

FarLinX TCP-X25 GP Gateway Version 2.0

Highly flexible data format translation and connection routing gateway between TCP/IP and X.25

FarSite
COMMUNICATIONS



Key Features

- **General Purpose TCP to X.25 data translation with a very wide variety of modes including: fixed routes, dynamic routing, RFC1006, Cisco RBP compatibility, header stripping and parity correction**
- **High performance, non stop operation - up to 1000 messages per second**
- **3 Models, equipped with 1, 2 or 4 X.25 lines, and up to 4000 SVC and PVC connections**
- **Switching of X.25 connections between X.25 lines and routing over TCP**
- **Multiple Gateways providing Resilience with Load Balancing**
- **Simple configuration with a Web accessible Configuration Application**

Overview

The FarLinX TCP-X25 General Purpose (GP) Gateway Version 2.0 provides a reliable means of inter-connecting equipment between TCP/IP and X.25 networks.

The Gateway can operate as a general purpose means for connecting a variety of different TCP/IP equipment to X.25 services. Similarly, the Gateway can also inter-connect existing legacy terminals attached to an X.25 network to Host systems with TCP/IP interfaces. An X.25 switch function is also included in some models.

The product can support generalised protocols when the X.25 Host system treats the incoming X.25 data as a character stream. It can also convert the data when a header is used to describe the message payload within the TCP connections and remove this header on the X.25 virtual circuits. Data types supported include: RFC1006, Cisco RBP and special character delimiting. Dynamic routing is supported where the Client TCP application determines the X.25 address and call parameters used at the time the connection is established. The Gateway can provide connectivity to several different Host systems at the same time with each can have different data conversion configurations.

The Gateway also support X.25 Data Switching over TCP this allows X.25 devices to be interconnected via an IP network without the layer 3 overheads associated with XOT.

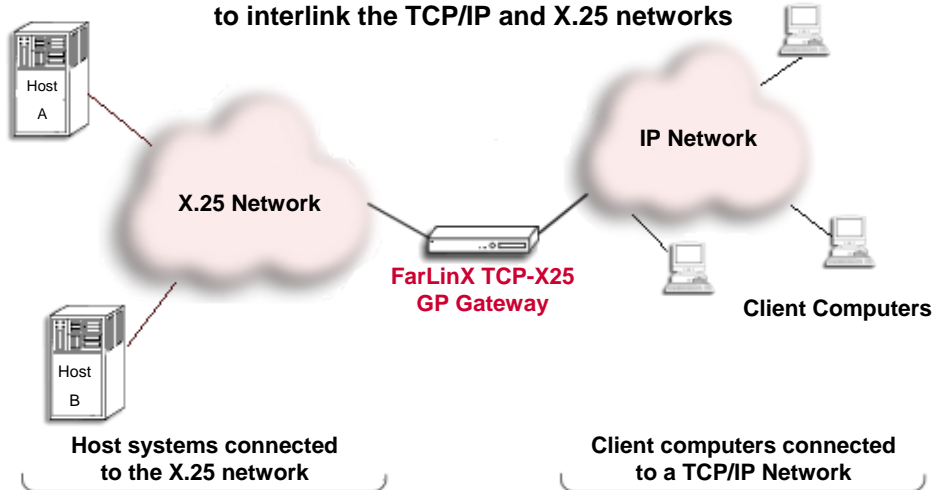
Up to 2048 transactions can be handled simultaneously over each X.25 line. There are 3 versions of the Gateway providing scalable solutions, starting with the entry level GP Gateway-1 version supporting up to 254 simultaneous connections with 1 X.25 line to the GP Gateway-4 version allowing up to 4,000 connections over 4 X.25 lines.

Two or more Gateways can be used in a load balanced, resilient configuration that has no single point of failure.

Applications

- **Conversion of legacy X.25 connections and data to TCP connections**
- **X.25 to TCP/IP resilient Hub**
- **4 port X.25 switch with selective routing of data over TCP/IP**
- **Reproduction of X.25 connections mapped over an IP network**

Example network configuration using the FarLinX TCP-X25 GP Gateway to interlink the TCP/IP and X.25 networks



GP Gateway Operation

The Gateway provides connection establishment and data packetization services for general protocols to allow applications sending data over TCP/IP to interface to X.25 connected hosts. The Gateway provides routing facilities to select the appropriate Host from those available and maintains X.25 sessions to the Host as required.

The Gateway listens on a number of TCP ports – one port per configured X.25 Host. When a client establishes a TCP connection to the Gateway, the Gateway sets up an X.25 virtual circuit to the appropriate Host. Once the end-to-end connection is complete, the messages can be transferred.

At the end of the transaction, if the terminal disconnects, the Gateway will clear the X.25 virtual circuit. Alternatively, if the Host clears the X.25 virtual circuit first, the Gateway will disconnect the TCP connection to the terminal.

An X.25 Switch function provided on some models of the Gateway can switch X.25 calls between X.25 connections and permit selective filtering of calls to TCP.

TCP to X.25 data translation functions

The Gateway supports a wide range of TCP to X.25 data translation and connection functions these including:

- Character stream
- ETX terminated messages
- Special character terminated messages (customisable)
- Message header conversion - types available 2 or 4 byte ASCII or Binary length representation
- Custom message header conversion
- RFC1006 - ISO Transport Class 0 protocol data units, using the RFC-1006 encapsulation on the TCP connection
- Cisco RBP - Record Boundary Preservation
- X.25 Parity conversion - the Gateway performs any required parity adjustments and removal on the x.25 connection

Many of the functions can be configured for the same connection for maximum flexibility.

Connection Routing and Address Mapping

The FarLinX TCP-X25 GP Gateway can support routes to 2,000 different X.25 hosts. Similarly, when using the called X.25 address as the routing key, incoming X.25 calls can be routed to thousands of different TCP/IP hosts.

When making connections to the X.25 network, the Gateway has the capability of mapping the source IP address to a calling X.25 address, thus allowing the destination X.25 host to identify the connection source uniquely.

The Dynamic routing option allows the X.25 address (NUA) and call parameters to be set by the remote application at the time each X.25 connection is established. X.25 packetisation information is passed to the application.

The main modes supported include:

- Statically defined routing
- DRPD - the Dynamic Routing Packetized Data format allows TCP connected applications to dynamically setup the X.25 connection
- X.25 Data Switching - allows X.25 devices to be interconnected via an IP network without the overheads associated with XOT
- PAD Routing - PAD or Dynamic routing may be employed to allow the TCP client application to specify the X.25 call parameters

Performance and Expandability

The FarLinX TCP-X25 GP Gateway easily handles very high transaction loads. Support for large numbers of X.25 lines and multiple Gateways provides enormous scalable expansion capability and resiliency. The main performance and expansion features of the Gateway are:

- Up to 1000 messages per second on each Gateway
- Up to 4000 simultaneous connections
- Multiple load balancing Gateways with up to 32 sharing a single IP address
- X.25 line speeds up to 8 Mbits/s
- 3 models - 1, 2 and 4 X.25 port versions
- X.25 Networks, Leased Lines and X.25 Dialup connections supported

Overview of Resilient Operation Configurations

The FarLinX TCP-X25 GP Gateway can be deployed in a wide variety of ways to achieve the level of resilience required by the application. The level will depend on the value of the data traffic and the acceptable degree of user intervention required to rectify any problem. The aim with resilience is to **remove single points of failure**. Resilient configurations using more than one Gateway also allow **improved performance by sharing the traffic load between several machines**.

Network Line Redundancy

To achieve network line redundancy, a **single FarLinX TCP-X25 GP Gateway may operate with two or more X.25 lines**. It can route data over any active line connected to the Gateway so that if one line goes out of operation then the other lines continue to be used automatically.

Gateway Redundancy and Load Balancing

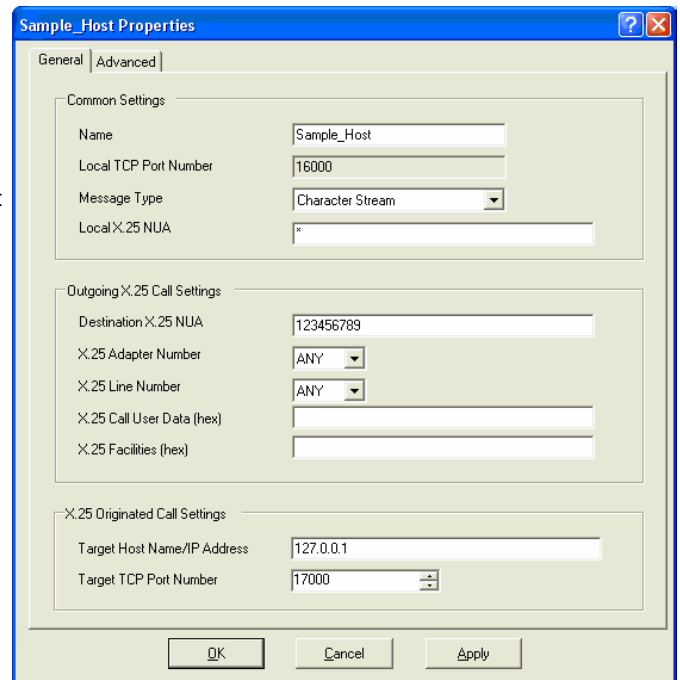
For fully resilient operation, two (or more) FarLinX TCP-X25 GP Gateways may be deployed. They can be **either configured for simple failover from a primary to a backup machine or for full load balanced operation**. In Network Load Balancing (NLB) mode both failover and load balancing of the connections are provided thus ensuring there is no single point of failure and that there is no performance bottleneck.

The built in Gateway Supervisor checks the state of the X.25 network lines and as these change state between fully operational and faulty it automatically enables/disables the unit from the pool of FarLinX TCP-X25 GP Gateway's, thus managing the availability of that particular Gateway machine. Key events such as the loss of an X.25 line are recorded on a daily rotating event log.

Configuration Application

The remotely accessible Configuration Application for the Gateway allows the TCP interface, X.25 connection, data translation configuration and the event log levels to be selected. Almost all changes to the configuration are made dynamically so continuous operation of the Gateway can be maintained.

On line help is provided for the parameters. See the sample screen shot of the Configuration Application (right).



The screenshot shows a Windows-style dialog box titled "Sample_Host Properties". It has two tabs: "General" and "Advanced", with "Advanced" selected. The dialog is divided into three sections:

- Common Settings:** Includes fields for Name (Sample_Host), Local TCP Port Number (16000), Message Type (Character Stream), and Local X.25 NUA.
- Outgoing X.25 Call Settings:** Includes fields for Destination X.25 NUA (123456789), X.25 Adapter Number (ANY), X.25 Line Number (ANY), X.25 Call User Data (hex), and X.25 Facilities (hex).
- X.25 Originated Call Settings:** Includes fields for Target Host Name/IP Address (127.0.0.1) and Target TCP Port Number (17000).

At the bottom of the dialog are buttons for "OK", "Cancel", and "Apply".

Maintenance

FarSite recognises that this product is often used as a key component in networked systems and as such a guaranteed response to unexpected problems is required. A maintenance contract is available for the FarLinX TCP-X25 GP Gateway for priority service and rapid problem resolution.

Product Name	FarLinX TCP-X25 GP Gateway-1	FarLinX TCP-X25 GP Gateway-2	FarLinX TCP-X25 GP Gateway-4
Product code	FL2400	FL2402	FL2404
Maximum simultaneous connections	254	2048	4000 (a maximum of 2048 per X.25 line)
X.25 line count	1 line	2 lines	4 lines
X.25 Switch module included	No	Yes	Yes

Product Features

TCP to X.25 data translation modes	Character stream, ETX terminated messages, CR terminated messages, Message header conversion (types available Conv Hdr 2-bin, Conv Hdr 2-ascii, Conv Hdr 4-bin, Conv Hdr 4-ascii), Customisable message header conversion RFC1006, Cisco RBP, X.25 Parity conversion
TCP to X.25 call routing modes	Statically defined routing, DRPD, X.25 Data Switching, PAD Routing
Messages per second	Up to 1000 per second
Resilience and load balancing	Yes, from 2 to 32 Gateways
Logging key events	Events such as the connections being established and dropped, X.25 call fails, X.25 line down, and X.25 line up are logged on a daily rotating log file

X.25 Details

Network connectors	Connection cables are available with RS232C (V.24), X.21, V.35 and RS530 connectors. The cables are ordered separately, see the list of cables below.
Types of X.25 connections	X.25 networks, Leased Lines and X.25 Dialup
X.25 feature summary	Line speeds up to 8 Mbits/s, data packet size up to 4096 bytes SVC and PVC logical connections X.25 CCITT Compliance 1980, 84 and 88 Reverse charging, Closed User Groups (CUG), Network User Identification (NUI), Fast Select, Throughput Class Negotiation Built in remotely accessible multi channel X.25 Line Monitor Compatible with all known X.25 networks including for example: Datex-P, BT X.25 Direct, Eirpac, Austpac, Transpac, Iberpac and Itapac
LAN	3 10/100 BaseT LAN ports, RJ45. Each port is for connection to a separate Network
Approvals	CE, FCC part 15 class A, UL
Physical	Dimensions: metric - 429(W) x 282(D) x 44(H) mm, imperial - 16.89"(W) x 11.1"(D) x 1.73"(H) Weight: 3.9 kg (8.59lbs) Rack Height 1U (19" rack mount) Operating Temperature: 5 to 40°C (41 to 104°F), Humidity: 20% to 90% RH (non-condensing) Storage Temperatures: 0 to 70°C (32 to 158°F), Humidity: 5% to 95% RH (non-condensing)
Warranty period	1 year

Cables for the FarLinX TCP-X25 GP Gateway

Name	Description	Product Code
UCR1	Single RS232C (V.24, X.21bis) cable with male 25 pin D type (DB25) connector, suitable for internal or external clocking, 1.5 metres	FS6061
UCX1	Single X.21 (V.11, RS422) cable with male 15 pin D type (DB15) connector, suitable for internal or external clock generation, 1.5 metres	FS6062
UCV1	Single V.35 DTE cable with standard MRAC-34 (brick) male connector, suitable for external clock generation only, 1.5 metres	FS6063
UX35C	Single V.35 DCE cable with standard MRAC-34 (brick) female connector, suitable for internal clock generation only. 1.5 metres	FS6095
U530	Single RS530 cable with male 25 pin D type (DB25) connector, suitable for external clocks generation only, 1.5 metres	FS6064