable	Spare

Cards Status Window

This window provides general status information about the XM542. Details are provided in the GigaHUB User's Manual, Part B, Extended System Manager, Section 5.5.3.

Cards Type Window

This window shows the type of LAN Card identified for each LAN Card in a GigaHUB slot. Details are provided in the GigaHUB User's Manual, Part B, Extended System Manager, Section 5.2.1.1.

Serial Buses Per Resource Window

This window is used to attach XM542 cards housed in a GigaHUB to Eth100SW resources. Details are provided in the GigaHUB User's Manual, Part B, Extended System Manager, Section 5.2.1.3.2. The procedure for attaching an XM542 to any one or more of the resources is also described there.

Card Versions Window

This window shows the XM542 version. Details are provided in the GigaHUB User's Manual, Part B, Extended System Manager, Section 5.2.1.2.

Slots Assignment Window

This window is used to view all the resources allocated to all the LAN Cards in the GigaHUB. Details are provided in the GigaHUB User's Manual, Part B, Extended System Manager, Section 5.2.1.3.3.

Commands

Expanded Card Commands Window

The following commands are invocable in the Expanded Card Commands window (described generically in the GigaHUB User's Manual, Part B, Extended System Manager, Section 5.3):

Table 2: Expanded Card Commands Window Commands/Parameters

Command	Parameters
Reset Card	Cold, Warm, Factory Default
Global FDplx	Full, Half
Module Enable	Enable, Disable
Attach port	P # (Ports 1 to 18)
Detach Port	P # (Ports 1 to 18)
Set Full Duplex	P # (Ports 1 to 16)
Set Half Duplex	P # (Ports 1 to 16)

The Duplex mode for Channels 17 and 18 is configured through jumpers. See **Installation and Setup**, *Jumpers*.

Console Management

This section describes how to use the console services to configure and manage the XM542.

You access the console by connecting a terminal to the GigaHUB RS-232 DB-9 connector.

Setting Up and Starting the Local Console

System Requirements

Hardware Requirements

- XM542 card
- Either a VT100 terminal or a VT100 terminal emulator running on a workstation or PC
- Straight-through RS-232 cable with a 9-pin male D-subminiature connector on one end and an appropriate connector on the other end to attach to the VT terminal or VT100 terminal emulator.

Software Requirements

If you are using a workstation, use the VT100 terminal emulation software appropriate for your workstation.

If you are using a PC to emulate a VT100 terminal, you can use the following software:

- In a DOS environment: - MS-DOS 3.30 or later
                                                   - PROCOMM PLUS for DOS
- In a Windows environment: - Microsoft Windows 3.1 or later
                                                   - Windows Terminal or PROCOMM PLUS for Windows

NOTE   *Because of their compatibility and reliability, the software combination listed above are recommended. Other applications may also provide satisfactory results.*

VT100 Terminal Settings

Use the following modem settings when connecting the VT100 terminal or terminal emulator to the XM542 (via the GigaHUB).

- Press the Setup key (usually identified on the screen's prompt bar) and set the parameter values as follows:

    General Setup
        - VT100 Mode
        - Application Keypad

    Communications Setup
        - Transmit = 9600 (baud)
        - Receive = Transmit
        - 8 Bits, No Parity
        - No Local Echo

- **Terminate the setup session by keying Ctrl-C**

CLI Access

The GigaHUB ESM allows access to the CLI facility of a card in the GigaHUB. It routes CLI commands from the host (eg. VT100 terminal), via the GigaHUB Management Bus, to the addressed card for decoding/emulation, and drives the card responses to the Management Bus. The CLI commands and responses are encapsulated in a Data Link Layer (DLL) frame format.

To start the local console, follow the steps below:

- Connect a VT100 terminal or a VT100 terminal emulator to the Outband DB9 connector on the GigaHUB using a straight-through RS-232 cable.
- Make sure both units are powered on.
- To establish connection to the CLI as well as to display the GigaHUB CLI Main Menu for the XM542:

For	Press
VT100 terminal	BREAK key
PC VT100 Terminal Emulator	CTRL-BREAK key
Procomm	ALT-F7 keys

In response to pressing the BREAK key, the CLI Main Menu window will display a list of cards having CLIs (eg. XM542). To select a card, move the cursor to the row and press ENTER **twice**.

When the command line appears, you can enter the console commands.

To return to the CLI Main Menu from any other window, press CTRL-C keys.

NOTE   *The next section gives the definitions and syntax for the command-line commands. Use the online HELP for more information about parameters you can use with the commands and to see examples of queries using the commands.*

Console Commands

The console commands contain a set of commands which allow the user to configure the Administrative Interface parameters and user interface.

?

Typing **?** at the Administrative Interface prompt displays a list of all the available command topics and a short explanation about each. Typing in one of the names on this list will yield a list of the commands under that topic.

```
SYS_console> ?
            Commands groups are:
            ----------------------
console          Console related commands
system           System related commands
ip               IP related commands
port-cfg         Port configuration-related commands
SYS_console>_
```

help-kbd

This command lists the console function keys.

```
SYS_console> help-kbd
 ?        -  for a list of the categories
 !        -  for previous command
SYS_console> _
```

banner

   The banner command will display the XM542 NBase Administrative Interface logo.

clear

   The clear command will clear the screen and display the prompt.

set-prompt

```
Usage:
set-prompt <new_prompt>
```

   The set-prompt command allows the user to set a new command line prompt for the Administrative Interface. With the prompt command, you can set a more meaningful prompt (up to 15 characters), such as a location of the switch, or the name of a work-group. The default prompt is SYS_console> _

   NOTE   *If the new prompt is longer than 15 characters, the following message is displayed: "prompt string too long <xx>", where <xx> is the number of characters that were given. The prompt will proceed to use the first 15 characters.*

get-baud

   This command shows the serial line baud rate.

set-baud

```
Usage:
set-baud <new baud rate>
```

   This command sets the serial line baud rate.

   If an illegal baud rate is typed in, the following message is displayed:

```
Illegal baud rate
Allowed baud rates are:
        4800
        9600
        19200
        38400
SYS_console>_
```

System Commands

   The System Commands allow the user to display and set the system related parameters.

reset

   The reset command updates the parameters stored in NVRAM and reinitializes the device.

init-nvram

   This command resets the non-volatile RAM on the SNMP Agent to default values. The command takes effect only after the switch has been reset.

get-rsw-file

```
Usage:
  SYS_console> get-rsw-file
  NVRAM-based SNMP Agent remote software file name is: <filename>
```

   This command retrieves the SNMP Agent Software remote file name.

set-rsw-file

```
Usage:
set-rsw-file <filename>
SNMP Agent remote software file name change in the NVRAM OK.
SNMP Agent remote software file name changed to <filename>
```

This command sets the SNMP Agent Software remote file name downloaded by TFTP. This name must match the name of the agent software file on the TFTP server and must not be longer than 80 characters.

get-tftp-srvr

```
Usage:
  SYS_console> get-tftp-srvr
     The IP address of the TFTP server is: <IP address>
  SYS_ console>
```

This command retrieves the TFTP download server IP address.

set-tftp-srvr

```
Usage:
  SYS_console> set-tftp-srvr <IP address>
```

This command sets the TFTP download server IP address.

enable-tftp

This command forces TFTP in the next boot.

disable-tftp

This command disables TFTP in the next boot.

IP Commands

This section lists the IP Configuration commands available to the command line interface.

IP Configuration

get-ip

Shows the device's current IP address, if any.

```
SYS_console> get-ip
 The device IP address is: <IP address>
SYS_console> _
```

get-ip-conf

Shows the complete current IP configuration - address, network mask and gateway.

```
SYS_console> get-ip-conf
  The device IP address is: <IP address>
  The device netmask address is: <IP netmask>
  The device default gateway IP address is: <IP gateway>
```

set-ip

```
Usage:
set-ip <IP address>
```

Sets the IP address of the SNMP Agent. The new value will only be stored in the NVRAM, and the user must execute a `<reset>` to effect the change.

NOTE   *The default gateway address and the IP address of the switch must be in the same subnet.*

set-ip-conf

```
Usage:
set-ip-conf <IPaddress> <netmask> <default gateway>
```

Sets IP address and network IP address. If a previous IP configuration was being used, the new configuration will be saved in NVRAM for the next session. In order to use the newly defined values immediately, reset the system using the `<reset>` command.

NOTE   *If the IP configuration is not specified, the agent will not respond to any in-band requests, including ping messages.*

```
SYS_console> set-ip-conf 194.1.1.1 255.255.255.000 194.1.1.2

  Device IP Address and Mask unchanged for this session
  Device IP Address, mask and default gateway change in the NVRAM OK
  After boot the device IP address, Mask and default gateway will be:
          IP address  : <IP address>
          IP netmask  : <IP netmask>
          IP gateway  : <IP gateway>
```

If the wrong gateway is typed in, the following message will be displayed:

```
  The network part of the IP address must be equal to the default gateway
  network part.
```

get-gatew

Shows default gateway. This command shows which default route will be used to access a different IP network.

set-gatew

```
Usage:
set-gatew <IP address>
```

Sets the default gateway IP Address. This command lets you specify the address of the router used to access a different IP network. The default value for the default gateway IP address is 194.1.1.2. This command takes effect after reset.

NOTE   *The default gateway address and the IP address of the switch must be in the same subnet.*

```
SYS_console> set-gatew <IP gateway address>
  Device Default Gateway change in the NVRAM OK
  Device Default Gateway changed to : <IP gateway address>
SYS_console> get-gatew
  Device default gateway address is : <IP gateway address>
SYS_console> _
```

Port Commands

get-port-cfg

Usage:
```
get-port-cfg
```

This command displays the configuration of all the ports.

```
SYS_console> get-port-cfg

Port_ID          FDPLX

   1             OFF
   2             ON
  ..             ..
  ..             ..
  ..             ..
  16             OFF

SYS_console>
```

set-port-dplex

Usage:
```
set-port-dplex <port No> {half | full}
```

This command sets the port mode to half or full duplex.

```
SYS_console> set-port-dplex ?
  set-port-dplex sets the port mode: half or full duplex
   [arg #0]  port number 1....16
   [arg #1]  enter either {half |full}
SYS_console>
```

TROUBLESHOOTING

The XM542 is highly reliable. If you encounter an operating problem, follow the troubleshooting steps below. If the problem persists, contact your local NBase representative.

1. Review all link LEDs to ensure that those ports you believe should be functioning are properly attached to a cable.

2. Verify that your cables are wired correctly; i.e. use a UTP crossover cable to directly connect another switch or any other DTE type-device (such as a workstation) directly to a port. (See **Network Connections)**

3. Review all link LEDs to ensure that those ports you believe should be functioning are properly configured, and not disabled or partitioned.

Problem: LINK LED is ON but data is not being forwarded through switch.

Cause: *Cables are too long.*

Solution: Make sure that cables are as defined in the installation section of this guide. Check that cables meet the 10Base-T/100Base-TX standards and that they do not exceed 100m.

Problem: Port disabled due to a defective device on segment.
Cause: *When a defective NIC card causes a permanent jam on the network, the port will be disabled by the XM542.*

Solution: a) Locate the defective device and disconnect it from the network.

b) In a managed unit the disabled port can be enabled through management or by shutting off the unit and powering up again.

c) In an unmanaged unit, the disabled port can be enabled only by shutting off the unit and powering up again.

Problem: Port 18 functions as a 100Base-TX port but stops functioning when the optical module is installed, ie Port 18 does not function as an optical port.
Cause: *Optical module is defective.*

Solution: Replace the optical module.

Problem: There is a failure during self-test.
Cause: *The XM542 card may not be securely installed in its slot.*

Solution: Re-insert the XM542 card into its GigaHUB slot, making sure that it is secure, and activate a RESET.

If you encounter any situations you cannot solve, obtain, if possible, the following information:

- The serial number of your switch and its hardware address

- If the NMS option is installed, the firmware revision number displayed in the terminal console banner message

- The configuration of the equipment being interfaced with the switch

- The sequence of events leading up to your problem

- Troubleshooting procedures you have already followed

After compiling the above information, contact your local NBase representative or a Customer Service Representative. In addition, if you have specific questions about your network configuration, or have a particularly difficult network, please call our technical support.

Tel: (972) 4-993-6200, 4-993-6271, 4-993-6257 or 4-993-6269
Fax: (972) 4 989-2743
E-mail: support@nbase.co.il

TECHNICAL SPECIFICATIONS

Compatibility	EEE 802.3; IEEE802.1D; IEEE 802.3u (Fast Ethernet); MIB II (RFC 1213); Ethernet MIB (RFC1643); Bridge MIB (RFC1493)	

Electrical	**XM542**	**EM541/FO**
Voltage/Current	5V DC / 6A	5V DC / 0.4A (from GigaHUB)
Power Units	4	0.27

Pinout   **SUTP RJ-45 Connector (on XM542)**

1 - Transmit (TX+)
2 - Transmit (TX-)
3 - Receive   (RX+)
6 - Receive   (RX-)
4, 5, 6, 7 are Unused

Cables   Twisted-Pair cable for station
UTP/STP Category 5   100m / 330 ft max length   Male RJ-45 connectors

Optical (EM541/FO)

Fiber **MM**	62.5 / 125
Tx Power	-18.5 dBm
Rx Sensitivity	-31.5 dBm

Connectors

STP	RJ-45
Fiber	DSC

Diagnostics

Port LEDs	**LK**	Green		ON indicates link connection
	RX	Green		ON indicates port receive activity

Global *LEDs*	**RUN**	**STA**	
	ON	ON	Self-test in progress
	ON	OFF	OK
	OFF	ON	Self-test failed
	ON	ON	Global error

Performance

Filter/Forward Rate	650Kpps

Physical

H x W x D	30 x 27.7 x 3.5 cm	11.8" x 11" x 1.4"
Weight	<1 kg	<2.2 lb

Environment

Operating Temperature	0°C to 40°C	32°F to 104°F
Storage Temperature	-10°C to 50°C	14°F to 122°F
Humidity	85% maximum, non-condensing	

Standards Compliance   UL-1950; CSA 22.2 No 950; VCCI; FCC Part 15 Class A; CE - 89/336/EEC, 73/23/EEC