

# HSSI- DES I/O Card Administrator's Guide

Compatible Systems Corporation  
4730 Walnut Street  
Suite 102  
Boulder, Colorado 80301

303-444-9532  
800-356-0283  
<http://www.compatible.com>

HSSI-DES I/O Card Administrator's Guide, Version 1.0  
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**FCC Notice:** This product has been certified to comply with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of FCC Rules. It is designed to provide reasonable protection against radio or television communication interference in a commercial environment. Operation of this equipment in a residential area could cause interference with radio or television communication.

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# Introduction to the HSSI - DES I/O Card

The HSSI-DES Input/Output Processor card, as part of the IntraPort Carrier (IPC) VPN Access Server, terminates Layer 3 IPSec sessions which were initiated by PCs running VPN Client software. Traffic from client sessions is typically decrypted and authenticated by the IPC, and then switched into pre-specified Layer 2 virtual circuits (VCs). The process also works in reverse, with traffic received from a specific VC typically being encrypted and digitally signed before being routed to the appropriate client session.

The I/O card can support up to 5,000 simultaneous client connections. The HSSI interface has a data capacity of 44.736 Mbps.

This section of the manual contains information specific to the HSSI - DES I/O card. It is divided into the following sections:

## **Chapter 1: Network Installation**

This part of the manual includes step-by-step instructions on how to physically install the HSSI - DES I/O card and connect it to your network.

## **Chapter 2: Basic Configuration Guide**

This part of the manual includes provides a basic list of parameters that must be entered into the HSSI - DES I/O for proper operation.

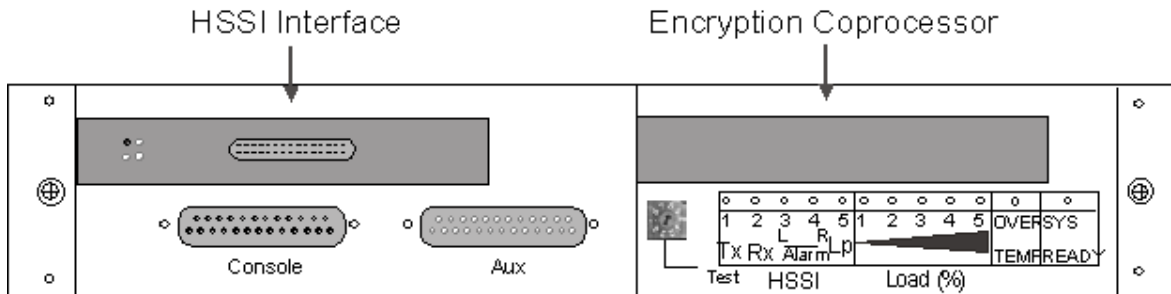
## **Chapter 3: Shipping Defaults**

This part of the manual includes lists factory defaults for the interface.

## **Chapter 4: LED Patterns**

This part of the manual includes describes the LED indicators for the HSSI - DES I/O card.

# Chapter 1 - Network Installation



HSSI - DES I/O card Front Panel

This section of the manual will help you connect the IntraPort Carrier's HSSI - DES I/O card to a CSU/DSU or frame switch and a management console.

In summary, the steps for installation are:

1. After mounting the server or placing on a desktop, make sure it is not connected to any power source.
2. Connect the server to the CSU/DSU or frame switch.
3. Power up the CSU/DSU or frame switch.
4. Connect a management console to the server (optional).
5. Plug in the power cable and power up the server.

## Connecting the HSSI - DES I/O to a T3 Line Communications Device

The HSSI - DES I/O is not a line communications device. It must be connected to a CSU/DSU or frame switch, which is then connected to the wide area transmission line. To connect the HSSI interface to your line communications device, you will need a standard HSSI cable. The cable is not supplied; you may contact your reseller or your Compatible Systems sales representative for information on obtaining the correct cabling supplies.

❖ **Note:** *The HSSI - DES I/O includes loopback features which can be used to check the functionality of your T3 line. Before attempting to route network traffic, use these features to check the line's basic integrity.*

To connect the HSSI port on the HSSI - DES I/O module to a T3 (or other HSSI-based) CSU/DSU, first make sure that both units are powered off. Then, simply connect a standard HSSI cable between the HSSI port of the HSSI - DES I/O module and the appropriate port of the CSU/DSU, following the cable installation instructions supplied by the CSU/DSU manufacturer as well.

❖ **Note:** *Do not use a "null-modem" cable.*

The CSU/DSU connects to the appropriate WAN interface (usually a T3 link) as specified in the installation instructions supplied by the CSU/DSU manufacturer.

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## Connecting a Management Console

If you wish to connect an out-of-band management console, use the supplied cable and connect to the Console interface on the HSSI - DES I/O. You can use a dumb terminal or a computer equipped with VT100 terminal emulation.

The default settings for the Console interface are VT100 terminal emulation, 9600 bps, 8 bits, no parity, 1 stop bit and no Flow Control.

❖ **Note:** *The HSSI - DES I/O also has an AUX interface. This is a modem connection which should only be used in consultation with Compatible Systems Technical Support staff, who will provide instruction on its use.*

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## Chapter 2 - Basic Configuration Guide

This chapter briefly discusses the major parameters that must be set in order to use the HSSI - DES I/O card as part of your IntraPort Carrier VPN Access Server.

Detailed information on the meaning of the server's parameters is provided in the *CompatiView Management Software Reference Guide* and the *Text-Based Configuration and Command Line Management Reference Guide*. You should use this list as a starting point to look up more specific information in the other documents.

If you need more general information on IP, IPX, AppleTalk or wide area protocols, see the Appendices in the *CompatiView Management Software Reference Guide*.

There are a number of parameter settings which are optional, in the sense that they are not required for all installations. These settings are not covered in this chapter.

In this chapter:

**CV** = CompatiView

**TB** = Text-Based Configuration

❖ **Note:** *This guide does not include information on setting up packet filters for using the server as a Firewall. See the **CompatiView Management Software Reference Guide** or **Text-Based Configuration and Command Line Management Reference Guide** regarding IP packet filters for more information.*

### WAN Interface Configuration

In order to use the WAN interface, you may want to set some physical parameters. Then set up the link and protocol parameters.

#### Physical Communications Settings

##### Required for Dedicated Line Operation

No changes from the default values are required for standard operation over a T3 line. The default values are listed in [Chapter 3 - Shipping Defaults](#).

##### Suggested for Dedicated Line Operation

Changing to a different clocking or CRC setting may be required. These parameters can only be set using the command line interface.

**TB:** Use **configure** and the **HSSI Interface WAN 0** section.

### Frame Relay Configuration

This section covers the settings required for Frame Relay operation of the HSSI WAN interface.

#### Link Configuration

- Set Dedicated connection
- Set Frame Relay connection

**CV:** Use the Link Configuration: WAN Dialog Box.

**TB:** Use **configure** and then set the **Mode** and **ConnectMode** keywords in the **Link Config WAN 0** section.

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## Frame Relay DLCI Mappings

If you are connecting to another Compatible Systems device, this information is not required for Frame Relay operation. Compatible Systems uses IARP (Inverse Address Resolution Protocol) to dynamically generate this information. To connect to other vendors' devices which do not support IARP, you must provide DLCI-to-protocol mapping information.

**CV:** Use the DLCI Mapping Database window.

**TB:** Use **configure** and set the **DLCI** keyword in the **Frame Relay WAN 0** section.

❖ **Note:** *This parameter is not required for DLCIs which are mapped in VPN Groups. It may be necessary for PVCs with Internet destinations.*

## IP Protocol

There are two ways to set up Frame Relay. One is to set the WAN interface as a “numbered interface.” This means that the interface (and thus the Frame Relay network) will have an IP address, subnet mask, etc. The other is to set it as an unnumbered interface and specify that the link is point-to-point Frame Relay and set the local DLCI. Instructions are provided for both options.

### Required for IP Numbered Interface

- IP numbered interface
- IP address
- IP subnet mask
- IP broadcast address

**CV:** Use the TCP/IP Routing: WAN Dialog Box.

**TB:** Use the **configure** command and the **Numbered**, **IPAddress**, **SubnetMask**, and **IPBroadcast** keywords in the **IP WAN 0** section.

### Required for IP Unnumbered Interface

- IP unnumbered interface
- Point-to-Point Frame Relay
- Local DLCI

**CV:** Use the TCP/IP Routing: WAN Dialog Box.

**TB:** Use the **configure** command and the **Numbered**, **PointToPointFrame**, and **InterfaceDLCI** keywords in the **IP WAN 0** section.

### Suggested for IP

These parameters help supply information about the segment that the interface is connected to. With this information, routing can take place.

- Set IP RIP 1, IP RIP 2, or OSPF (Open Shortest Path First)
- IP static routes

**CV:** Use the TCP/IP Routing: WAN Dialog Box to set RIP, and the IP Static Routing Dialog Box (under Global/IP Static Routes) to set static routes. To set parameters for OSPF, refer to the CompaView Management Software Reference Guide.

**TB:** Use **configure** and set either the **RIPVersion** keyword or the **OSPFEnabled** keyword in the **IP WAN 0** section. Add static routes and a default router using the **edit config IP Static** command.



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## Configuring the Server for IP and IPX Client Tunnels

To configure the IntraPort Carrier for IP and IPX client tunnels, each user must be entered into the VPN user database (or into a RADIUS server database) and assigned a tunnel configuration.

### Required for Client Tunnel Configurations

These are the basic parameters for a tunnel configuration:

- Name of configuration
- Bind To port
- Local IP Net and/or Local IPX Network
- Reachable IP networks
- VPN Group DLCI

**CV:** Use the VPN Group Configuration Dialog Box to create and name a tunnel configuration. Use the General tab to set the Bind To port. Use the IP Connection tab to set the Local IP Net and add IP network numbers and masks which will be reachable via the tunnel configuration. Use the IPX Connection tab to set the Local IPX Network. The VPN Group DLCI can only be set via text-based configuration.

**TB:** Use the **configure** command and create and name a **VPN Group Name** section. Then set the **BindTo**, **LocalIPNet**, **IPNet** and/or **LocalIPXNet**, and **VPNGroupDLCI** keywords in that section.

### Suggested for Client Tunnel Configurations

You may want to add or change protection suites, set up filters for the tunnel, set a backup device, etc.

**CV:** Use the IKE Configuration, IPX Filters, IP Filters and/or Rollover tabs in the VPN Group Configuration Dialog Box.

**TB:** Use the **configure** command and set keywords in the **VPN Group Name** section.

### VPN User Database

If you are using a RADIUS server for user authentication, you will need to set up VPN users on that server. If not, then you must enter each user into the VPN user database.

**CV:** Use the VPN User Dialog Box.

**TB:** Use the **edit config** command and set parameters in the **VPN Users** section.

## Setting up RADIUS Authentication

If you are using a RADIUS server for user authentication, you must set up the IPC to communicate with a RADIUS server and also set some special parameters in the RADIUS server itself.

### Setting the IntraPort for a RADIUS Server

Just a few basic settings are required for the IntraPort to communicate with a RADIUS server.

- Primary server IP address
- Secret
- VPN password attribute number
- VPN group attribute number

**CV:** Use the RADIUS Configuration Dialog Box.

**TB:** Use the **configure** command and set the **PrimAddress**, **Secret**, **VPNPassword** and **VPNGroupInfo** keywords in the **RADIUS** section.

### RADIUS Server User Authentication Settings

In order for client authentication and accounting to be done on a RADIUS server, the RADIUS server must be configured with four pieces of data for each user.

- User name
- Login password
- Group configuration
- Tunnel secret

The user name is kept in the User-Name attribute in the RADIUS server and the login password is kept in the Password attribute. The group configuration is kept in attribute number 77 of the RADIUS database, and the tunnel secret is kept in attribute number 69. These two attribute numbers must be configured in the RADIUS server's dictionary file.

The RADIUS server will also log the real IP address of the client and the IP address assigned to the client by the IPC as it begins to account for the client. To use this feature, the two attribute numbers for these two IP address strings must also be configured in the RADIUS server's dictionary file and in the **RADIUS** section of the IntraPort's configuration.

The following is an example for a Livingston RADIUS server dictionary file:

```
ATTRIBUTEClient-Real-IP66 string
ATTRIBUTEClient-Assigned-IP67string
ATTRIBUTEVPN-Password69 string
ATTRIBUTEVPN-GroupInfo77 string
```

The following is a sample RADIUS user database entry from a Livingston RADIUS server.

```
User-Name = corpauser
Password = "radiuslogin"
VPN-Password = "abc"
VPN-GroupInfo = "CorporateA"
```

After making and saving these changes, you must restart the RADIUS server in order for it to recognize the new settings.

❖ **Note:** Refer to the user manual for your RADIUS server for the exact format of dictionary and user database entries.

❖ **Note:** Although MacRADIUS servers offer a GUI, the custom attribute settings will require that you enter users in the Users text file. See the user manual for your server for more information on exporting, editing and importing the Users text file.

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In addition to the RADIUS server settings, the user name, login password and tunnel secret must match the settings for each user in the User Properties window of the VPN Client. The group configuration must match one of the VPN group configurations in the IntraPort's configuration.

## Saving a Configuration File to Flash ROM

Once a configuration is complete, you can save it to the server's Flash ROM. Until saved, all changes are made in a separate buffer and the actual server interfaces continue to run as before the changes were made.

**CV:** Use the Save to/Device option from the File menu.

**TB:** Use the **save** command.

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# Chapter 3 - Shipping Defaults

## Default Password

- letmein

## WAN Interface

### IP Defaults

- On
- Address: 198.41.12.1
- Subnet mask: 255.255.255.0
- Broadcast address: 198.41.12.255
- Unnumbered interface
- RIP off
- Van Jacobson compression off

### Link and Physical Defaults

- PPP
- Internal clocking
- 16 bit CRC

## Chapter 4 - LED Patterns

Some of the LEDs on the front of the IntraPort Carrier VPN Access Server serve dual functions. In addition to indicating certain server-wide operating conditions and they may also display port-specific information.

❖ **Note:** *Any continuous flashing pattern not noted in this chapter may be caused by a hardware failure. Please call Compatible Systems Technical Support if your server shows a hardware failure.*

### Server LED Patterns

#### Over Temp

The server is above the proper operating temperature. The filter needs changing. See the appropriate IntraPort Carrier chassis section of the manual for instructions.

#### Sys Ready

The server booted properly without detecting any failures.

### General Indicators

HSSI Lights	Load Lights	Indication
1 flashing	20 flashing	Server stacks starting up.
2&3 flashing	40&60 flashing	No OS loaded. Running from ROM.
2&5 flashing	40&100 flashing	Erasing OS in Flash ROM.
1,2&3 flashing	20,40&60 flashing	Erasing config in Flash ROM.
Scanning from the outside toward the center.		Flash ROM erase due to switch setting five or six is complete. Set switch to zero and cycle power.

### HSSI - DES I/O LED Patterns

The following LEDs and light patterns provide information about the HSSI - DES I/O interfaces.

#### HSSI Indicators

Scan from 1 to 3: WAN transmit packet

Scan from 5 to 3: WAN receive packet

#### HSSI Connection Indicators

TX: WAN transmit packet

RX: WAN receive packet

❖ **Note:** *The four lights on the HSSI card are for manufacturing diagnostic purposes only and are off during normal operating conditions.*