CHAPTER 7

Protocol Translation Configuration Commands

The protocol translator software attempts to provide transparent translation between systems running disparate protocols. The software fully supports two-way virtual terminal protocol translation between nodes running X.25, LAT (Local Area Transport), and Telnet a remote terminal protocol that is part of the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

To provide fully transparent protocol conversion, the protocol translator masquerades as two or more hosts on the same network. When a connection is made to the protocol translator, the protocol translator determines which host the connection is for and what protocol that host is using. The protocol translator then establishes a new network connection using the networking protocol required by that host. This network connection is more efficient and allows the protocol translator to act upon greater knowledge of the protocols in use because the protocol translator acts as a network connection rather than a terminal.

This chapter describes the **translate** global configuration command. For protocol translation configuration information and examples, see the *Protocol Translator Configuration Guide*.

translate

To automatically convert incoming LAT, TCP, or X.25 requests for connections to a specified destination address or host name to the specified outgoing connection type, use the **translate** global configuration command.

translate *protocol incoming-address* [*in options*] *protocol outgoing-address* [*out options*] [*global-options*]

Syntax Description

protocol incoming-address
protocol outgoing-address

Name of a protocol followed by a service name or address.These arguments can have the following values:

lat *service-name*— LAT and a LAT service name. The application of *service-name* can differ, depending on whether it is being used on the incoming or the outgoing portion of the command. When used on the incoming portion, *service-name* is the name of the service that users specify when trying to make a translated connection. This name can match the name of final destination resource, but this is not required. This can be useful when making remote translated connections.

x25 *X.121-address*— X.25 and an X.121 address. The X.121 address must conform to specifications provided in the *CCITT 1984 Red Book*. This number generally consists of a portion that is administered by the PDN and a portion that is locally assigned. You must be sure that the numbers that you assign are in agreement with addresses assigned to you by the X.25 service provider. The X.121 addresses will generally be subaddresses of the X.121 address of the X.25 network interface. Typically, the interface address will be a 12 digit number. Any additional digits are interpreted as a subaddress. The PDN still routes these calls to the interface, and the protocol translator itself is responsible for dealing with the extra digits appropriately.

tcp *IP-address*— TCP/IP Telnet and a standard IP address or host name. The argument *IP-address* is a standard, four-part dotted decimal IP address or the name of an IP host that can be resolved by the Domain Name System (DNS) or explicit specification in an **ip host** command.

in-options
out-options

(Optional.) Incoming and outgoing connection request options. These arguments can have the following values:

For Telnet TCP translation options:

port *number*—For incoming connections, number of the port to match. The default is port 0 (any port). For outgoing connections, number of the port to use. The default is port 23 (Telnet).

binary—Negotiates Telnet binary mode on the Telnet connection. (This was the default in previous versions of the protocol translator software and is set automatically when you enter at **translate** command in the old format.)

stream—Performs stream processing, which enables a raw TCP stream with no Telnet control sequences. A stream connection does not process or generate any Telnet options, and prevents Telnet processing of the data stream as well. This option might be useful for connections to ports running UUCP or other non-Telnet procotols, or to ports connected to printers. For ports connected to printers using Telnet, the stream option prevents some of usual problems associated with using Telnet for printers, such as strange things happening to bare carriage returns or line feeds and echoing of data back to VMS systems.

printer—Supports LAT and X.25 printing over a TCP network among multiple sites. Causes the protocol translation software to delay the completion of an incoming Telnet connection until after the outgoing protocol connection (to LAT or X.25) has been successfully established. An unsuccessful outgoing connection attempt results in the TCP connection to the protocol translator being refused, rather than being accepted and then closed, which is the default behavior. Note that using this option will force the global option *quiet* to be applied to the translation.

For LAT translation options:

node *node-name*—Connects to the specified node (*node-name*) that offers a service. By default, the connection is made to the highest-rated node that offers the service.

port *port-name*—Destination LAT port name (*port-name*) in the format of the remote system. This parameter is usually ignored in most timesharing systems, but is used by terminal servers that offer reverse-LAT services.

unadvertised—Prevents service advertisements from being broadcast to the network. This can be useful, for example, when you define translations for many printers, and you do not want these services advertised to other LAT terminal servers. (VMS systems will be able to connect to the service even though it is not advertised.)

For X.25 translation options:

cud *c-u-data*—Sends the specified Call User Data (CUD) text (*c-u-data*) as part of an outgoing call request after the protocol identification bytes.

profile *profile*—Sets the X.3 PAD parameters as defined in the profile created by the **x29 profile** command.

reverse—Provides reverse charging for X.25 on a per-call rather than a per-interface basis.

printer—Supports LAT and TCP printing over an X.25 network among multiple sites. Provides an "interlock mechanism" between the acceptance of an incoming X.25 connection and the opening of an outgoing LAT or TCP connection. The option causes the protocol translator to delay the call confirmation of an incoming X.25 call request until the outgoing protocol connection (to TCP or LAT) has been successfully established. An unsuccessful outgoing connection attempt results in the incoming X.25 connection to the protocol translator being refused, rather than being confirmed and then cleared, which is the default behavior. Note that using this option will force the global option *quiet* to be applied to the translation.

pvc *number*—Specifies that the incoming connection (identified by the argument *number*) is actually a permanent virtual circuit (PVC).

global-options

(Optional.)Translation options that can be used by any connection type. It can be one or more of the following:

access-class *number*—Allows the incoming call to be used by source hosts that match the access list parameters. The argument *number* is the number (integer) previously assigned to an access list. This feature is supported only for incoming TCP and X.25 connections.

local—Allows Telnet protocol negotiations to *not* be translated.

login—Requires that the user log in before the outgoing connection is made. This type of login is specified on the VTY's using the **login** command.

quiet—Suppresses printing of user-information messages.

max-users *number*—Limits the number of simultaneous users of the translation to *number* (an integer you specify).

swap—Allows X.3 parameters to be set on the protocol translator by the host originating the X.25 call, or by an X.29 profile. This allows incoming and outgoing X.25 connections to be swapped so that the protocol translator is treated like a PAD when it accepts a call. By default, the protocol translator behaves like a PAD for calls that it initiates, and behaves like an X.25 host for calls it accepts. The **swap** keyword allows connections from an X.25 host that wants to connect to the protocol translator, and then treats it like a PAD. For X.25 to TCP translations only.

Default

None

Command Mode

Global configuration

Usage Guidelines

Table 1-1 provides a visual aid for understanding how to use the **translate** command. As the table illustrates, you define the protocol translation connections—both incoming and outgoing—by choosing a protocol keyword and supplying the appropriate address or service name. The protocol connection information is followed by optional features for that connection, also as appropriate. For example, the **binary** option is only appropriate with TCP/IP connections. The global options, in general, apply to all the connection types, but there are exceptions. The **swap** keyword, for example, is for X.25 to TCP translations only. See the examples for more explanations on how to enter this command.

Table 1-1 Translate Command Options

	Incoming Protocol	Options	Outgoing Protocol	Options	Global Options
translate	*protocol incoming-address*	[*in-options*]	*protocol outgoing-address*	[*out-options*]	[*global-options*]
	lat *service-name*	**unadvertised**	**lat** *service-name*	**node** *node-name*	**access-class** *number*
				port *port-name*	**max-users** *number*
					local
					login
	x25 *x.121 address*	**cud** *c-u-data*	**x25** *x.121 address*	**cud** *c-u-data*	**quiet**
		profile *profile*		**profile** *profile*	**swap**
		reverse		**reverse**	
		printer			
		pvc *number*			
	tcp *IP-address*	**port** *number*	**tcp** *IP-address*	**port** *portnumber*	
		binary			
		stream			
		printer			

Examples

Note In the following examples, the underscores highlight parts of the command and are for illustration purposes only.

The following example illustrates a simple X.25 to TCP translation command. Packets coming in X.25 address 652365123 arrive via PVC 1 and are translated to TCP packets and transmitted out IP address 131.108.1.1.

```
translate x25 652365123 pvc 1 tcp 131.108.1.1
          incoming      option outgoing
```

The following example illustrates incoming LAT to outgoing TCP translations. The **unadvertised** keyword prevents broadcast of service advertisements to other servers. Outgoing translated packets are transmitted out IP address rubble via TCP port 4005.

```
translate lat pt-printer1 unadvertised tcp rubble port 4005
           incoming        option       outgoing   option
```

The following example illustrates a more complex configuration that calls an X.29 profile and swaps the default PAD operation of the protocol translator to that of an X.25 host.

```
x29 profile fullpackets 2:0 3:0 4:100 7:21
translate x25 217536124 profile fullpackets tcp rubble port 4006 swap
            incoming      option              outgoing   option    global
```

The following example illustrates the use of the TCP incoming protocol option **printer** for an incoming TCP connection.

```
translate tcp 160.89.32.250 printer x25 5678
              incoming     option  outgoing
```

The following example illustrates the use of the X.25 incoming protocol option **printer** for an incoming X.25 connection.

```
translate x25 55555  printer tcp 131.108.1.1
            incoming  option   outgoing
```