IATE Gateway

for Windows® and Solaris™

Configuration Manual
and User's Guide

July 2001

InnoSys

INCORPORATED

INSCC-QP cards have been tested and found to comply with the limits for CE conformity; for Class B digital devices, pursuant to Part 15 of the FCC Rules; for the Japanese VCCI standards; and for similar standards. The FCC Class B approval is deemed to be satisfactory evidence of compliance with Canada's ICES-003 of the Canadian Interference-Causing Equipment Regulations. All of these standards and limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If an INSCC-QP card does cause harmful interference to radio television, or other reception, which can be determined by turning the computer off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Increase the separation between the computer and receiver (radio or TV).
- Connect the computer into an outlet on a circuit different from that to which the receiver is connected.

Shielded cables must be used with the INSCC-QP cards to insure compliance with emission limits. Changes or modifications to the INSCC-QP not expressly approved by InnoSys could void the customer's right to operate the equipment.

CE Declaration of Conformity
According to EN 45014

Manufacturer's Name and Address
InnoSys Incorporated
3095 Richmond Parkway, Suite 207
Richmond, CA 94806

Declares that the product:
Product Name: INSCC
Model Number: INSCC-QP
Conforms to the following Product Specifications:
EMC: EN 55022: 1994 Class B
EN 50082-1:1992
IEC 801-2:1984 - 4kV CD, 8 kV AD
IEC 801-3:1984 - 3 V/m
IEC 801-4:1988 - 1 kV Power Lines, .5 kV Signal Lines
following the provisions of the Electromagnetic Compatibility Directive.
It also meets the EN60950:1992 standard, including amendments 1, 2 and 3, relating to the Low Voltage Directive (ITE).
Richmond, CA, USA Mike Ridenhour
June, 1996 President

Voluntary Control Council for Interference by
Information Technology Equipment

This equipment is in the 2nd Class category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential area.
When used near a radio or TV receiver, it may become the cause of radio interference.
Read the instructions for correct handling.

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Table of Contents

Introduction

The IATE Gateway enables a Windows® PC or a Sun™ workstation to connect client applications, terminal emulators, and printers to an airline host. The Gateway communicates with the airline host through a TCP/IP, ALC, or X.25 connection. This document describes IATE Gateway installation, configuration and usage.

The IATE Gateway is part of the InnoSys Airline data Transport Environment (IATE), a family of products which also includes terminal client software, printing client software, and APIs for software development.

The IATE Gateway is implemented as a "console" application for Microsoft® Windows® 2000 (Server or Professional) or Windows NT® version 4 (Server or Workstation). The IATE Gateway software is also available for Sun™ Solaris™.

The IATE Gateway software distribution includes:

- The **IATE Gateway** and related software
  (normally supplied on CD, or alternatively supplied via
  download from the InnoSys Web site).

- One or more **INSCC-QP communications card(s)** and connection cables
  (for ALC or X.25 connections only, not used for TCP host connections).

System Requirements

The IATE Gateway, and the INSCC-QP card (if supplied), operate on selected PCI-bus PCs and Sun systems. The systems recommended for use with the IATE Gateway are listed on the InnoSys Web site (http://www.innosys.com/). Supported systems include several from the following vendors:

- Acer
- Compaq
- Dell
- HP
- IBM
- Sun
- Other systems with Intel PCI-bus mainboards

The IATE Gateway software can be used on multiprocessor machines.

The system on which the IATE Gateway software is to be installed should be configured with both a CD drive and a floppy drive.

The IATE Gateway software for Windows requires Windows® 2000 (with or without service packs), or Windows NT® version 4 (with Service Pack 3 or later).

The IATE Gateway software for Solaris® requires Sun™ Solaris™ version 2.4 or later.

For current CPU, memory, and disk space requirements, please refer to the InnoSys Web site as noted above.

Getting Started

Here are the basic steps required in order to prepare your system and complete your IATE Gateway installation on a Windows NT or Windows 2000 system.

> **Note:** These instructions focus upon systems running the Microsoft® Windows® operating system.
> For Sun™ Solaris™ systems, some installation steps differ.
> For details, refer to "**Installation for Solaris**".

Step 1:

Obtain your host connection information from your airline network provider.

Your host connection information depends on the type of airline network you are using (e.g. SABRE, Worldspan, Galileo, Amadeus, etc.), and the network communications protocol (TCP, ALC or X.25). Your network provider provides configuration information that is specific to your particular connection.

For a TCP host connection, this information may include items such as Configuration Server IP addresses, Configuration ID numbers, terminal and printer device addresses, and various other parameters.

ALC connection information may include Interchange Addresses (IAs), Terminal Addresses (TAs), Line Numbers, and various other parameters.

For X.25 connections, obtain the X.121 remote and local addresses, the range of logical channel numbers for SVCs or PVCs, the Network User ID, and any other relevant X.25 configuration information required by the airline host or network.

Step 2:

Check the system on which you plan to run the Gateway. Verify that it is properly set up, that it is connected to a TCP/IP network, and that TCP/IP networking is correctly installed, configured, and operational.

Use the "**ping**" command from a different machine on the network, to verify that TCP/IP is operational on the network. (If necessary, contact your network administrator for assistance.) If you cannot "ping" the Gateway system successfully, the Gateway will not work.

Step 3:

Install the IATE Gateway software.
For ALC or X.25 connections only, install the INSCC-QP card.

For Windows 2000:
First, install the Gateway software from the IATE CD or installation archive, as explained in the **Installation** section below. Then, for ALC or X.25 connections, install the INSCC-QP PCI card and cable.

For Windows NT:
For an ALC or X.25 connection, install the INSCC-QP PCI card and cable first. Then install the Gateway software as explained in the "**Installation**" section below.

For Solaris:
For an ALC or X.25 connection, install the INSCC-QP PCI card and cable first. Then install the Gateway software as explained in the "**Installation for Solaris**" section below.

(The INSCC-QP PCI card is not required for TCP host connections.)

Step 4:

For ALC or X.25 connections, connect the INSCC-QP card to your airline network interface (modem or FRAD) using an appropriate cable. Verify that the network interface is properly installed and communicating with the airline host.

> **<u>Caution</u>:**
> To avoid possible damage, the PC should be turned off while the cable is being plugged into or unplugged from the INSCC-QP card.

Step 5:

Create configuration file(s) for the IATE ALC Gateway.
 (The ALC Gateway is used for TCP and X.25 as well as ALC host connections.)
For X.25 connections, also create configuration file(s) for the X.25 Bridge.

One of the easiest ways to create configuration files is to use the **Gateway Configuration Utility** (discussed on page 29). Alternatively, you may use the provided sample configuration files, located in the **alc_gate** folder. Configuration options are described later in this manual.

Note:

The following steps are for Windows systems.
For Solaris, refer to "**Installation for Solaris**".

Step 6:

In Windows, set up the shortcut(s) that you will use to start the Gateway software.
Shortcuts provide the most common means of starting the Gateway software in Windows.
The shortcuts will also specify the configuration files that the Gateway software will use.

The software installation process creates a folder named "**InnoSys**", on the desktop.
This folder contains sample shortcuts to start up or to locate IATE software components.
Appropriate items are also added to menus under **Start** / **Programs** / **InnoSys**.

The ALC Gateway is used for TCP and X.25 as well as ALC host connections.
By default, the ALC Gateway uses a configuration file named "**scfg**". In order to use
configuration file(s) with any other name, the Properties of the "**ALC Gateway**" Shortcut
must be edited to specify the appropriate configuration file.

For X.25 connections, the Properties of the "**X.25 Bridge**" Shortcut must be edited to specify
an X.25 Bridge configuration file. (Multiple X.25 connections will require separate shortcuts.)

Shortcuts are discussed under "**Starting the Gateway**", which begins on page 17.

Step 7:

For Windows NT 4 only (not Windows 2000), double-click the "**Load Driver**" shortcut
to load the device driver. Then proceed as follows.

For an X.25 host connection, start the X.25 Bridge by double-clicking the
"**X.25 Bridge**" shortcut.

Start the ALC Gateway by double-clicking the "**ALC Gateway**".
(Note: The ALC Gateway is used for TCP and X.25 as well as ALC host connections.)

Step 8:

Check the output in the Gateway window(s) to verify that the software
starts and runs without errors.

For more information, see "**Starting the Gateway**", which begins on page 17.

Installation for Windows

Installation of the IATE Gateway requires the following steps:

- Installing the IATE Gateway software.
- Installing the INSCC-QP PCI-bus card (for ALC or X.25 connections only).

The installation procedures are explained below. The procedures and the order of the steps will be different for Windows NT 4 vs. Windows 2000.

> **Note:** These instructions focus on systems running the
> Microsoft® Windows® operating system.
> For Sun™ Solaris™ systems, some installation steps differ.
> For details, refer to "**Installation for Solaris**", on page 11.

A special level of administrative security privilege or authorization may be required in order to install the IATE software. This depends on how the PC has been configured by your system administrator.

Instructions for removing the software are also provided, under
"**Removing (Uninstalling) the IATE Gateway software**" on page 10.

Installing the INSCC-QP PCI-Bus Card

The INSCC-QP card is required for <u>ALC or X.25 host connections only</u>. It is <u>not used</u> for TCP/IP based host connections. If you will be using TCP/IP host connection(s) exclusively, you do not need the INSCC-QP card; please skip ahead to the next section.

For <u>**Windows 2000**</u>, please follow the instructions in the next subsection, "**Installing the IATE Gateway software**," before installing the INSCC-QP card.

For <u>**Windows NT** 4</u>, you may install the INSCC-QP card either before or after installing the Gateway software.

To install the INSCC-QP card:

1. Turn off the PC and unplug it.

2. Remove the cover from the PC.

3. Remove the face plate from any available PCI-bus slot that supports PCI bus-mastering.

4. Install the INSCC-QP card in the selected PCI-bus slot . (Refer to the PC's installation documentation for instructions if necessary.)

5. Plug the modem cable into the INSCC-QP card. Since plugging (or unplugging) the cable into/from the INSCC-QP card can cause the INSCC-QP card to move, **the PC should always be turned off while the cable is being plugged into or unplugged from the INSCC-QP card. Otherwise the PC or the INSCC-QP card could be damaged.**

6. Re-assemble the Gateway PC and plug it back in.

Installing the IATE Gateway software for Windows

To install the IATE Gateway, insert the IATE CD and run the installer, "**Setup.exe**".
If the software was provided via web or email in a .zip archive, use a Zip utility to extract the files into a new folder, and then run the "**Setup.exe**" installer located in that folder.

The installer prompts for input as needed throughout the installation process

There are two important choices to make during the installation process:
the folder in which to install the software, and the type of installation to perform.
Normally, it is recommended to install the software in the default location suggested by the installer program. Select one the following three types of installation:

- **Typical**: The Gateway is installed with the most common options. This choice is recommended for most users. A "Typical" installation installs the components necessary to run a Gateway plus a terminal and printer session.

- **Compact**: The Gateway is installed with the minimum required options.

- **Custom**: The user can decide which parts of the Gateway will be installed. This option is recommended for advanced users only.

Follow the installer's instructions to complete the Gateway installation.

After installing the IATE Gateway software, the Gateway installer program can create an additional folder containing an installer program for InnoSys <u>client</u> software. The client software includes the WinIATE terminal emulator and a printing program. The client software is not described in this manual. If you will be installing client software, refer to the client software's documentation or information provided by InnoSys.

Before the Gateway installation program finishes, it asks the user whether or not to reboot the PC. The PC should be rebooted to enable the IATE Gateway to run correctly.

After the PC has been rebooted, the license file must be copied from the license disk to the **alc_gate** folder on the Gateway PC.

- If using the Windows desktop to copy the license file, drag the license file from the diskette to the the **alc_gate** folder. If using a command-prompt window to copy the license file, change to the **alc_gate** folder and copy the license file to the **alc_gate** directory using the command: **copy a:license c:**

- If an "update" or "patch" disk or archive was included with the software distribution, the individual files from the update package may need to be copied to the appropriate folders.

Depending on which options were selected during installation, the installation program makes some or all of the following changes on the Gateway PC:

- The installation program creates directories and subdirectories for the product, and installs the software files. The default installation location (on an English-language system) is:

  \Program Files\InnoSys\IATE

- The installation program edits the system's network "**services**" file, located at:

  %SystemRoot%\system32\drivers\etc\services

  The installer adds entries to the "**services**" file to specify two TCP/IP ports that are registered to InnoSys Inc.:

  ```
  1412  x25gate/tcp
  1413  ialcserver/tcp
  ```

- The installation program makes registry entries for the **innopci** driver.

- The installation program copies the driver file (**innopci.sys**), and the INSCC-QP PCI onboard code file (**PAX5LOA.ROM**), into:

  %SystemRoot%\system32\drivers\innopci.sys

  %SystemRoot%\system32\drivers\PAX5LOA.ROM

- For a Windows 2000 installation, the installation program copies the INSCC-QP driver's INF file (**innopci.inf**) into:

  %SystemRoot%\inf\innopci.inf

- If installing the WinIATE terminal client software, the installation program copies the terminal fonts into:

  %SystemRoot%\Fonts

- The installation program creates a folder which contains shortcuts to a number of the programs included with the product. By default, the shortcut folder is installed at the following location for Windows 2000:

  \Documents and Settings\All Users\Start Menu\Programs\InnoSys

  or the following location for NT4:

  %SystemRoot%\Profiles\All Users\Start Menu\Programs\InnoSys

  For custom installations, an administrator can modify the shortcuts to specify custom command-line options or target program locations, if needed.

- The installation program adds the same set of shortcuts to the Start Menu.

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Removing (Uninstalling) the IATE Gateway software for Windows

The IATE Gateway software can be removed by selecting **Add/Remove Programs** from the Control Panel, and then selecting IATE. For an alternative means of removing the software, there is also a shortcut to "**Uninstall IATE**" in the "**InnoSys**" desktop folder.

> **Important**:
> Removal of the IATE software entails removal of the folder containing the Gateway.
> Any existing configuration files will be lost. If any of the files anywhere in the product folder should be retained, please store backup copies elsewhere before removing IATE.

If the installation process was used to add files to an existing installation, there is a good chance that the system will not be able to reverse every change made to the system. In this case the user should remove the remaining files, folders, or registry entries manually.

If the product will be re-installed, it is not necessary to clean up from the previous installation. The re-installation process will, for the most part, replace any old files that it finds.

> **Note**:
> IATE software removal does not back out the changes made to the system's network "**services**" file. Also, if the INSCC-QP card was installed, some of its PnP-related entries may remain in the Registry; this is normal.

Installation for Solaris

Installation of the IATE Gateway for Solaris requires the following steps:

- Installing the INSCC-QP PCI-bus card (for ALC or X.25 connections only).
- Installing the IATE Gateway software.

These steps are explained below.

> **Note:** These instructions focus upon systems running the Sun™ Solaris™ operating system. For installation in Windows®, refer to "**Installation for Windows**", on page 6.

Personnel installing IATE software for Solaris will need to log in as **root**, or use **su**, to establish full administrative privileges which are necessary for successful installation.

Some of the installation procedures involve small shell-scripts. After installation and initial testing, it may be desirable to write additional shell-scripts to further automate some of the steps necessary for running the IATE software in the future. Such additional scripts are not described in this manual.

Installing the INSCC-QP PCI-Bus Card on Sun systems

The INSCC-QP card is required for <u>ALC or X.25 host connections only</u>. It is <u>not used</u> for TCP/IP based host connections. If you will be using TCP/IP host connection(s) exclusively, you do not need the INSCC-QP card; please skip ahead to the next section.

To install the INSCC-QP PCI card:

1. Turn off the Sun system and unplug it.

2. Remove the system's cover, to gain access to the PCI slots.

3. Remove the face plate from any available 32-bit PCI-bus slot.

4. Install the INSCC-QP card in the selected PCI-bus slot .

5. Plug the modem cable into the INSCC-QP card.
    Since plugging (or unplugging) the cable into/from the INSCC-QP card can cause the INSCC-QP card to move, **the system should be turned off while the cable is being plugged into or unplugged from the INSCC-QP card.**

6. Close the Sun system's cover, and plug in the power cord.

If you are installing InnoSys S-bus card(s) on an S-bus system, use a similar procedure.

Installing the IATE Gateway software for Solaris

Installing the Software Files for Solaris

To install the IATE Gateway for Solaris, begin by extracting the software files from the provided CD or archive.

- For installation from CD: Insert and mount the IATE CD. Copy the "**innosys**" directory from the CD to a hard drive partition that has at least 20 MB of space available.

- For installation from an archive provided via web or email: Uncompress the archive , using "**gunzip**" (for a **.tar.gz** archive) or "**uncompress**" (for a **.tar.Z** archive).
  Then extract the files using "**tar**" (from the uncompressed .tar archive),
  onto a hard drive partition that has at least 20 MB of space available.

- A separately provided "**.license**" file must be installed into the **alc_gate** subdirectory under the installed software directory.

Configuring the Device Driver for Solaris

For **ALC or X.25 host connections**, which require the INSCC-QP PCI card, it is necessary to configure and load the INSCC-QP device driver. After installing the software and the license file, use a command shell to test the device driver loading procedure:

- Using the **cd** command, change to the installed software directory.
- Change to the **device** subfolder.
- Enter this command:
  ./ld
  That command runs a script which configures and installs the IATE PCI device driver.
  It also makes a necessary change to a system file, "**/etc/devlink.tab**".

The installed IATE device driver will be one of two versions, for either a 32-bit or a 64-bit kernel – whichever type of kernel the system is running. (The output messages will indicate that either the 32- or 64-bit driver was installed.)

Note: If you later reboot and switch between a 32- and 64-bit kernel, you'll need to run the device driver script again as described above, to update the driver installation with the version appropriate for the running kernel.

If the device driver script issues error messages, please verify that you are logged in as **root** (or with **su**), and try again.

The device driver script creates device entries in the **/dev** directory. These are *"Streams"* device nodes, which have the following structure: There is a *master* device **/dev/insccqp**, and *slave* devices **/dev/insccqp0**, **/dev/insccqp1**, etc. Each slave device corresponds to one of the installed PCI cards. The ALC Gateway or X.25 Bridge software can be configured for host communications through a particular PCI card, by referring to one of the slave devices.

Loading the PCI Onboard Firmware on Solaris

For **ALC or X.25 host connections**, which require the INSCC-QP PCI card, it is necessary to load IATE firmware onto the PCI card.

- Using the **cd** command, change to the installed software directory.
- Change to the **line** subfolder.
- Enter this command:
    ./loadall
    That command loads the IATE firmware onto all of the installed INSCC-QP PCI boards.

Editing the Services file on Solaris

After installing the software as above, edit the **/etc/services** file. Add appropriate entries to specify the network ports by which client software (such as WinIATE terminals and printer software, or custom applications) will connect to the IATE ALC Gateway. For typical or basic installations, use the InnoSys reserved port number **1413**, and the service name "**ialcserver**":

```
ialcserver          1413/tcp
```

For <u>X.25 connections</u>, add an additional entry or entries to specify the network ports for connections between the ALC Gateway and the X.25 Bridge, e.g.:

```
x25gate             1412/tcp
```

For multiple X.25 physical connections, each connection will require an additional entry, specifying a different network port number for each connection.

The uses of network port numbers and the Services file will be mentioned in the discussions of the relevant ALC Gateway and X.25 Bridge configuration options, elsewhere in this manual.

Configuring the Gateway for Solaris

After completing the foregoing steps, the next step is to begin creating configuration file(s).
For ALC or TCP connections, create configuration file(s) for the ALC Gateway. For X.25
connections, create configuration file(s) for the X.25 Bridge.

The following sections of this manual explain the creation of configuration files. Some sample
files are provided. If you have a Windows PC available and a copy if IATE for Windows,
you may wish to use the provided **Gateway Configuration Utility** (which runs in Windows).
Otherwise, you can create or edit your configuration files using any text editor (such as **vi**).

Running the Gateway on Solaris

After creating configuration files, start up the required Gateway software. For all types of host
connections (ALC, TCP, or X.25), it is necessary to use the ALC Gateway. For X.25 host
connections only, it is also necessary to use the X.25 Bridge.

The ALC Gateway is located in the **alc_gate** subdirectory.
The X.25 Bridge is located in the **x25_gate** subdirectory.

The command to start the ALC Gateway will specify a configuration file, and possibly a
diagnostic option to issue helpful status or error messages. Typical Gateway startup commands
might look like this:

```
cd /innosys     (or other InnoSys installation directory)
cd alc_gate
./iate_server –v104ff –f filename
```

Here, *filename* is the name of an ALC Gateway configuration file. For example, a SABRE TCP
configuration might use a configuration file named "**scfg.sabre.tcp**". (The "scfg" prefix is
conventional in ALC Gateway configuration file names, but any name can be used.)

The option **-v104ff** specifies a typical preliminary diagnostic setting, instructing the Gateway
to output useful messages for initial problem resolution. The Gateway's diagnostic messages go
to the screen or window. (If you want the messages logged to a file as well, add a similar option
with '**-l**', the lower-case letter L, in place of the '**-v**': **-v104ff –l104ff**.) These options can
be modified or removed later to reduce the volume of diagnostic output.

For X.25 connections, the X.25 Bridge startup command must specify a PCI board device
as well as an X.25 Gateway configuration file.   The suggested preliminary diagnostic option
is **–vff** (or **–vff –lff**).   The resulting X.25 Bridge startup command night look like this:

```
cd /innosys     (or other InnoSys installation directory)
cd x25_gate
./x25gate –vff –f filename –b/dev/insccqp0
```

Introduction to Gateway Configuration

In order to set up the IATE software, you first need to know the type of airline network you plan to use (such as Galileo or Apollo, SABRE, Worldspan, etc.). You'll also need to find out which "protocol" is used on your airline network connection(s): TCP/IP, ALC, or X.25.

TCP/IP based connectivity has been deployed on several airline networks.
ALC and X.25 protocols also continue to be used on established networks.

The primary task in setting up the IATE software is to configure the "ALC Gateway" for operation with your airline network connection. The "ALC Gateway" is used with <u>all</u> supported protocols (TCP/IP, ALC, and X.25), on all of the supported networks (such as SABRE, Worldspan, etc.). For X.25 connections, the X.25 Bridge is also used.

The ALC Gateway and the X.25 Bridge support many configuration options.
The required options depend, in part, on the type of airline network and protocol.
Suggested configuration procedures for several common networks and protocols
can be found under "**Gateway Configuration: Quick-Start**", beginning on page 29.

The Gateway configuration options must be specified in text files, called "configuration files".
These files must be created before you can use the IATE Gateway software. When you start up your IATE Gateway software, it will read the options from your configuration file(s), enabling communications on your airline network connection.

You will also need a Gateway <u>license</u> permitting each type of host connection that you are configuring. An appropriate license is purchased from InnoSys along with the Gateway software package.

There are two ways to create a new configuration file. The easiest way to begin is to use the **Gateway Configuration Utility** (discussed on page 29). Alternatively, configuration files can be created manually, with a text editor (such as Notepad).

Starting the Gateway Software

When you start the IATE Gateway software, you can instruct it to use the configuration files that you have created. Each configuration file controls the software's use of one TCP/IP or ALC airline network connection, or one X.25 virtual circuit.

The IATE software installation creates sample Shortcuts which you can use to start the Gateway software. In particular, there are shortcuts to the "**ALC Gateway**" and "**X.25 Bridge**". Configuration files are specified with the `-f` command-line option, in the <u>Target</u> field of the Shortcuts' Properties.

If you create multiple configuration files, a list of your configuration files' names can be placed together into a separate text file (with one file name per line in the list). The resulting configuration list file can be used with the Gateway's `-F` option (with a capital F).

The following example shows how a simple configuration can be specified on the Gateway startup command line. (Some additional command-line examples are given under "**How to Enable Diagnostic Output**", on page 23.)

> <u>Example</u>:
>
> Suppose you have one SABRE TCP/IP host connection. The ALC Gateway supports TCP/IP host connections. The first step is to create a configuration file for the ALC Gateway. The recommended procedure to create the file is given in "**Gateway Quick-Start for SABRE TCP**", on page 47.
>
> The resulting configuration file could be named "**scfg.tcp.sabre**". The next step is to instruct the ALC Gateway to use it. You could specify the file's name with the `-f` option on the command line, in the <u>Target</u> field of the "**ALC Gateway**" shortcut's Properties.
>
> ```
> "C:\winnt\system32\cmd.exe /k iate_server.exe" -fscfg.tcp.sabre
> ```

(Continued)

Starting the Gateway Software: <u>*Example*</u> *(Continued)*

To extend the example, suppose that you later add a SABRE X.25 connection, with one virtual circuit. You would need to create another configuration file for the X.25 virtual circuit. SABRE X.25 configuration requirements are outlined in "**Gateway Quick-Start for SABRE X.25",** on page 55.

The resulting configuration file could be called "**scfg.x25.sabre**".
The ALC Gateway command line could be extended to use both the
TCP and X.25 configuration files for the two SABRE connections.

```
"C:\winnt\system32\cmd.exe /k iate_server.exe" -fscfg.tcp.sabre -fscfg.x25.sabre
```

Alternatively, multiple ALC Gateway configuration file names (such as **scfg.tcp.sabre** and **scfg.x25.sabre** in this example) can be listed in a separate text file, with one file name per line in the list. The resulting configuration list file can be used with the Gateway's **–F** option (with a capital F).

If the list file were named "**scfg.list**", a suitable command line would be:

```
"C:\winnt\system32\cmd.exe /k iate_server.exe" -Fscfg.list
```

For the X.25 connection, the IATE <u>X.25 Bridge</u> software must be used along with the ALC Gateway. Like the ALC Gateway, the X.25 Bridge requires configuration options specified in a file.

X.25 Bridge configuration options are different from ALC Gateway configuration options. The X.25 Bridge options and the ALC Gateway options can be placed together in a single file, called a "<u>combined configuration file</u>". The quick-start configuration procedures for X.25 will create a combined configuration file.

After creating the configuration file, the next step is to instruct the X.25 Bridge to use it. You can specify the file's name with the **–f** option on the command line, in the <u>Target</u> field of the "**X.25 Bridge**" shortcut's Properties.

```
"C:\winnt\system32\cmd.exe /k x25gate.exe" -fscfg.x25.sabre
```

The foregoing example assumes a simple configuration with a single X.25 line and virtual circuit. If you have multiple X.25 lines or virtual circuits, additional configuration files will be needed. Each ALC Gateway configuration file defines only one virtual circuit, and each X.25 Bridge configuration file defines only one X.25 physical line.

The creation and management of multiple configuration files, for use with multiple X.25 virtual circuits or physical lines, is beyond the scope of the quick-start configuration procedures. In such cases, the configuration files must be edited manually.

Required Startup Sequence

This is the startup sequence for the IATE Gateway software:

1. For ALC or X.25 connections using the INSCC-QP PCI board, the INSCC-QP Device Driver must be installed and running before the Gateway software is started.

   (The Device Driver is <u>not</u> used for connections to airline networks using TCP protocols.)

2. For X.25 connections only, the X.25 Bridge must be started before the ALC Gateway.

3. The ALC Gateway must be started, in order to use the airline network connection. (The ALC Gateway is used for TCP and X.25 as well as ALC network connections.)

Starting the Device Driver (for ALC or X.25 connections)

For <u>Windows 2000</u>:

> The INSCC-QP Device Driver for <u>Windows 2000</u> is a plug-and-play driver.
> After installation and system restart, the driver loads automatically.
> There is no need to take any further action to load the driver in Windows 2000.
> The presence of the driver can be verified in the system's <u>Device Manager</u>.

For <u>Windows NT 4</u> only:

- Double-click on the "**load driver**" icon in the "**InnoSys**" desktop folder,
  or select "**load driver**" from the menus under **Start / Programs / InnoSys / IATE**.

- If the device driver starts successfully, this message appears:
  "The innopci service was started successfully."

Important:
If the device driver and the Gateway software are started from a batch file, the batch file
should pause for 20 to 30 seconds between starting the device driver and starting the
Gateway. This pause is required to allow the device driver to load and start software
on the INSCC-QP card. For X.25 connections, there should also be another pause of
about 20 to 30 seconds between starting the X.25 Bridge and starting the ALC Gateway.

Starting the ALC Gateway

The ALC Gateway is used for TCP and X.25 as well as ALC network connections.

For X.25 connections, the X.25 Bridge must be started <u>before</u> the ALC Gateway.
See "**Starting the X.25 Bridge**", on page 26.

The ALC Gateway can be started in any one of three ways:

- Double-click on the "**ALC Gateway**" shortcut in the "**InnoSys**" desktop folder, or

- Select "**ALC Gateway**" from the menus under **Start / Programs / InnoSys / IATE**, or

- Enter a command line in a command-prompt window,
  with parameters as described below.

We recommend that you make a simple change in the Gateway shortcuts' Properties, so that the Gateway's diagnostic output can be viewed:

- Edit the Properties of the "**ALC Gateway**" shortcut.
- Select the <u>Layout</u> tab.
- Increase the Height of the <u>Screen Buffer</u> to 500 or more.

This allows the X.25 Bridge window to retain the specified number of lines of diagnostic output. The output can be reviewed by using the Gateway windows' vertical scroll-bars.

As the ALC Gateway starts up, it may display numerous messages (depending on the diagnostic level). An example of typical Gateway diagnostic output is shown in "**Appendix D — Typical Gateway Startup Sequences**", on page 184.

Near the end of these messages, if the ALC Gateway is properly communicating with the network host (or communicating with the X.25 Bridge), the following text should appear:

```
Host status: hostup:0x1 linkstat:0x7
```

Command-Line Options for the ALC Gateway

The ALC Gateway accepts the following command-line options:

Option	Parameters	Default	Notes
-f*name*	Configuration file name, e.g: **-f**ALCConfigFile	*(no default)*	At least one configuration file must be specified.
-F*name*	Name of a file that contains a list of configuration files, e.g.: **-f**ListFile	*(no default)*	This option provides an alternative way to specify multiple configuration files.
-v*level*	Hexadecimal value from 0 to 1ffff. Example: **-v**100ff	0	Specifies the types of diagnostic messages that the Gateway will output to its console window.
-l*level*	Hexadecimal value from 0 to 1ffff. Example: **-l**100ff	0	Specifies the types of diagnostic messages that that the Gateway will output to a disk file. This option is for use in combination with the **−v***level* option.
-L*name*	Name of file for diagnostic output.	server.log	Specifies the name of the file that collects diagnostic messages. This takes effect only if the **−l** option is also specified.
-p*seconds*	Startup delay time, in seconds	0 *(no delay)*	Specifies a delay after startup.
-e*flag*	**-e1** to enable event-logging, or **-e0** to disable event-logging.	1 *(enabled)*	If Gateway event-logging. is enabled, the Gateway sends any noteworthy diagnostic messages to the Windows system's Event Log.
-h			Displays the list of command-line options.

How to Enable Diagnostic Output

For troubleshooting, it is sometimes useful to enable diagnostic output from the Gateway. Different types of diagnostic messages can be enabled, to provide an appropriate amount of diagnostic information.

As noted above, the **–v***level* command-line option selects the diagnostic messages that the Gateway will output to its console window. The **–l***level* option can be added to copy the messages into a disk file. These options can be specified in the <u>Target</u> field of the Gateway shortcut's Properties.

The **–v***level* and **–l***level* command-line options specify a diagnostic *level*, ranging from 0 through 1ffff in hexadecimal. The diagnostic level is a combination of bit-values, where each bit that is set to 1 will enable a specific class of diagnostic messages.

The X.25 Bridge supports similar command-line options, with a different set of diagnostic message classes.

The message classes for both the ALC Gateway and the X.25 Bridge are listed in **Appendix A — Diagnostic Message Classes,** on page 174.

To enable basic diagnostic output, add the command-line option **–vff**.
For example, this command line would start the ALC Gateway with diagnostic output:

```
"C:\winnt\system32\cmd.exe /k iate_server.exe" -vff -f scfg.x25.sabre
```

This command line would start the X.25 Bridge with diagnostic output:

```
"C:\winnt\system32\cmd.exe /k x25gate.exe" -vff -f xcfg.sabre
```

Other diagnostic options can be used.to obtain more-detailed or less-detailed diagnostics. In particular, for TCP host connections, it is more appropriate to use the diagnostic option **–v100ff** with the ALC Gateway:

```
"C:\winnt\system32\cmd.exe /k iate_server.exe" -v100ff -f scfg.tcp.sabre
```

The diagnostic output appears in the Gateway's console window.
If you wish to log the output to disk instead of the console window, you can redirect
the Gateway's output to a file. For example:

```
"C:\winnt\system32\cmd.exe /k iate_server.exe"  -v100ff  -f scfg.tcp.sabre  > server.log
```

If you wish to see the ALC Gateway's diagnostic output in the window and <u>also</u>
place it into a disk file, use both the **-l***level* and **-v***level* options. Typical usage is to
specify the same diagnostic level for both of these options. Example:

```
"C:\winnt\system32\cmd.exe /k iate_server.exe"  -v100ff  -l100ff  -f scfg.tcp.sabre
```

In that case, the ALC Gateway's diagnostic output file is named **"server.log**" by default.
The **-L***name*   option can be used to specify a different name for the output file.

The ALC Gateway can send copies of any noteworthy diagnostic messages to the Windows
system's <u>Event Log</u>. To enable event-logging, use the **-e1** command-line option. Example:

```
"C:\winnt\system32\cmd.exe /k iate_server.exe"  -e1  -v100ff  -l100ff  -f scfg.tcp.sabre
```

<u>Note:</u>
For optimal performance, it may be appropriate to turn off diagnostics, or to switch to a
less-detailed diagnostic setting, after the Gateway is found to be operating without trouble.

Stopping the ALC Gateway

There are three ways to stop the ALC Gateway:

- Use the Windows <u>Task Manager</u> to terminate the **iate_server.exe** process, or
- Press **Ctrl-C** in the console window where the ALC Gateway is running, or
- Close the ALC Gateway's console window.

Starting the X.25 Bridge

The X.25 Bridge is used only for X.25 network connections.
It is not used for ALC or TCP connections.

For X.25 connections, the X.25 Bridge must be started <u>before</u> the ALC Gateway.
The X.25 Bridge can be started in any one of three ways:

- Double-click on the "**X.25 Bridge**" shortcut in the **InnoSys** window, or

- Select "**X.25 Bridge**" under **InnoSys** in the **Start/Programs** menu, or

- Enter a command line in a command-prompt window,
  with parameters as described below.

We recommend that you make a simple change in the Gateway shortcuts' Properties, so that the
Gateway's diagnostic output can be viewed:

- Edit the Properties of the "**X.25 Bridge**" shortcut.
- Select the <u>Layout</u> tab.
- Increase the Height of the <u>Screen Buffer</u> to 500 or more.

This allows the X.25 Bridge window to retain the specified number of lines of diagnostic output.
The output can be reviewed by using the Gateway windows' vertical scroll-bars.

As the X.25 Bridge starts up, it may display numerous messages (depending on
the diagnostic level). An example of typical X.25 diagnostic output is shown in
"Appendix D — Typical Gateway Startup Sequences", "**Gateway Startup for X.25**",
on page 189.

Near the end of these messages, if the X.25 Bridge is properly communicating with the
X.25 host, the following text should appear:

```
RESTARTPENDING --->
.
.
<--- RESTARTALLOWED
.
.
RESTARTCOMPLETE --->
```

When performing an attended startup (by clicking shortcuts),
start the ALC Gateway <u>after</u> the RESTARTCOMPLETE message has appeared.

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Command-Line Options for the X.25 Bridge

The X.25 Bridge accepts the following command-line options:

Option	Parameters	Default	Notes
–f*name*	Configuration file name, e.g: **–f**X25ConfigFile	*(no default)*	(<u>Required</u>.) Specifies the X.25 Bridge configuration file.
–b*name*	INSCC-QP board/port device name: **\\\\.\\innopciX_Y** where X is the <u>board number</u>, and Y is the <u>port number</u> (starting from zero), selecting one of the ports on that board.	*Board:* 0 *Port:* 0	(<u>Required</u>.) Specifies which INSCC-QP board the X.25 Bridge will use.
–v*level*	Hexadecimal value from 0 to ff. Example: **–v**ff	0	Specifies the level of diagnostic message output.
–l*level*	Hexadecimal value from 0 to ffff. Example: **–l**ff	0	Specifies the level of diagnostic message output written to a file.
–L*name*	Name of file for diagnostic output.	x25gate.log	Specifies the name of the file that collects diagnostic messages. This takes effect only if the **–l** option is also specified.
–p*seconds*	Startup delay time, in seconds	0 *(no delay)*	Specifies a delay after startup.
–h			Displays the list of command-line options.

Stopping the X.25 Bridge

There are two ways to stop the X.25 Bridge:

- Use the Windows Task Manager to terminate the **x25gate.exe** process, or
- Press **Ctrl-C** in the window where the X.25 Bridge is running.

Gateway Configuration: Quick-Start

The instructions that follow can help you to get your IATE Gateway configuration off the ground as quickly as possible.

The IATE **Gateway Configuration Utility** simplifies creation of configuration files for the ALC Gateway. (The ALC Gateway is used for TCP and X.25 as well as ALC host connections.)

The Gateway Configuration Utility is provided with the IATE software When you start the configuration utility, it displays a list of supported airline host types and protocols:
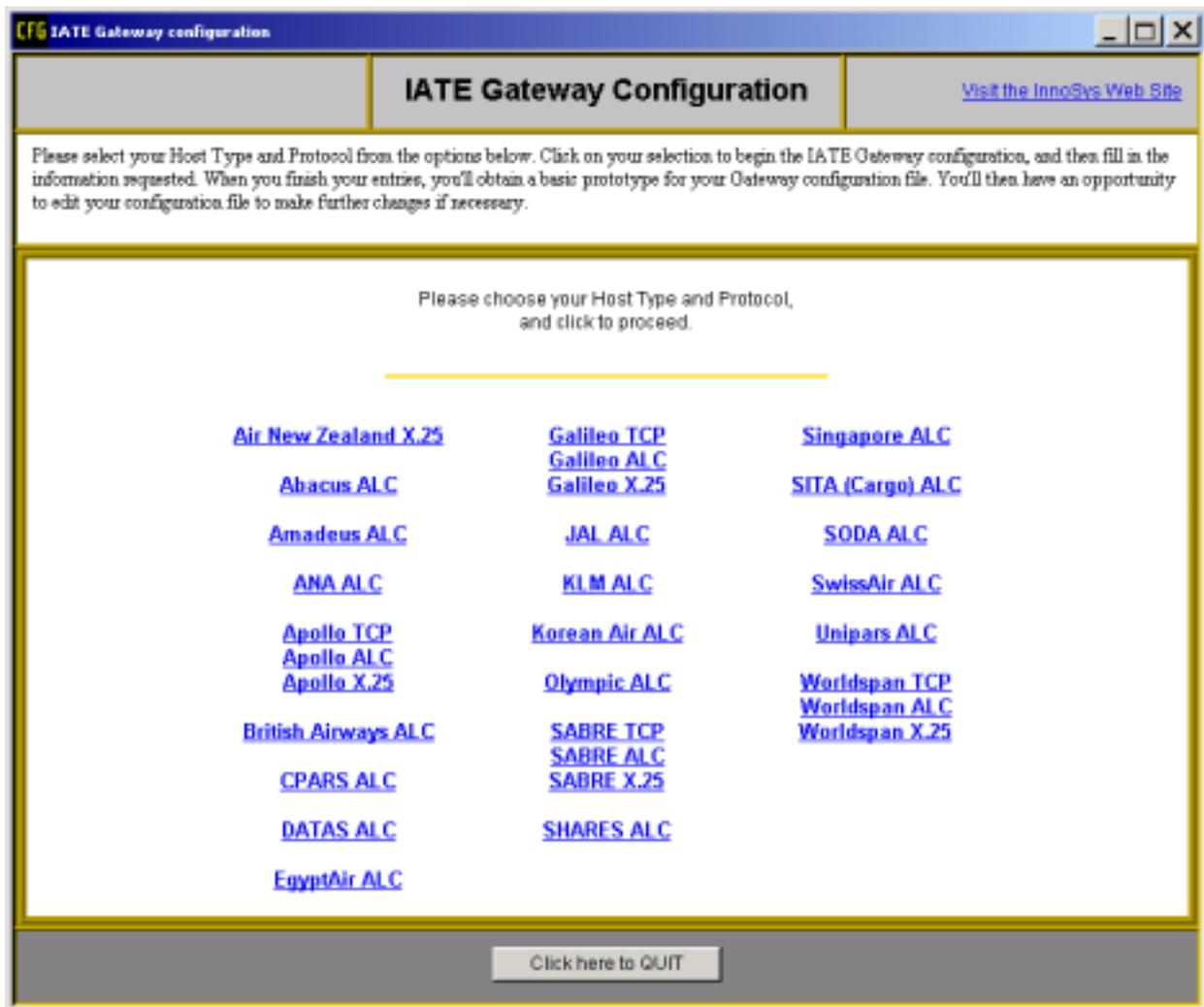
To begin creating a configuration for your airline network connection, click on the appropriate host-type and protocol shown in the list. For example, if you have a SABRE TCP connection, click on "**SABRE TCP**" in the center column of the list.

When you select one of the configuration types from the list above, the utility presents a data-entry screen, where you can enter the ALC Gateway configuration options for the selected host type and protocol. The following pages explain the configuration procedures for some of the most common host types and protocols.

The Gateway Configuration Utility is normally installed in this folder:

    \Program Files\InnoSys\IATE\Configuration\ConfigFileGenerator

The utility creates configuration files in this default location:

    \Program Files\InnoSys\IATE\Configuration\ConfigFileGenerator\CfgFiles

For convenient usage, completed ALC Gateway configuration files can be placed into the ALC Gateway's folder:

    \Program Files\InnoSys\IATE\alc_gate\

Galileo or Apollo TCP configurations require an additional step to produce a final configuration file. This is explained under "**Gateway Quick-Start for Galileo** or Apollo TCP", on page 31.

For X.25 connections, it will also be necessary to create X.25 Bridge configuration files. The Gateway Configuration Utility does not create these configuration files. They can created with a text-editor. X.25 configuration options are described later in this manual.

Completed X.25 Bridge configuration files can be placed in the X.25 Bridge's folder:

    \Program Files\InnoSys\IATE\x25_gate\

Configuration procedures for some of the most common host types and protocols are explained on the following pages. If your host type and protocol are not listed in these "**quick-start**" procedures, create your configuration files with a text-editor. Check the subsequent sections of this manual to find out about the required configuration options. For additional examples, please refer to the sample configuration files provided with the IATE software.

Gateway Quick-Start for Galileo or Apollo TCP

To begin a configuration for Galileo or Apollo TCP, start the **Gateway Configuration Utility**. Select "**Galileo TCP**" from the menu. The following data-entry screen appears.

Enter the **Host Name or IP Address of the Configuration Server**.

> Your Galileo or Apollo configuration information should include the required Host Name or IP Address of the Configuration Server.

Enter the **Port Number or Service Name of the Configuration Server**.

> The given default Configuration Server Port number (`5067`) was correct at the time of this writing. Your configuration instructions from Galileo/Apollo may specify a different network port number.

> If you enter a different <u>Service Name</u> instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number. You can press the "**Edit the Services File**" button to edit the "**services**" file.

> If you add a network-service definition to the "**services**" file, for Configuration Server communications, it should specify UDP protocol (not TCP). Note the "**udp**" protocol specifier in this example:

```
galileo-cfg-server      5067/udp
```

> For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

In the **Client ID** field, enter the Client Identifier assigned to you for your Galileo/Apollo connection. Your Galileo configuration information should include the required Client Identifier. (Enter the Client ID as a decimal value.)

> If you have multiple Client IDs, first complete this configuration screen to create a configuration file for one of them. Then return to this screen and repeat the procedure, to create configuration files for your other client IDs. This is discussed further on page 34.

In the **Dormant Timeout** field, select a timeout value from the drop-down menu.

> This specifies the Gateway's timeout for input from the Galileo/Apollo TCP server. If the IATE Gateway receives no messages from the server for this amount of time, then the Gateway will un-register its configuration with the server, and close the connection.

> Select "**None**" if you do not want the IATE Gateway to un-register its configuration for lack of input.

In the **<u>Attempt Reconnect</u>** field, select a timeout value from the drop-down menu.

    If a previous connection has been lost, the Gateway will attempt to reconnect to the CFE, after the specified number of seconds have passed.

    Select "**None**" if you do not want the Gateway to attempt automatic reconnection to the CFE.

    <u>**Note**</u>:
    It may not be logical to configure both the **Dormant Timeout** and the **Attempt-Reconnect** delay time to a value other than "**None**". With both of these timeouts set, the Gateway could disconnect due to the Dormant Timeout, but then reconnect automatically -- possibly creating an unnecessary cycle of disconnection and reconnection.

In the **<u>TA Timeout</u>** field, select a timeout value from the drop-down menu.

    The **TA Timeout** option sets an activity timer for connections between client applications and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages for the specified time period.

    Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that case, an idle client can remain connected indefinitely.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name. By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. The default name is: "**scfg.tcp.gal.base**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

Galileo or Apollo TCP configurations require an additional step, to produce a final configuration file. The file that you created by the foregoing procedure is called a "base file".
The base file cannot be used to operate the ALC Gateway. Use the **gconfig** utility to process it, and to create a complete configuration file for the ALC Gateway.

To use the **gconfig** utility, first move your base file (e.g. "**scfg.tcp.gal.base**") into the **gconfig** folder. Then run the **gconfig** utility, specifying your base file. For example, this command runs the **gconfig** utility to process a base file:

```
gconfig -vff -fscfg.tcp.gal.base
```

If you have multiple Client IDs, create a separate base file for each Client ID
(such as "**scfg.tcp.gal.base1**", "**scfg.tcp.gal.base2**", etc.) Run **gconfig** once
with all of your base files, e.g.:

```
gconfig -vff -fscfg.tcp.gal.base1 -fscfg.tcp.gal.base2
```

The **gconfig** utility contacts the Galileo/Apollo Configuration Server over the network, and submits information taken from the base file that you created. (The **gconfig** utility does not alter the base file.) The Configuration Server sends back configuration information, which **gconfig** uses to create the final ALC Gateway configuration file.
The contents of the final configuration file are then ready for use with the ALC Gateway.
(If this process fails, the **gconfig** utility may issue error messages.)

The **gconfig** utility writes numerous configuration options into the final configuration file.
In particular, the final configuration file contains client definitions and other settings that will enable end-to-end communications. You may need to review the contents of the final configuration file, and make note of the client objects' names, if you will be using client software that may require you to know these object names in order to connect.

For more information about the options that **gconfig** may write to the final configuration file,
refer to "**ALC Gateway Options for <u>Galileo or Apollo TCP</u>**" on page 86, and
"**ALC Gateway Options for All Types of Host Connections**" on page 83.

For convenient usage with the ALC Gateway, you can move the final configuration file into the ALC Gateway's folder. Then set up a Shortcut or command-line to start the ALC Gateway using that file, as discussed at the beginning of "**Gateway Configuration: Quick-Start**", on page 29.

If the ALC Gateway is being used to connect to other hosts at the same time as
Galileo/Apollo TCP, other configuration files will be involved. If any of the other
host connections use ALC or X.25 protocols, it may be necessary to review all of the
ALC Gateway configuration files to check for conflicts. Compare the other files against
the one for Galileo/Apollo TCP, to make sure that there are no conflicts between the
client object names for Galileo/Apollo TCP and those in the other files.

Gateway Quick-Start for Galileo or Apollo ALC

To begin a configuration for Galileo or Apollo ALC, start the **Gateway Configuration Utility**.
Select "**Galileo ALC**" or "**Apollo ALC**" from the menu, and a data-entry screen will appear.
The Galileo screen is shown here; the Apollo screen is similar.

In the **<u>Connection Name</u>** field, enter a name to identify the host connection you're configuring.

    If you plan to configure more than one host connection, then it's important to specify a
different Connection Name for each one.

    The Connection Name is useful for troubleshooting. When the Gateway issues diagnostic
messages pertaining to each host connection, those messages can mention the
Connection Name, to make it clear which connection they belong to.

If you have more than one InnoSys INSCC-QP PCI board installed, one of them
corresponds to the connection that you are configuring on this screen. Select that board
the **<u>PCI Board</u>** field. (Select the "First board" or the "Second board", etc.).

    You can only select one board for the ALC connection you are configuring,
because each connection (each configuration file) corresponds to one port on one board.

    In this configuration program, you can select from up to four INSCC-QP boards.
Select the board that corresponds to this connection.

    The physical ordering of the boards depends on your system's design. If you have more than
one INSCC-QP board, it may be necessary to experiment to find out which board is the first
one in the sequence.

    The InnoSys boards are always configured as the "First board", "Second board", etc. –
regardless of any other PCI slots between them, whether populated or not.
In the configuration file, the board number will appear as `BOARD_NUMBER 0`,
`BOARD_NUMBER 1`, etc. (counting from zero rather than 1).

In the **<u>Port on Board</u>** field, select which connection port this connection will use,
on the PCI board that you selected above.

    The INSCC-QP card has one 80-pin physical connector, which supports multiple port
connections through a special adapter cable. A six-port adapter cable can be purchased from
InnoSys along with the card. On the six-port cable, the connectors are labeled "Port 1",
"Port 2", etc. On the configuration screen, select the "First port", "Second port", etc.

    In the configuration file, the port number will appear as `PORT_NUMBER 0`,
`PORT_NUMBER 1`, etc. (counting from zero rather than 1).

In the **TA Timeout** field, select a timeout value from the drop-down menu.

The **TA Timeout** option sets an activity timer for connections between client applications and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages for the specified time period.

Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that case, an idle client can remain connected indefinitely.

In the **Gateway Service** field, enter the TCP/IP Port Number or Service Name on which the Gateway should listen for connections from clients.

The default Port Number for IATE client connections is **1413**, associated with the Service Name "**ialcserver**". If you wish to specify a different Port Number, enter the number.

If you wish to specify a different Service Name instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number. You can press the "**Edit the Services File**" button to edit the "**services**" file.

For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

Enter an Interchange Address (IA) in one or more of the **IA** fields on the left side of the window. Each IA is a 2-digit hexadecimal value.

After entering a Line and IA, please also enter the related client TAs and associated information on the right-hand side of the window, as discussed below.

This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IA or client object entries.

Enter your TA client information on the <u>right-hand side</u> of the configuration window. You can enter a terminal or printer's IA and TA numbers in the **IA** and **TA** fields.Also select the type of client object in the **Object Type** field, and enter a name in the **Object Name** field.

> The IA and TA are 2-digit hexadecimal values. Each TA Object's IA must correspond to one of the IA values defined in the "IAs" section on the left side of the window.

> This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

> Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IAs and TA client definitions.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name.   By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. For Galileo, the default name is: "**scfg.alc.galileo**". For Apollo, the default name is: "**scfg.alc.apollo**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

Gateway Quick-Start for Galileo or Apollo X.25

To begin a configuration for Galileo or Apollo X.25, start the **Gateway Configuration Utility**. Select "**Galileo X.25**" or "**Apollo X.25**" from the menu, and a data-entry screen will appear. The Galileo screen is shown here; the Apollo screen is similar.

You can use this configuration screen to create a configuration file for the ALC Gateway,
as described on the following pages. This configuration file applies to <u>one X.25 virtual circuit</u>.
If you have multiple X.25 virtual circuits, you'll need to use this configuration screen repeatedly,
to create separate ALC Gateway configuration files for each circuit.

It will also be necessary to create configuration file(s) for the X.25 Bridge.
The Gateway Configuration Utility does not create X.25 Bridge configuration files. They can be
created with a text editor. An example is given at the end of the following instructions.

In the **<u>Connection Name</u>** field, enter a name to identify the host connection you're configuring.

> If you plan to configure more than one host connection, then it's important to specify a
> different Connection Name for each one.

> The Connection Name is useful for troubleshooting. When the Gateway issues diagnostic
> messages pertaining to each host connection, those messages can mention the
> Connection Name, to make it clear which connection they belong to.

If you have more than one InnoSys INSCC-QP PCI board installed, one of them
corresponds to the connection that you are configuring on this screen. Select that board
the **<u>PCI Board</u>** field. (Select the "First board" or the "Second board", etc.).

> You can only select one board for the X.25 connection you are configuring,
> because each connection (each configuration file) corresponds to one port on one board.

> In this configuration program, you can select from up to four INSCC-QP boards.
> Select the board that corresponds to this connection.

> The physical ordering of the boards depends on your system's design. If you have more than
> one INSCC-QP board, it may be necessary to experiment to find out which board is the first
> one in the sequence.

> The InnoSys boards are always configured as the "First board", "Second board", etc. –
> regardless of any other PCI slots between them, whether populated or not.
> In the configuration file, the board number will appear as `BOARD_NUMBER 0`,
> `BOARD_NUMBER 1`, etc. (counting from zero rather than 1).

In the **<u>Port on Board</u>** field, select which connection port this connection will use,
on the PCI board that you selected above.

>   The INSCC-QP card has one 80-pin physical connector, which supports multiple port
>   connections through a special adapter cable. A six-port adapter cable can be purchased from
>   InnoSys along with the card. On the six-port cable, the connectors are labeled "Port 1",
>   "Port 2", etc. On the configuration screen, select the "First port", "Second port", etc.
>
>   In the configuration file, the port number will appear as `PORT_NUMBER 0`,
>   `PORT_NUMBER 1`, etc. (counting from zero rather than 1).

In the **<u>Local X.121 Address</u>** field, enter the Local X.121 Address for SVC connections.
In the **<u>Remote X.121 Address</u>** field(s), enter the Remote X.121 Address(es).

>   The required X.121 addresses should be provided in the configuration information that you
>   received from Apollo or Galileo.
>
>   Galileo X.25 connections permit up to three Remote addresses.

In the **<u>TA Timeout</u>** field, select a timeout value from the drop-down menu.

>   The **TA Timeout** option sets an activity timer for connections between client applications
>   and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages
>   for the specified time period.
>
>   Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that
>   case, an idle client can remain connected indefinitely.

In the **Gateway Service** field, enter the TCP/IP Port Number or Service Name on which the Gateway should listen for connections from clients.

>   The default Port Number for IATE client connections is **1413**, associated with the Service Name "**ialcserver**". If you wish to specify a different Port Number, enter the number.

>   If you wish to specify a different Service Name instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number. You can press the "**Edit the Services File**" button to edit the "**services**" file.

>   For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

In the **X.25 Service** field, enter the TCP/IP Port Number or Service Name on which the ALC Gateway should connect to the X.25 Bridge.

>   The network port number or service name that you enter here must specify the same network port that the X.25 Bridge will use, to communicate with the ALC Gateway for this X.25 connection.

>   The default network Port Number for the ALC Gateway's connection to the X.25 Bridge is **1412**, associated with the Service Name "**x25gate**". There may be no need to change this default, if you have only one X.25 physical connection – and if you do not specify a different network port number or service name in the X.25 Bridge configuration file.
>   (See "**X.25 Bridge Configuration for Galileo or Apollo**", on page 45.)

>   If you have more than one X.25 physical connection, each one will require a separate X.25 Bridge configuration file, and a separate running instance of the X.25 Bridge. Each connection's X.25 Bridge configuration file must specify a network port number or service name that is different from the other connections. On the ALC configuration screen, specify the network port number for the corresponding instance of the X.25 Bridge, so that the ALC Gateway will associate this configuration with that X.25 Bridge.

Enter an Interchange Address (IA) in one or more of the **IA** fields on the left side of the window. Each IA is a 2-digit hexadecimal value.

> After entering a Line and IA, please also enter the related client TAs and associated information on the right-hand side of the window, as discussed below.

> This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

> Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IA or client object entries.

Enter your TA client information on the right-hand side of the configuration window. You can enter a terminal or printer's IA and TA numbers in the **IA** and **TA** fields.Also select the type of client object in the **Object Type** field, and enter a name in the **Object Name** field.

> The IA and TA are 2-digit hexadecimal values. Each TA Object's IA must correspond to one of the IA values defined in the "IAs" section on the left side of the window.

> This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

> Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IAs and TA client definitions.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name. By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. For Galileo, the default name is "**scfg.x25.galileo**"; for Apollo, the default name is "**scfg.x25.apollo**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

You can use this configuration screen to create a configuration file for the ALC Gateway, as described on the following pages. This configuration file applies to one X.25 virtual circuit. If you have multiple X.25 virtual circuits, you'll need to use this configuration screen repeatedly, to create separate ALC Gateway configuration files for each circuit.

To establish the X.25 connection, the IATE X.25 Bridge software must be used along with the ALC Gateway. X.25 Bridge configuration is discussed below.

X.25 Bridge Configuration for Galileo or Apollo

To establish an X.25 connection, the ALC Gateway works with the X.25 Bridge. Like the ALC Gateway, the X.25 Bridge requires configuration options specified in a file.

The configuration file created by the Gateway Configuration Utility contains options for <u>both</u> the ALC Gateway and the X.25 Bridge. In a simple scenario, with a single virtual circuit on a single X.25 line, this "<u>combined configuration file</u>" may be ready for use with both the ALC Gateway and the X.25 Bridge.

The combined configuration file may not be sufficient for use with multiple virtual circuits or multiple physical connections. If your airline network X.25 configuration includes multiple virtual circuits, you'll need a separate ALC Gateway configuration file for each one. If you have multiple X.25 physical connections, you'll need a separate X.25 Bridge configuration file for each connection.

In such cases, there is no longer a one-to-one correspondence between ALC Gateway and X.25 Bridge configuration files. It may therefore be necessary to put the X.25 Bridge options into separate files. This can be done with a text editor.

Here is an example of a separate Galileo/Apollo X.25 configuration file for use with the X.25 Bridge:

```
SERVICE x25gate

BOARD_NUMBER 0
PORT_NUMBER 0

DTE

SVC 1 3
PACKET_SIZE 512
WINDOW_SIZE 5

T2 500    (for Galileo)

FLAG
CTS
DCD
DSR
```

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In the example above, the **SERVICE** option specifies the TCP/IP network service name or network port number on which the X.25 Bridge should listen for connections from the ALC Gateway. The default setting, "**x25gate**", need not be specified explicitly, but is shown in this example for illustration.

Each X.25 Bridge configuration file (one for each physical connection) must specify a network service name or network port number that is different from the others. Each ALC Gateway configuration file (one for each virtual circuit) must select one of those network service names or port numbers. This arrangement enables the ALC Gateway to contact each instance of the X.25 Bridge, through its assigned network port.

The next two lines in the X.25 Bridge configuration specify the first port (**PORT_NUMBER 0**) on the first INSCC-QP PCI board (**BOARD_NUMBER 0**). The numbers used with these options start from zero rather than 1.

For an X.25 connection using a different port or a different board, specify the board or port number. For example, to define a connection on the second port of the first board, change "**PORT_NUMBER 0**" to "**PORT_NUMBER 1**"; or to use the second board, change "**BOARD_NUMBER 0**" to "**BOARD_NUMBER 1**", etc.

The **DTE** option specifies that the X.25 Bridge's local LAPB address is logical DTE. This is usually correct since the remote X.25 host's LAPB address is logical DCE. If the remote end is logical DTE and the local end should be DCE, specify **DCE**.

Galileo/Apollo X.25 connections use Switched Virtual Circuits (SVCs). The **SVC 1 3** option specifies a range of Logical Channel Numbers (LCNs) #1 through #3 for SVCs. Edit this option to specify the SVC channel number range given in the configuration information that you obtained from Galileo or Apollo.

The **PACKET_SIZE** and **WINDOW_SIZE** options specify the X.25 packet size and packet-window size. The examples given here are typical; edit them if necessary in accordance with the configuration information that you obtained from Galileo or Apollo.

The **FLAG** option instructs the X.25 Bridge to expect X.25 LAPB Flags on the Galileo or Apollo X.25 line. The **CTS**, **DCD**, and **DSR** options specify the required modem-signals.

Various protocol-related timer settings can be specified as part of X.25 Bridge configuration. For most of the timers, the default settings are correct, so they usually need not be specified. For Galileo connections, one of the timers, T2, may need to be set to 500 milliseconds with the **T2 500** option.

Additional protocol options may be required, in accordance with the configuration information that you obtained from Galileo or Apollo. Please investigate the other X.25 Bridge configuration options, described under: **X.25 Bridge Configuration: Summary**, on page 91, and **X.25 Bridge Configuration: Details**, on page 140.

Gateway Quick-Start for SABRE TCP

To begin a configuration for SABRE TCP, start the **Gateway Configuration Utility**.
Select "**SABRE TCP**" from the menu. The following data-entry screen appears.

In the **Connection Name** field, enter a name to identify the host connection you're configuring.

> If you plan to configure more than one host connection, then it's important to specify a different Connection Name for each one.

> The Connection Name is useful for troubleshooting. When the Gateway issues diagnostic messages pertaining to each host connection, those messages can mention the Connection Name, to make it clear which connection they belong to.

In the **Primary Load Balancer** and **Secondary Load Balancer** fields, enter the host names or IP addresses of the Primary and Secondary Load Balancers, respectively.

> The given default Load Balancer addresses (151.193.141.1 for the primary, and 151.193.141.2 for the secondary) were correct at the time of this writing.
> If SABRE specifies different addresses for your installation, please change these addresses to those that SABRE provided

In the **Load Balancer Port** fields, enter the TCP/IP Port Number or Service Name for communications with the SABRE Load Balancer.

> The given default Load Balancer Port number (`12001`) was correct at the time of this writing. Your configuration instructions from SABRE may specify a different network port number.

> If you enter a different Service Name instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number, as in the following example:

```
sabre-load-balancer      12001/tcp
```

> You can press the "**Edit the Services File**" button to edit the "**services**" file.
> For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

In the **TA Timeout** field, select a timeout value from the drop-down menu.

> The **TA Timeout** option sets an activity timer for connections between client applications and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages for the specified time period.

> Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that case, an idle client can remain connected indefinitely.

Enter a Line/IA (LNIA) in one or more of the **Line/IA** fields on the left side of the window. Each Line/IA (LNIA) is a 4-digit hexadecimal value.

> In each LNIA, the first two digits are the Line Number and the last two digits represent the IA.

> After entering a Line and IA, please also enter the related client TAs and associated information on the right-hand side of the window, as discussed below.

> This configuration window accomodates up to 3 Line/IA pairs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

> Do you have more than 3 Line/IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional Line/IA or client object entries.

Enter your TA client information on the right-hand side of the configuration window. You can enter a terminal or printer's LNIA and TA numbers in the **LNIA** and **TA** fields. Also select the type of client object in the **Object Type** field, and enter a name in the **Object Name** field.

> The TA number is a 2-digit hexadecimal value. The LNIA is a 4-digit hexadecimal value. Each TA Object's LNIA must correspond to one of the LNIA values defined in the "LNIAs" section on the left side of the window.

> This configuration window accomodates up to 3 Line/IA pairs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

> Do you have more than 3 Line/IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional Line/IAs and TA client definitions.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name. By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. The default name is: "**scfg.tcp.sabre**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

Gateway Quick-Start for SABRE ALC

To begin a configuration for SABRE ALC, start the **Gateway Configuration Utility**.
Select "**SABRE ALC**" from the menu. The following data-entry screen appears.

In the **<u>Connection Name</u>** field, enter a name to identify the host connection you're configuring.

If you plan to configure more than one host connection, then it's important to specify a different Connection Name for each one.

The Connection Name is useful for troubleshooting. When the Gateway issues diagnostic messages pertaining to each host connection, those messages can mention the Connection Name, to make it clear which connection they belong to.

If you have more than one InnoSys INSCC-QP PCI board installed, one of them corresponds to the connection that you are configuring on this screen. Select that board the **<u>PCI Board</u>** field. (Select the "First board" or the "Second board", etc.).

You can only select one board for the ALC connection you are configuring, because each connection (each configuration file) corresponds to one port on one board.

In this configuration program, you can select from up to four INSCC-QP boards. Select the board that corresponds to this connection.

The physical ordering of the boards depends on your system's design. If you have more than one INSCC-QP board, it may be necessary to experiment to find out which board is the first one in the sequence.

The InnoSys boards are always configured as the "First board", "Second board", etc. – regardless of any other PCI slots between them, whether populated or not.
In the configuration file, the board number will appear as `BOARD_NUMBER 0`, `BOARD_NUMBER 1`, etc. (counting from zero rather than 1).

In the **<u>Port on Board</u>** field, select which connection port this connection will use, on the PCI board that you selected above.

The INSCC-QP card has one 80-pin physical connector, which supports multiple port connections through a special adapter cable. A six-port adapter cable can be purchased from InnoSys along with the card. On the six-port cable, the connectors are labeled "Port 1", "Port 2", etc. On the configuration screen, select the "First port", "Second port", etc.

In the configuration file, the port number will appear as `PORT_NUMBER 0`, `PORT_NUMBER 1`, etc. (counting from zero rather than 1).

In the **TA Timeout** field, select a timeout value from the drop-down menu.

> The **TA Timeout** option sets an activity timer for connections between client applications and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages for the specified time period.
>
> Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that case, an idle client can remain connected indefinitely.

In the **Gateway Service** field, enter the TCP/IP Port Number or Service Name on which the Gateway should listen for connections from clients.

> The default <u>Port Number</u> for IATE client connections is **1413**, associated with the Service Name "**ialcserver**". If you wish to specify a different Port Number, enter the number.
>
> If you wish to specify a different <u>Service Name</u> instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number. You can press the "**Edit the Services File**" button to edit the "**services**" file.
>
> For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

Enter an Interchange Address (IA) in one or more of the **IA** fields on the left side of the window. Each IA is a 2-digit hexadecimal value.

> After entering a Line and IA, please also enter the related client TAs and associated information on the right-hand side of the window, as discussed below.
>
> This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.
>
> Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IA or client object entries.

Enter your TA client information on the <u>right-hand side</u> of the configuration window. You can enter a terminal or printer's IA and TA numbers in the **IA** and **TA** fields.Also select the type of client object in the **Object Type** field, and enter a name in the **Object Name** field.

The IA and TA are 2-digit hexadecimal values. Each TA Object's IA must correspond to one of the IA values defined in the "IAs" section on the left side of the window.

This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IAs and TA client definitions.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name.   By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. The default name is: "**scfg.alc.sabre**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

Gateway Quick-Start for SABRE X.25

To begin a configuration for SABRE X.25, start the **Gateway Configuration Utility**.
Select "**SABRE X.25**" from the menu. The following data-entry screen appears.

You can use this configuration screen to create a configuration file for the ALC Gateway,
as described on the following pages. This configuration file applies to one X.25 virtual circuit.
If you have multiple X.25 virtual circuits, you'll need to use this configuration screen repeatedly,
to create separate ALC Gateway configuration files for each circuit.

It will also be necessary to create configuration file(s) for the X.25 Bridge.
The Gateway Configuration Utility does not create X.25 Bridge configuration files. They can be
created with a text editor. An example is given at the end of the following instructions.

In the **<u>Connection Name</u>** field, enter a name to identify the host connection you're configuring.

If you plan to configure more than one host connection, then it's important to specify a different Connection Name for each one.

The Connection Name is useful for troubleshooting. When the Gateway issues diagnostic messages pertaining to each host connection, those messages can mention the Connection Name, to make it clear which connection they belong to.

If you have more than one InnoSys INSCC-QP PCI board installed, one of them corresponds to the connection that you are configuring on this screen. Select that board the **<u>PCI Board</u>** field. (Select the "First board" or the "Second board", etc.).

You can only select one board for the X.25 connection you are configuring, because each connection (each configuration file) corresponds to one port on one board.

In this configuration program, you can select from up to four INSCC-QP boards. Select the board that corresponds to this connection.

The physical ordering of the boards depends on your system's design. If you have more than one INSCC-QP board, it may be necessary to experiment to find out which board is the first one in the sequence.

The InnoSys boards are always configured as the "First board", "Second board", etc. – regardless of any other PCI slots between them, whether populated or not.
In the configuration file, the board number will appear as `BOARD_NUMBER 0`, `BOARD_NUMBER 1`, etc. (counting from zero rather than 1).

In the **<u>Port on Board</u>** field, select which connection port this connection will use, on the PCI board that you selected above.

The INSCC-QP card has one 80-pin physical connector, which supports multiple port connections through a special adapter cable. A six-port adapter cable can be purchased from InnoSys along with the card. On the six-port cable, the connectors are labeled "Port 1", "Port 2", etc. On the configuration screen, select the "First port", "Second port", etc.

In the configuration file, the port number will appear as `PORT_NUMBER 0`, `PORT_NUMBER 1`, etc. (counting from zero rather than 1).

In the **<u>Hunt Group</u>** field, enter the SABRE Hunt Group for this X.25 connection.

The Hunt Group is the <u>X.121 Address</u> for the SVC connection to SABRE. The required Hunt Group address should be provided in the configuration information that you received from SABRE.

In the **<u>TA Timeout</u>** field, select a timeout value from the drop-down menu.

The **TA Timeout** option sets an activity timer for connections between client applications and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages for the specified time period.

Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that case, an idle client can remain connected indefinitely.

In the **<u>Gateway Service</u>** field, enter the TCP/IP Port Number or Service Name on which the Gateway should listen for connections from clients.

The default <u>Port Number</u> for IATE client connections is **1413**, associated with the Service Name "**ialcserver**". If you wish to specify a different Port Number, enter the number.

If you wish to specify a different <u>Service Name</u> instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number. You can press the "**Edit the Services File**" button to edit the "**services**" file.

For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

In the **X.25 Service** field, enter the TCP/IP Port Number or Service Name on which the
ALC Gateway should connect to the X.25 Bridge.

> The network port number or service name that you enter here must specify the same network
> port that the X.25 Bridge will use, to communicate with the ALC Gateway for this X.25
> connection.

> The default network <u>Port Number</u> for the ALC Gateway's connection to the X.25 Bridge is
> **1412**, associated with the <u>Service Name</u> "**x25gate**". There may be no need to change this
> default, if you have only one X.25 physical connection – and if you do not specify a different
> network port number or service name in the X.25 Bridge configuration file.
> (See "**X.25 Bridge Configuration for SABRE**", on page 60.)

> If you have more than one X.25 physical connection, each one will require a separate
> X.25 Bridge configuration file, and a separate running instance of the X.25 Bridge.
> Each connection's X.25 Bridge configuration file must specify a network port number
> or service name that is different from the other connections. On the ALC configuration
> screen, specify the network port number for the corresponding instance of the X.25 Bridge,
> so that the ALC Gateway will associate this configuration with that X.25 Bridge.

Enter a Line/IA (LNIA) in one or more of the **Line/IA** fields on the left side of the window.
Each Line/IA (LNIA) is a 4-digit hexadecimal value.

> In each LNIA, the first two digits are the Line Number and the last two digits represent
> the IA.

> After entering a Line and IA, please also enter the related client TAs and associated
> information on the right-hand side of the window, as discussed below.

> This configuration window accomodates up to 3 Line/IA pairs, and up to 32 TAs. All of them
> must belong to the same host-connection, since the configuration you're editing represents
> just one host-connection.

> Do you have more than 3 Line/IAs or more than 32 client TAs to configure on this host
> connection? If so, you'll need to edit the Gateway configuration text file later, and add your
> additional Line/IA or client object entries.

Enter your TA client information on the <u>right-hand side</u> of the configuration window. You can enter a terminal or printer's LNIA and TA numbers in the **LNIA** and **TA** fields. Also select the type of client object in the **Object Type** field, and enter a name in the **Object Name** field.

> The TA number is a 2-digit hexadecimal value. The LNIA is a 4-digit hexadecimal value. Each TA Object's LNIA must correspond to one of the LNIA values defined in the "LNIAs" section on the left side of the window.

> This configuration window accomodates up to 3 Line/IA pairs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

> Do you have more than 3 Line/IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional Line/IAs and TA client definitions.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name. By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. The default name is: "**scfg.x25.sabre**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

You can use this configuration screen to create a configuration file for the ALC Gateway, as described on the following pages. This configuration file applies to <u>one X.25 virtual circuit</u>. If you have multiple X.25 virtual circuits, you'll need to use this configuration screen repeatedly, to create separate ALC Gateway configuration files for each circuit.

To establish the X.25 connection, the IATE <u>X.25 Bridge</u> software must be used along with the ALC Gateway. X.25 Bridge configuration is discussed below.

X.25 Bridge Configuration for SABRE

To establish an X.25 connection, the ALC Gateway works with the X.25 Bridge. Like the ALC Gateway, the X.25 Bridge requires configuration options specified in a file.

The configuration file created by the Gateway Configuration Utility contains options for <u>both</u> the ALC Gateway and the X.25 Bridge. In a simple scenario, with a single virtual circuit on a single X.25 line, this "<u>combined configuration file</u>" may be ready for use with both the ALC Gateway and the X.25 Bridge.

The combined configuration file may not be sufficient for use with multiple virtual circuits or multiple physical connections. If your airline network X.25 configuration includes multiple virtual circuits, you'll need a separate ALC Gateway configuration file for each one. If you have multiple X.25 physical connections, you'll need a separate X.25 Bridge configuration file for each connection.

In such cases, there is no longer a one-to-one correspondence between ALC Gateway and X.25 Bridge configuration files. It may therefore be necessary to put the X.25 Bridge options into separate files. This can be done with a text editor.

Here is an example of a separate SABRE X.25 configuration file for use with the X.25 Bridge:

```
SERVICE x25gate

BOARD_NUMBER 0
PORT_NUMBER 0

DTE

SVC 1 3
PACKET_SIZE 512
WINDOW_SIZE 5

FLAG
CTS
DCD
DSR
```

In the example above, the **SERVICE** option specifies the TCP/IP network service name or network port number on which the X.25 Bridge should listen for connections from the ALC Gateway. The default setting, "**x25gate**", need not be specified explicitly, but is shown in this example for illustration.

Each X.25 Bridge configuration file (one for each physical connection) must specify a network service name or network port number that is different from the others. Each ALC Gateway configuration file (one for each virtual circuit) must select one of those network service names or port numbers. This arrangement enables the ALC Gateway to contact each instance of the X.25 Bridge, through its assigned network port.

The next two lines in the X.25 Bridge configuration specify the first port (**PORT_NUMBER 0**) on the first INSCC-QP PCI board (**BOARD_NUMBER 0**). The numbers used with these options start from zero rather than 1.

For an X.25 connection using a different port or a different board, specify the board or port number. For example, to define a connection on the second port of the first board, change "**PORT_NUMBER 0**" to "**PORT_NUMBER 1**"; or to use the second board, change "**BOARD_NUMBER 0**" to "**BOARD_NUMBER 1**", etc.

The **DTE** option specifies that the X.25 Bridge's local LAPB address is logical DTE. This is usually correct since the remote X.25 host's LAPB address is logical DCE. If the remote end is logical DTE and the local end should be DCE, specify **DCE**.

SABRE X.25 connections use Switched Virtual Circuits (SVCs). The **svc 1 3** option specifies a range of Logical Channel Numbers (LCNs) #1 through #3 for SVCs. Edit this option to specify the SVC channel number range given in the configuration information that you obtained from SABRE.

The **PACKET_SIZE** and **WINDOW_SIZE** options specify the X.25 packet size and packet-window size. The examples given here are typical; edit them if necessary in accordance with the configuration information that you obtained from SABRE.

The **FLAG** option instructs the X.25 Bridge to expect X.25 LAPB Flags on the SABRE X.25 line. The **CTS**, **DCD**, and **DSR** options specify the required modem-signals.

Additional protocol options may be required, in accordance with the configuration information that you obtained from SABRE. Please investigate the other X.25 Bridge configuration options, described under: **X.25 Bridge Configuration: Summary**, on page 91, and **X.25 Bridge Configuration: Details**, on page 140.

Gateway Quick-Start for Worldspan TCP

To begin a configuration for Worldspan TCP (Extended MATIP), start the
Gateway Configuration Utility. Select "**Worldspan TCP**" from the menu.
The following data-entry screen appears.

Note: The window shown above may not appear in its entirety on your screen. If necessary,
use the vertical scroll-bars in the center and on the right to reveal all of the options.

Enter the **Host Name or IP Address of the Worldspan CFE**.

> The required name or address should be found in the configuration instructions obtained
> from Worldspan.

For the **Local Name or IP Address for Interface to Worldspan**, enter the name or IP address
associated with the local network interface for communications with Worldspan.

> Typically, the Gateway system has multiple network interfaces, one of which connects to the
> Worldspan network. Enter the name or IP address associated with that network interface, so
> that the Gateway will use it to contact the CFE.

In the **PIN** field, enter your Worldspan PIN.

> The PIN is used for security purposes. The correct value is required in order to gain access
> through the Worldspan Security Object. Please obtain your PIN value from Worldspan.

In the **Open Confirmation Timer (T0)** field, select the Open Confirmation timeout.

> This specifies the maximum amount of time (in seconds) that the Gateway should wait for an
> Open-Confirmation response from the CFE.

In the **Wakeup Pending Timer (T1)** field, select the Wakeup Pending timeout.

> This specifies the amount of time (in seconds) that the Gateway should ignore any successive
> Wakeups received after an initial Wakeup from the CFE.

In the **Status Response Pending Timer (T2)** field, select a Status Response Pending timeout.

> This specifies the maximum amount of time (in seconds) that the Gateway should wait for an
> expected Status Response from the CFE.

In the **Keep Alive Interval** field, select the interval for receipt of Keepalive messages.

This specifies the maximum time interval (in seconds) at which the Gateway should expect to receive Keepalive messages from the CFE.

If the Gateway receives no Keepalive messages for the specified amount of time, the Gateway will disconnect from the host. (In that event, the Gateway's host-status indication will show that the host is no longer available.)

 If the Keepalive interval is set to "**None**", the Gateway will not expect Keepalives.

In the **Dormant Timeout** field, select the Dormant Timeout.

This specifies the maximum time interval (in seconds) at which the Gateway should expect to receive messages from the CFE. If the specified time passes with no messages received from the CFE, the Gateway disconnects from the CFE.

If the Dormant Timeout is set to "**None**", the Gateway will never disconnect from the CFE because of inactivity.

In the **Attempt Reconnect** field, select the delay time for reconnection to the CFE.

If a previous connection has been lost, the Gateway will attempt to reconnect to the CFE, after the specified number of seconds have passed.

If the reconnection time is set to "**None**", the Gateway will not attempt to reconnect to the CFE.

Note:
It may not be logical to configure both the **Dormant Timeout** and the **Attempt-Reconnect** delay time to a value other than "**None**". With both of these timeouts set, the Gateway could disconnect due to the Dormant Timeout, but then reconnect automatically -- possibly creating an unnecessary cycle of disconnection and reconnection.

For the **Local Name or IP Address for IATE Client Connections**, enter the name or IP address associated with the local network interface for IATE Client connections.

Typically, the Gateway system has multiple network interfaces, one of which connects to the business network through which IATE Client applications connect. Enter the name or IP address associated with that network interface, so that the Gateway will accept client connections arriving through it.

In the **Local Port Number or Service Name for IATE Client Connections**, enter the network port number or service name for communications with IATE Clients.

The default Port Number for IATE client connections is **1413**, associated with the Service Name "**ialcserver**". If you wish to specify a different Port Number, enter the number.

If you wish to specify a different Service Name instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number. You can press the "**Edit the Services File**" button to edit the "**services**" file.

For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

In the **TA Timeout** field, select a timeout value from the drop-down menu.

The **TA Timeout** option sets an activity timer for connections between client applications and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages for the specified time period

Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that case, an idle client can remain connected indefinitely

Enter a GCID in one or more of the **GCID** fields. Each GCID is an 8-digit hexadecimal value.

> After entering a GCID, please also enter the related client DAs and associated information on the right-hand side of the window, as discussed below.
>
> This configuration accomodates up to 3 GCIDs, and up to 32 DAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.
>
> Do you have more than 3 GCIDs or more than 32 DAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional GCID values or DA Objects.

Configure your client objects on the <u>right-hand side</u> of the configuration window. You can enter a terminal or printer's GCID and DA numbers in the **GCID** and **DA** fields. Also select the type of client object in the **Object Type** field, and enter a name in the **Object Name** field.

> The DA number is a 2-digit hexadecimal value. The LNIA is a 4-digit hexadecimal value. Each TA Object's LNIA must correspond to one of the LNIA values defined in the "LNIAs" section on the left side of the window.
>
> This configuration window accomodates up to 3 GCIDs, and up to 32 DAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.
>
> Do you have more than 3 GCIDs or more than 32 client objects to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional GCIDs and client objects.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name. By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. The default name is: "**scfg.tcp.worldspan**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

Gateway Quick-Start for Worldspan ALC

To begin a configuration for Worldspan ALC, start the **Gateway Configuration Utility**.
Select "**Worldspan ALC**" from the menu. The following data-entry screen will appear.

In the **<u>Connection Name</u>** field, enter a name to identify the host connection you're configuring.

If you plan to configure more than one host connection, then it's important to specify a different Connection Name for each one.

The Connection Name is useful for troubleshooting. When the Gateway issues diagnostic messages pertaining to each host connection, those messages can mention the Connection Name, to make it clear which connection they belong to.

If you have more than one InnoSys INSCC-QP PCI board installed, one of them corresponds to the connection that you are configuring on this screen. Select that board the **<u>PCI Board</u>** field. (Select the "First board" or the "Second board", etc.).

You can only select one board for the ALC connection you are configuring, because each connection (each configuration file) corresponds to one port on one board.

In this configuration program, you can select from up to four INSCC-QP boards. Select the board that corresponds to this connection.

The physical ordering of the boards depends on your system's design. If you have more than one INSCC-QP board, it may be necessary to experiment to find out which board is the first one in the sequence.

The InnoSys boards are always configured as the "First board", "Second board", etc. – regardless of any other PCI slots between them, whether populated or not.
In the configuration file, the board number will appear as `BOARD_NUMBER 0`, `BOARD_NUMBER 1`, etc. (counting from zero rather than 1).

In the **<u>Port on Board</u>** field, select which connection port this connection will use,
on the PCI board that you selected above.

The INSCC-QP card has one 80-pin physical connector, which supports multiple port connections through a special adapter cable. A six-port adapter cable can be purchased from InnoSys along with the card. On the six-port cable, the connectors are labeled "Port 1", "Port 2", etc. On the configuration screen, select the "First port", "Second port", etc.

In the configuration file, the port number will appear as `PORT_NUMBER 0`, `PORT_NUMBER 1`, etc. (counting from zero rather than 1).

In the **TA Timeout** field, select a timeout value from the drop-down menu.

> The **TA Timeout** option sets an activity timer for connections between client applications and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages for the specified time period.

> Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that case, an idle client can remain connected indefinitely.

In the **Gateway Service** field, enter the TCP/IP Port Number or Service Name on which the Gateway should listen for connections from clients.

> The default Port Number for IATE client connections is **1413**, associated with the Service Name "**ialcserver**". If you wish to specify a different Port Number, enter the number.

> If you wish to specify a different Service Name instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number. You can press the "**Edit the Services File**" button to edit the "**services**" file.

> For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

Enter an Interchange Address (IA) in one or more of the **IA** fields on the left side of the window. Each IA is a 2-digit hexadecimal value.

> After entering a Line and IA, please also enter the related client TAs and associated information on the right-hand side of the window, as discussed below.

> This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

> Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IA or client object entries.

Enter your TA client information on the right-hand side of the configuration window. You can enter a terminal or printer's IA and TA numbers in the **IA** and **TA** fields.Also select the type of client object in the **Object Type** field, and enter a name in the **Object Name** field.

> The IA and TA are 2-digit hexadecimal values. Each TA Object's IA must correspond to one of the IA values defined in the "IAs" section on the left side of the window.

> This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

> Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IAs and TA client definitions.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name.   By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. The default name is: "**scfg.alc.worldspan**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

Gateway Quick-Start for Worldspan X.25

To begin a configuration for Worldspan X.25, start the **Gateway Configuration Utility**. Select "**Worldspan X.25**" from the menu. The following data-entry screen will appear.

You can use this configuration screen to create a configuration file for the ALC Gateway, as described on the following pages. This configuration file applies to <u>one X.25 virtual circuit</u>. If you have multiple X.25 virtual circuits, you'll need to use this configuration screen repeatedly, to create separate ALC Gateway configuration files for each circuit.

It will also be necessary to create configuration file(s) for the X.25 Bridge. The Gateway Configuration Utility does not create X.25 Bridge configuration files. They can be created with a text editor. An example is given at the end of the following instructions.

In the **<u>Connection Name</u>** field, enter a name to identify the host connection you're configuring.

> If you plan to configure more than one host connection, then it's important to specify a different Connection Name for each one.

> The Connection Name is useful for troubleshooting. When the Gateway issues diagnostic messages pertaining to each host connection, those messages can mention the Connection Name, to make it clear which connection they belong to.

If you have more than one InnoSys INSCC-QP PCI board installed, one of them corresponds to the connection that you are configuring on this screen. Select that board the **<u>PCI Board</u>** field. (Select the "First board" or the "Second board", etc.).

> You can only select one board for the X.25 connection you are configuring, because each connection (each configuration file) corresponds to one port on one board.

> In this configuration program, you can select from up to four INSCC-QP boards. Select the board that corresponds to this connection.

> The physical ordering of the boards depends on your system's design. If you have more than one INSCC-QP board, it may be necessary to experiment to find out which board is the first one in the sequence.

> The InnoSys boards are always configured as the "First board", "Second board", etc. – regardless of any other PCI slots between them, whether populated or not.
> In the configuration file, the board number will appear as `BOARD_NUMBER 0`, `BOARD_NUMBER 1`, etc. (counting from zero rather than 1).

In the **Port on Board** field, select which connection port this connection will use, on the PCI board that you selected above.

> The INSCC-QP card has one 80-pin physical connector, which supports multiple port connections through a special adapter cable. A six-port adapter cable can be purchased from InnoSys along with the card. On the six-port cable, the connectors are labeled "Port 1", "Port 2", etc. On the configuration screen, select the "First port", "Second port", etc.
>
> In the configuration file, the port number will appear as `PORT_NUMBER 0`, `PORT_NUMBER 1`, etc. (counting from zero rather than 1).

In the **Local X.121 Address** field, enter the Local X.121 Address for SVC connections. In the **Remote X.121 Address** fields, enter up to three Remote X.121 Addresses.

> The required X.121 addresses should be provided in the configuration information that you received from Worldspan.

In the **TA Timeout** field, select a timeout value from the drop-down menu.

> The **TA Timeout** option sets an activity timer for connections between client applications and the ALC Gateway. The Gateway will disconnect an idle client that has sent no messages for the specified time period.
>
> Select "**None**" if you do not want the Gateway to disconnect clients due to inactivity. In that case, an idle client can remain connected indefinitely.

In the **Gateway Service** field, enter the TCP/IP Port Number or Service Name on which the Gateway should listen for connections from clients.

> The default <u>Port Number</u> for IATE client connections is **1413**, associated with the Service Name "**ialcserver**". If you wish to specify a different Port Number, enter the number.

> If you wish to specify a different <u>Service Name</u> instead of the Port Number, your system's "**services**" file must contain a network-service definition which associates that name with a network port number. You can press the "**Edit the Services File**" button to edit the "**services**" file.

> For more information about Port Numbers and Service Names, click the Help icon (the question-mark) next to the "**Edit the Services File**" button.

In the **X.25 Service** field, enter the TCP/IP Port Number or Service Name on which the ALC Gateway should connect to the X.25 Bridge.

> The network port number or service name that you enter here must specify the same network port that the X.25 Bridge will use, to communicate with the ALC Gateway for this X.25 connection.

> The default network <u>Port Number</u> for the ALC Gateway's connection to the X.25 Bridge is **1412**, associated with the <u>Service Name</u> "**x25gate**". There may be no need to change this default, if you have only one X.25 physical connection – and if you do not specify a different network port number or service name in the X.25 Bridge configuration file. (See "**X.25 Bridge Configuration for Worldspan**", on page 77.)

> If you have more than one X.25 physical connection, each one will require a separate X.25 Bridge configuration file, and a separate running instance of the X.25 Bridge. Each connection's X.25 Bridge configuration file must specify a network port number or service name that is different from the other connections. On the ALC configuration screen, specify the network port number for the corresponding instance of the X.25 Bridge, so that the ALC Gateway will associate this configuration with that X.25 Bridge.

Enter an Interchange Address (IA) in one or more of the **IA** fields on the left side of the window. Each IA is a 2-digit hexadecimal value.

    After entering a Line and IA, please also enter the related client TAs and associated information on the right-hand side of the window, as discussed below.

    This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

    Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IA or client object entries.

Enter your TA client information on the <u>right-hand side</u> of the configuration window. You can enter a terminal or printer's IA and TA numbers in the **IA** and **TA** fields.Also select the type of client object in the **Object Type** field, and enter a name in the **Object Name** field.

    The IA and TA are 2-digit hexadecimal values. Each TA Object's IA must correspond to one of the IA values defined in the "IAs" section on the left side of the window.

    This configuration window accomodates up to 3 IAs, and up to 32 TAs. All of them must belong to the same host-connection, since the configuration you're editing represents just one host-connection.

    Do you have more than 3 IAs or more than 32 client TAs to configure on this host connection? If so, you'll need to edit the Gateway configuration text file later, and add your additional IAs and TA client definitions.

After completing these configuration entries, press the button at the bottom of the window, labeled "**Click here when you're finished.**"

Next, you'll see a file-save dialog. Select the location to save the configuration file, and enter its name. By default, the file will be saved in a folder reserved for the configuration files that you create with the Gateway Configuration Utility. The default name is "**scfg.x25.worldspan**". If you accept these defaults, simply press the **Save** button to save the file.

After you save the file, its contents will appear on-screen in the Notepad editor. Please review the file's contents as shown in the Notepad window. The file may contain some comments suggesting additional changes that you may need to make in the file. If you make any changes here in Notepad, save the file again (using the File/Save command in Notepad) to commit your changes. (At any later time, you can use Notepad or another editor to edit the file again, if necessary.)

You can use this configuration screen to create a configuration file for the ALC Gateway, as described on the following pages. This configuration file applies to <u>one X.25 virtual circuit</u>. If you have multiple X.25 virtual circuits, you'll need to use this configuration screen repeatedly, to create separate ALC Gateway configuration files for each circuit.

To establish the X.25 connection, the IATE <u>X.25 Bridge</u> software must be used along with the ALC Gateway. X.25 Bridge configuration is discussed below.

X.25 Bridge Configuration for Worldspan

To establish an X.25 connection, the ALC Gateway works with the X.25 Bridge. Like the
ALC Gateway, the X.25 Bridge requires configuration options specified in a file.

The configuration file created by the Gateway Configuration Utility contains options for <u>both</u>
the ALC Gateway and the X.25 Bridge. In a simple scenario, with a single virtual circuit
on a single X.25 line, this "<u>combined configuration file</u>" may be ready for use with both the
ALC Gateway and the X.25 Bridge.

The combined configuration file may not be sufficient for use with multiple virtual circuits
or multiple physical connections. If your airline network X.25 configuration includes
multiple virtual circuits, you'll need a separate ALC Gateway configuration file for
each one. If you have multiple X.25 physical connections, you'll need a separate
X.25 Bridge configuration file for each connection.

In such cases, there is no longer a one-to-one correspondence between ALC Gateway and
X.25 Bridge configuration files. It may therefore be necessary to put the X.25 Bridge options
into separate files. This can be done with a text editor.

Here is an example of a separate Worldspan X.25 configuration file for use with the
X.25 Bridge:

```
SERVICE x25gate

BOARD_NUMBER 0
PORT_NUMBER 0

DTE

SVC 1 3
PACKET_SIZE 512
WINDOW_SIZE 5

T2 500

FLAG
CTS
DCD
DSR
```

In the example above, the `SERVICE` option specifies the TCP/IP network service name or network port number on which the X.25 Bridge should listen for connections from the ALC Gateway. The default setting, "**x25gate**", need not be specified explicitly, but is shown in this example for illustration.

Each X.25 Bridge configuration file (one for each physical connection) must specify a network service name or network port number that is different from the others. Each ALC Gateway configuration file (one for each virtual circuit) must select one of those network service names or port numbers. This arrangement enables the ALC Gateway to contact each instance of the X.25 Bridge, through its assigned network port.

The next two lines in the X.25 Bridge configuration specify the first port (`PORT_NUMBER 0`) on the first INSCC-QP PCI board (`BOARD_NUMBER 0`). The numbers used with these options start from zero rather than 1.

For an X.25 connection using a different port or a different board, specify the board or port number. For example, to define a connection on the second port of the first board, change "`PORT_NUMBER 0`" to "`PORT_NUMBER 1`"; or to use the second board, change "`BOARD_NUMBER 0`" to "`BOARD_NUMBER 1`", etc.

The `DTE` option specifies that the X.25 Bridge's local LAPB address is logical DTE. This is usually correct since the remote X.25 host's LAPB address is logical DCE. If the remote end is logical DTE and the local end should be DCE, specify `DCE`.

Worldspan X.25 connections use Switched Virtual Circuits (SVCs). The `SVC 1 3` option specifies a range of Logical Channel Numbers (LCNs) #1 through #3 for SVCs. Edit this option to specify the SVC channel number range given in the configuration information that you obtained from Worldspan.

The `PACKET_SIZE` and `WINDOW_SIZE` options specify the X.25 packet size and packet-window size. The examples given here are typical; edit them if necessary in accordance with the configuration information that you obtained from Worldspan.

The `FLAG` option instructs the X.25 Bridge to expect X.25 LAPB Flags on the Worldspan X.25 line. The `CTS`, `DCD`, and `DSR` options specify the required modem-signals.

Various protocol-related timer settings can be specified as part of X.25 Bridge configuration. For most of the timers, the default settings are correct, so they usually need not be specified. For this type of connection, one of the timers, T2, may need to be set to 500 milliseconds with the `T2 500` option.

Additional protocol options may be required, in accordance with the configuration information that you obtained from Galileo or Apollo. Please investigate the other X.25 Bridge configuration options, described under: **X.25 Bridge Configuration: Summary**, on page 91, and **X.25 Bridge Configuration: Details**, on page 140.

ALC Gateway Configuration: Summary

Following is a summary of the ALC Gateway's configuration options. Also provided are additional summaries of the options particular to each type of airline network protocol.

ALC Gateway Configuration Sections

An ALC Gateway configuration file is organized into "sections", each of which is labeled with one of the following section-names. Various options can be configured within each section of the configuration file. Every ALC Gateway configuration option belongs to one of these sections. All section and option keywords must be entered in upper case.

Section	Page
*HOST TYPE	95
*GATEWAY DEFAULTS	98
*CLIENT CONNECTIONS	96
*HOST CONNECTION	101
*PROTOCOL DESCRIPTION	123
*PRINTER ANSWERBACKS	128
*CRT ANSWERBACKS	128
*IAS	129
*BROADCAST TAS	132
*LINE NUMBERS	133
*OBJECT CONNECTION DEFAULTS	134
*OBJECT DEFINITIONS	136
*IPC CONNECTION	139
*PORT TABLE AND MULTIPLEXING CONTROL	139
*X25 GATEWAY CONFIGURATION	139

Every configuration section's name begins with an asterisk, as shown above.
The section names must be entered exactly as shown, capitalized, with no trailing blank space.

To create a configuration section, specify the section's name on a line by itself in the
configuration file. On subsequent lines, specify the individual options which belong in
that section. All of the options and their parameters are explained on the following pages.
Plan your configuration to determine which options you need in each section.

After specifying all of the necessary options within one section, enter the next section's name
on a subsequent line in the file, and proceed to specify the options which belong in that section.
Continue until all of the necessary sections and options have been entered into the file, according
to your configuration plan.

The order of sections in the file is not significant.

In addition to section names and options, "comments" can be added to Gateway configuration
files. Any line that begins with a pound sign (#) is a comment. Comments can serve as
annotations or explanations, for the benefit of personnel reading the configuration file.
The ALC Gateway and the X.25 Bridge ignore comments, so they have no effect on Gateway
operation.

ALC Gateway Configuration Options: An Alphabetical List

Following is a list of ALC Gateway configuration options, in alphabetical order.
Each option belongs to one of the configuration Sections listed above. Refer to the
referenced pages for more information about each section and option. Some options are
generic, but many apply to a particular host-type or network protocol (TCP, ALC, or X.25).

(This list does not include X.25 Bridge options. See also:
"**X.25 Bridge Configuration: Summary**" on page 91, and
"**X.25 Bridge Configuration: Details**" on page 140.)

Option	Section	Page
ACTIVITY_TIMER	*HOST CONNECTION	120
API_THROTTLE_INTERVAL	*OBJECT CONNECTION DEFAULTS	135
ATTEMPT_RECONNECT	*HOST CONNECTION	103
AUTO_ANSWER	*PROTOCOL DESCRIPTION	125
BOARD_NUMBER	*HOST CONNECTION	111
CLASS	*OBJECT DEFINITIONS	138
CLIENT_ID	*HOST CONNECTION	102
CONFIG_SERVER_IP	*HOST CONNECTION	102
CONFIG_SERVER_PORT	*HOST CONNECTION	102
CONNECT_ON	*GATEWAY CONNECTION	97
CTS_REQUIRED	*PROTOCOL DESCRIPTION	124
CUD	*HOST CONNECTION	119
DATA_IA	*IAS	129
DCD_REQUIRED	*PROTOCOL DESCRIPTION	124
DEFAULT_SEG_SIZE	*PROTOCOL DESCRIPTION	126
DIRECT_TCP	*HOST CONNECTION	102
DONT_FILTER_DATA_TO_HOST	*GATEWAY DEFAULTS	99
DORMANT_TIMEOUT_VALUE	*HOST CONNECTION	103
DSR_REQUIRED	*PROTOCOL DESCRIPTION	124

(Continued)

ALC Gateway Options: Alphabetical List *(Continued)*

Option	Section	Page
EOMC	*PRINTER ANSWERBACKS *CRT ANSWERBACKS	128
EOMI	*PRINTER ANSWERBACKS *CRT ANSWERBACKS	128
EOMPB	*PRINTER ANSWERBACKS *CRT ANSWERBACKS	128
EOMU	*PRINTER ANSWERBACKS *CRT ANSWERBACKS	128
ENABLE_ENCODING	*GATEWAY DEFAULTS	99
EXPECTED_KEEPALIVE_INTERVAL	*HOST CONNECTION	109
FREEZE_INITIAL_ADDRESS	*HOST CONNECTION	121
HEARTBEAT_REQUIRED	*OBJECT CONNECTION DEFAULTS	134
Host-Type	*HOST TYPE	95
IA_NATIVE_8_BIT	*HOST CONNECTION	122
LIMIT_SEGS_PER_POLL	*PROTOCOL DESCRIPTION	126
LISTEN_ON	*CLIENT CONNECTIONS	96
LOAD_BALANCER_PORT	*HOST CONNECTION	105
LOCAL_ADDRESS	*HOST CONNECTION	117
MAX_SEGS_PER_POLL	*PROTOCOL DESCRIPTION	126
NOTIFICATION_DELAY	*PROTOCOL DESCRIPTION	127
Object-Definitions	*OBJECT DEFINITIONS	136
OPEN_CONFIRM_WAIT_T0	*HOST CONNECTION	108
OVERRIDE_DEFAULT_PVC_IA0	*HOST CONNECTION	122
PAD_TYPE	*HOST CONNECTION	116
PLACE_INITIAL_CALL	*HOST CONNECTION	120
POLLING_IA	*IAS	129
PORT_NAME	*HOST CONNECTION	112
PORT_NUMBER	*HOST CONNECTION	112
PRIMARY_LOAD_BALANCER	*HOST CONNECTION	104
PVC_LCN	*HOST CONNECTION	116
QUEUE_SLACK	*GATEWAY DEFAULTS	99
QUEUEITEM_SLACK	*GATEWAY DEFAULTS	99
REMOTE_ADDRESS	*HOST CONNECTION	117
REMOTE_CFE_NAME	*HOST CONNECTION	107
REMOTE_CFE_PORT_TCP	*HOST CONNECTION	107

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ALC Gateway Options: Alphabetical List (Continued)

Option	Section	Page
SECONDARY_LOAD_BALANCER	*HOST CONNECTION	104
SEGMENTATION	*PROTOCOL DESCRIPTION	125
SERVER_NAME	*GATEWAY DEFAULTS	98
STATUS_RESPONSE_PENDING_T2	*HOST CONNECTION	108
SUN_PCI	*GATEWAY DEFAULTS	100
SUPPORT_LMT	*PROTOCOL DESCRIPTION	127
SYNCS_BETWEEN	*PROTOCOL DESCRIPTION	126
TA_POLLING_ENABLED	*PROTOCOL DESCRIPTION	124
TA_TIMEOUT	*OBJECT CONNECTION DEFAULTS	135
TAG151	*IPC CONNECTION	139
TAG190	*PORT TABLE AND MULTIPLEXING CONTROL	139
TXWAITCOUNT	*PROTOCOL DESCRIPTION	127
USER_ID	*HOST CONNECTION	119
WAKEUP_PENDING_T1	*HOST CONNECTION	108
WSEMATIP	*HOST CONNECTION	102
X25_GATEWAY	*HOST CONNECTION	114

ALC Gateway Options for All Types of Host Connections

The following table lists ALC Gateway configuration options which apply to all types of host connections: ALC, X.25, and TCP.

Every ALC Gateway option belongs to a configuration section, as indicated in the right-hand column of the table. For more information about configuration sections, refer to "**ALC Gateway Configuration Sections**", on page 79. For more information about each configuration option, refer to "**ALC Gateway Configuration: Details**", on page 92.

Some options require additional parameters. Numeric or text parameters are listed in italics. Numeric parameters use decimal numbers, except where specified as hexadecimal.

Parameters marked "±" indicate switches: Use '+' to turn the option on, or '–' to turn it off. A switch option configured without '+' or '–' will be turned on by default, as if '+' had been specified.

Option	**Parameters**	**Section**	**Page**
Host-Type	*(airline host type)*	*HOST TYPE	95
Object-Definitions	*object-definitions, and related parameters (depending on the host type and protocol)*	*OBJECT DEFINITIONS	136
PORT_NAME	*number*	*HOST CONNECTION	112
LISTEN_ON	*host-specifier port-specifier*	*CLIENT CONNECTIONS	96
SERVER_NAME	*port-specifier*	*GATEWAY DEFAULTS	98
ENABLE_ENCODING		*GATEWAY DEFAULTS	99
QUEUE_SLACK	*number*	*GATEWAY DEFAULTS	99
QUEUEITEM_SLACK	*number*	*GATEWAY DEFAULTS	99
± HEARTBEAT_REQUIRED		*OBJECT CONNECTION DEFAULTS	134
TA_TIMEOUT	*minutes*	*OBJECT CONNECTION DEFAULTS	135
API_THROTTLE_INTERVAL	*seconds*	*OBJECT CONNECTION DEFAULTS	135
DATA_IA	*number ... ... (hexadecimal)*	*IAS	129
EOMC		*PRINTER ANSWERBACKS *CRT ANSWERBACKS	128
EOMI		*PRINTER ANSWERBACKS *CRT ANSWERBACKS	128
EOMPB		*PRINTER ANSWERBACKS *CRT ANSWERBACKS	128
EOMU		*PRINTER ANSWERBACKS *CRT ANSWERBACKS	128

ALC Gateway Options for <u>TCP Host Connections</u>

The tables on the following pages list ALC Gateway configuration options which apply to
TCP host connections only.

The configuration file will also include some of the other options listed under
"**ALC Gateway Options for All Types of Host Connections**", on page 84.

Some options require additional parameters. Numeric or text parameters are listed in italics.
Numeric parameters use decimal numbers, except where specified as hexadecimal.

Parameters marked "±" indicate switches: Use '+' to turn the option on,
or '–' to turn it off. A switch option configured without '+' or '–' will be
turned on by default, as if '+' had been specified.

ALC Gateway Options for <u>Galileo or Apollo TCP</u>

Configuration procedures for Galileo/Apollo TCP differ from those for other TCP host types. For instructions, please see "**Configuration Quick-Start for Galileo/Apollo TCP**".

Galileo/Apollo TCP configuration begins with a separate file called a "<u>base file</u>". The Gateway administrator creates the base file, with information about a Galileo/Apollo TCP Configuration Server. Then the administrator uses the "**gconfig**" utility to process the base file.

The **gconfig** utility contacts the specified Configuration Server over the network. The server sends back configuration information, which **gconfig** uses to create a complete ALC Gateway configuration file.

The **gconfig** utility writes some or all of the following options into the ALC Gateway configuration file. The **gconfig** utility also adds some of the other options listed under. "**ALC Gateway Options for All Types of Host Connections**", on page 84.

Option	Parameters	Section	Page
Host-Type	GALILEO or APOLLO	*HOST TYPE	95
DIRECT_TCP		*HOST CONNECTION	102
CONFIG_SERVER_PORT	*port-specifier*	*HOST CONNECTION	102
CONFIG_SERVER_IP	*host-specifier*	*HOST CONNECTION	102
CLIENT_ID	*number*	*HOST CONNECTION	102
DORMANT_TIMEOUT_VALUE	*number*	*HOST CONNECTION	103
ATTEMPT_RECONNECT	*seconds*	*HOST CONNECTION	103
CONNECT_ON	*host-spec. port-spec.*	*GATEWAY CONNECTION	97
SUPPORT_LMT	0 *or* 1	*PROTOCOL DESCRIPTION	127
TAG151	*IP-address*	*IPC CONNECTION	139
TAG190	*mask flags port*	*PORT TABLE AND MULTIPLEXING CONTROL	139

Remember:

For Galileo/Apollo TCP, it is not necessary to write the ALC Gateway configuration file manually. Instead, create the <u>base file</u> with information about the Configuration Server, and then use the *gconfig* utility to create the ALC Gateway configuration file. For instructions, see "**Gateway Quick-Start for Galileo or Apollo TCP**", on page 31.

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ALC Gateway Options for <u>SABRE TCP</u>

For instructions on how to configure the Gateway for SABRE TCP, see
"**Gateway Quick-Start for SABRE TCP**", on page 47.

The following table lists ALC Gateway configuration options which apply specifically to
SABRE TCP host connections.

The configuration file will also include some of the other options listed under
"**ALC Gateway Options for All Types of Host Connections**", on page 84.

Option	Parameters	Section	Page
Host-Type	SABRE	*HOST TYPE	95
DIRECT_TCP		*HOST CONNECTION	104
LOAD_BALANCER_PORT	*port-specifier*	*HOST CONNECTION	105
PRIMARY_LOAD_BALANCER	*host-specifier*	*HOST CONNECTION	104
SECONDARY_LOAD_BALANCER	*host-specifier*	*HOST CONNECTION	104
ATTEMPT_RECONNECT	*seconds*	*HOST CONNECTION	105
CONNECT_ON	*host-spec. port-spec.*	*GATEWAY CONNECTION	97
CLASS	*Class-Name*	*OBJECT DEFINITIONS	138

ALC Gateway Options for <u>Worldspan (Extended MATIP) TCP</u>

For instructions on how to configure the Gateway for Worldspan TCP, see
"**Gateway Quick-Start for Worldspan TCP",** on page 62.

The following table lists ALC Gateway configuration options which apply specifically to
Worldspan (Extended MATIP) TCP host connections.

The configuration file will also include some of the other options listed under
"**ALC Gateway Options for All Types of Host Connections**", on page 84.

Option	Parameters	Section	Page
Host-Type	WORLDSPAN	*HOST TYPE	95
WSEMATIP		*HOST CONNECTION	106
DIRECT_TCP		*HOST CONNECTION	106
REMOTE_CFE_NAME	*host-specifier*	*HOST CONNECTION	107
REMOTE_CFE_PORT_TCP	*port-specifier*	*HOST CONNECTION	107
LOCAL_CFE_PORT_UDP	*port-specifier*	*HOST CONNECTION	107
PIN	*number*	*HOST CONNECTION	108
SECURITY_MODULE_NAME	*library-name*	*HOST CONNECTION	108
OPEN_CONFIRM_WAIT_T0	*seconds*	*HOST CONNECTION	108
WAKEUP_PENDING_T1	*seconds*	*HOST CONNECTION	108
STATUS_RESPONSE_PENDING_T2	*seconds*	*HOST CONNECTION	108
EXPECTED_KEEPALIVE_INTERVAL	*seconds*	*HOST CONNECTION	109
ATTEMPT_RECONNECT	*seconds*	*HOST CONNECTION	109
DORMANT_TIMEOUT_VALUE	*seconds*	*HOST CONNECTION	103
CONNECT_ON	*host-spec.* *port-spec.*	*GATEWAY CONNECTION	97
DONT_FILTER_DATA_TO_HOST		*GATEWAY DEFAULTS	99

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ALC Gateway Options for <u>ALC Host Connections</u>

The following table lists ALC Gateway configuration options which apply to
<u>ALC host connections only</u>.

The configuration file will also include some of the other options listed under
"**ALC Gateway Options for All Types of Host Connections**", on page 84.

Some options require additional parameters. Numeric or text parameters are listed in italics.
Numeric parameters use decimal numbers, except where specified as hexadecimal.

Parameters marked "±" indicate switches: Use '+' to turn the option on,
or '–' to turn it off. A switch option configured without '+' or '–' will be
turned on by default, as if '+' had been specified.

Option	Parameters	Section	Page
Host-Type	*(an ALC host type)*	*HOST TYPE	95
DONT_FILTER_DATA_TO_HOST		*GATEWAY DEFAULTS	99
± **DSR_REQUIRED**		*PROTOCOL DESCRIPTION	124
± **DCD_REQUIRED**		*PROTOCOL DESCRIPTION	124
± **CTS_REQUIRED**		*PROTOCOL DESCRIPTION	124
± **TA_POLLING_ENABLED**		*PROTOCOL DESCRIPTION	124
± **AUTO_ANSWER**		*PROTOCOL DESCRIPTION	125
± **SEGMENTATION**		*PROTOCOL DESCRIPTION	125
± **SYNCS_BETWEEN**		*PROTOCOL DESCRIPTION	126
± **LIMIT_SEGS_PER_POLL**		*PROTOCOL DESCRIPTION	126
MAX_SEGS_PER_POLL	*number*	*PROTOCOL DESCRIPTION	126
DEFAULT_SEG_SIZE	*number*	*PROTOCOL DESCRIPTION	126
NOTIFICATION_DELAY	*number*	*PROTOCOL DESCRIPTION	127
TXWAITCOUNT	*number*	*PROTOCOL DESCRIPTION	127
POLLING_IA	*IA (hexadecimal)*	*IAS	129

ALC Gateway Options for <u>X.25 Host Connections</u>

The following table lists ALC Gateway configuration options which apply to
<u>X.25 host connections only</u>.

The configuration file will also include some of the other options listed under
"**ALC Gateway Options for All Types of Host Connections**", on page 84.

Some options require additional parameters. Numeric or text parameters are listed in italics.
Numeric parameters use decimal numbers, except where specified as hexadecimal.

Parameters marked "±" indicate switches: Use '+' to turn the option on,
or '–' to turn it off. A switch option configured without '+' or '–' will be
turned on by default, as if '+' had been specified.

Option	Parameters	Section	Page
Host-Type	*(an X.25 host type)*	*HOST TYPE	95
PAD_TYPE	*PAD-type-name*	*HOST CONNECTION	116
PVC_LCN	*number*	*HOST CONNECTION	116
LOCAL_ADDRESS	*X.121-address*	*HOST CONNECTION	117
REMOTE_ADDRESS	*X.121-address*	*HOST CONNECTION	117
USER_ID	*Network-User-ID*	*HOST CONNECTION	119
CUD	*Call-User-Data*	*HOST CONNECTION	119
ACTIVITY_TIMER	*minutes*	*HOST CONNECTION	120
PLACE_INITIAL_CALL		*HOST CONNECTION	120
FREEZE_INITIAL_ADDRESS		*HOST CONNECTION	121
OVERRIDE_DEFAULT_PVC_IA0		*HOST CONNECTION	122
IA_NATIVE_8_BIT		*HOST CONNECTION	122

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X.25 Bridge Configuration: Summary

To establish an X.25 connection, the ALC Gateway works with the X.25 Bridge. Like the ALC Gateway, the X.25 Bridge requires configuration options specified in a file.

The X.25 Bridge configuration options are listed below. These options belong in the X.25 Bridge configuration file, or in the "***X25 GATEWAY CONFIGURATION**" section of a combined ALC/X.25 configuration file. For more information about these options, refer to "**X.25 Bridge Configuration: Details**", on page 140.

The formats of X.25 Bridge configuration options are different from the formats of ALC Gateway configuration options. In particular, an X.25 Bridge configuration file does not contain "sections" (as described above for the ALC Gateway).

Some options require additional parameters. Numeric or text parameters are listed in italics. Numeric parameters use decimal numbers, except where specified as hexadecimal.

Parameters marked "±" indicate switches: Use '+' to turn the option on, or '-' to turn it off. A switch option configured without '+' or '-' will be turned on by default, as if '+' had been specified.

Option for the ALC-to-X.25 Bridge connection:

Option	Parameters	Default
SERVICE	*name*	x25gate

Options for INSCC-QP Board and Port selection:

Option	Parameters	Default
BOARD_NUMBER	*number*	0
PORT_NUMBER	*number*	0

Physical port connection options:

Option	Parameters	Default
± **INTERNAL_CLOCK**		*(Default is external clocking)*
LINE_SPEED	*baud-rate*	
± **CTS**		–
± **DCD**		–
± **DSR**		–
± **FLAG**		–

Logical Channel ranges for PVCs and SVCs:

Option	Parameters	Default
PVC	*low-LCN high-LCN*	0 0
SVC	*low-LCN high-LCN* *(decimal values)*	0 0

Packet-level options:

Option	Parameters	Default
PACKET_SIZE	*number*	256
WINDOW_SIZE	*number*	2
± **PACKET_SIZE_NEGOTIATION**		+
± **WINDOW_SIZE_NEGOTIATION**		–
± **EXTENDED_PACKET**		–

LAPB options:

Option	Parameters	Default
DCE or **DTE**		DTE
± **START_SABM**	*number*	+
± **EXTENDED_LAPB**	*number*	−

LAPB counter values:

Option	Parameters	Default
N2	*number*	2
K	*number*	7

LAPB timer values:

Option	Parameters	Default
T1	*seconds*	10
T2	*milliseconds*	1500
T3	*seconds*	10
T4	*seconds*	10
T10	*seconds*	60
T11	*seconds*	120
T12	*seconds*	60
T13	*seconds*	60
T24	*seconds*	0

ALC Gateway Configuration: Details

This section describes each section of the ALC Gateway configuration file,
the options that can be specified in each section, their parameter values, and their usage.

For brief summaries of the available options, refer to the preceding discussion.
The preceding summaries also indicate which options refer to each type of
airline host connection: TCP, ALC, or X.25. In order to plan your configuration,
focus on the options that pertain to the type of airline host connection you're setting up.

The X.25 Bridge's configuration options are described under
"**X.25 Bridge Configuration: Details**", on page 140.

*HOST TYPE

The `*HOST TYPE` section contains a keyword specifying the airline host-type.
This is the type of airline host system to which the Gateway will connect
using this configuration file.

For example, a SABRE connection requires this line in the `*HOST TYPE` section:

```
SABRE
```

These are the recognized host type names for ALC connections:

```
APOLLO, GALILEO, SABRE, SHARES, WORLDSPAN,
ABACUS, AMADEUS, ANA, DATAS, BABS, CODACOM,
KLM, SWISSAIR, SITACARGO, AC100, CPARS, SODA,
EGYPT, ISEA, JAL, OLYMPIC, KOREAN, SINGAPORE,
UNIPARS, UNISCOPE
```

These are the recognized host type names for X.25 connections:

```
APOLLO, GALILEO, SABRE, WORLDSPAN
```

These are the recognized host type names for TCP host connections:

```
APOLLO, GALILEO, SABRE, WORLDSPAN
```

Notes:

• Specify only one host-type per configuration file.

• The host-type name must not contain any trailing spaces.

• Air New Zealand or Carina hosts require `WORLDSPAN` in the `*HOST TYPE` section,
  and `PAD_TYPE AIRNZ` in the `*HOST CONNECTION` section of the ALC Gateway
  configuration file.

*CLIENT CONNECTIONS

The following option can be specified in the *CLIENT CONNECTIONS section
of the configuration file.

Option	Parameters	Default
LISTEN_ON	*host-specifier* *port-specifier*	Local Host, Port 1413

The **LISTEN_ON** option specifies a network interface name or IP address, and a
network service name or network port number on which the ALC Gateway should
listen for client connections.

This option should be configured if the system running the Gateway has more than one TCP/IP
network interface, or, if the Gateway is to listen for client connections on a network port
other than 1413.

The *host-specifier* parameter specifies either a host name or IP address associated with the
network interface on which the Gateway should listen for client connections. (The system's
network configuration defines a host name and IP address for each installed network interface.)

If **LISTEN_ON** is not configured, the Gateway uses the system's first available
IP network interface.

The *port-specifier* parameter specifies the TCP/IP network port on which the Gateway should
listen for client connections. This can be specified as either a network port number or
service name.

If the *port-specifier* parameter is specified as a service name, the name must match an entry in
the system's network "**services**" file, which associates the name with a network port number.
See the "**Installation**" section for more information about the "**services**" file, and about the
default entries that the IATE software installation program places in the file.

If **LISTEN_ON** is not configured, or if the *port-specifier* is zero, the Gateway uses the
IATE default network port, 1413 (which is normally associated with the
IATE default service name, "**ialcserver**").

On a system with only one network interface, the **SERVER_NAME** option (described under
*GATEWAY DEFAULTS on page 98) can be used instead of **LISTEN_ON**. The difference is that the
SERVER_NAME option specifies only the network port. It does not specify a network interface
name; instead it defaults to the first available network interface.

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*GATEWAY CONNECTION

The following option can be specified in the ***GATEWAY CONNECTION** section of the configuration file.

Option	Parameters	Default	Notes
CONNECT_ON	*host-specifier* *port-specifier*	*host:* localhost *port:* 0 *(see below)*	For TCP host connections only.

This option applies to TCP host connections only. This option specifies the name associated with the network interface that the ALC Gateway should use to connect to the airline host.

The *host-specifier* parameter specifies either a <u>host name</u> or <u>IP address</u> associated with the network interface on which the Gateway should connect to the airline host. (The system's network configuration defines each interface's host name and IP address.)

The *port-specifier* parameter specifies the <u>local</u> network port number (or service name) on which the Gateway should make the connection. Normally, the local operating system should be allowed to determine which network port number to use. Set this parameter to 0 to allow the operating system to determine the network port number for connections.

*GATEWAY DEFAULTS

The following options can be specified in the ***GATEWAY DEFAULTS** section of the configuration file. Any option not configured will revert to its default value, as shown in the table below.

Option	Parameters	Default	Notes
SERVER_NAME	*port-specifier*	ialcserver	
ENABLE_ENCODING		No encoding	
QUEUE_SLACK	*number*	0	
QUEUEITEM_SLACK	*number*	0	
DONT_FILTER_DATA_TO_HOST	*number*	0	For Worldspan.
SUN_PCI			For Sun PCI systems only.

Following are explanations of each option listed above.

Option	Parameters	Default
SERVER_NAME	*port-specifier*	ialcserver

This option specifies the network port on which the ALC Gateway should listen for client connections. The *port-specifier* parameter specifies either a network <u>service name</u> or a network <u>port number</u>.

If the *port-specifier* parameter is specified as a <u>service name</u>, the name must match an entry in the system's network "**services**" file, which associates the name with a network port number. See the "**Installation**" section for more information about the "**services**" file, and about the default entries that the IATE software installation program places in the file.

If the system running the Gateway has more than one TCP/IP network interface, please use the **LISTEN_ON** option instead of **SERVER_NAME**. The **LISTEN_ON** option specifies both a network interface name and a network port. For more information, please refer to the preceding discussion of the **LISTEN_ON** option, on page 96.

If neither **SERVER_NAME** nor **LISTEN_ON** are configured, the Gateway uses the IATE default network port, 1413 (which is normally associated with the IATE default service name, "**ialcserver**").

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Option	Default
ENABLE_ENCODING	(No encoding)

This option enables *encoding* of the data that passes between the Gateway and clients
If this option is not enabled, the client/Gateway communications use ASCII plain text.

This option provides rudimentary security only – not intended as a substitute for your general network and data security strategy, which may provide more effective security.

Option	Parameters	Default
QUEUE_SLACK	*number*	0
QUEUEITEM_SLACK	*number*	0

These options are only necessary when shared TAs are being used These options increase the number of buffers and buffer-queues that the Gateway allocates. Programmers working with shared TAs should check with InnoSys to find out whether or not either of these options should be used. When used, typical parameter values are as follows:

- For QUEUEITEM_SLACK: 2 times the number of shared-TA applications running.
- For QUEUE_SLACK: 8 times the number of shared-TA applications running.

Option

DONT_FILTER_DATA_TO_HOST

This option applies to <u>Worldspan</u> host connections only. Normally, this option should not be configured. Configure it only if the Worldspan host's requirements specify that the character filtering functions listed below should be disabled.

By default, the Gateway checks for the following characters in each message segment sent to the host, and removes them before sending the data. If the **DONT_FILTER_DATA_TO_HOST** option is configured, the Gateway will <u>not</u> remove these characters.

```
• ALC 0x0e, ASCII 0x3d:  =
• ALC 0x2b, ASCII 0x3c:  <
• ALC 0x2c, ASCII 0x2b:  +
• ALC 0x3a, ASCII 0x3f:  ?
• ALC 0x3c, ASCII 0x25:  %
```

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Option

`SUN_PCI`

This option must be configured on <u>Sun systems with PCI bus</u>.
This option must not be configured on Windows systems.

Option	**Parameters**	**Default**
`MAX_MONITORS`	*number*	4

This option specifies the maximum number of Gateway monitoring applications that can connect to the ALC Gateway concurrently. For information about the provided Gateway monitoring application, see "**The Gateway Monitor**" on page 153.

*HOST CONNECTION

The contents of the HOST CONNECTION section vary depending on the
type of host connection (TCP, ALC, or X.25).

*HOST CONNECTION Options for <u>Galileo/Apollo TCP connections</u>:

The table below lists the options that can be specified in the ***HOST CONNECTION**
section for Galileo/Apollo TCP connections.

> ### <u>Remember</u>:
>
> For Galileo/Apollo TCP, it is not necessary to write the ALC Gateway configuration file
> manually. Instead, create the <u>base file</u> with information about the Configuration Server,
> and then use the **gconfig** utility to create the complete ALC Gateway configuration file.
> For instructions, see "**Gateway Quick-Start for Galileo or Apollo TCP**", on page 31.

Option	Parameters	Default
DIRECT_TCP		
PORT_NAME	*name*	
CONFIG_SERVER_IP	*host-specifier*	
CONFIG_SERVER_PORT	*port-specifier*	5067
CLIENT_ID	*number*	
DORMANT_TIMEOUT_VALUE	*seconds*	0
ATTEMPT_RECONNECT	*seconds*	0

Following are explanations of each option listed above.

Option

`DIRECT_TCP`

This option specifies a TCP connection to the airline network host
(as opposed to an ALC or X.25 connection).

Option   **Parameters**

`PORT_NAME`	*name*

This option is not required. If it is configured, the Gateway will include the specified port name
in certain diagnostic messages related to the TCP connection.

Option   **Parameters**

`CONFIG_SERVER_IP`	*host-specifier*

This option specifies the <u>host name</u> or <u>IP address</u> of the Galileo/Apollo
Configuration Server.

Option   **Parameters**   **Default**

`CONFIG_SERVER_PORT`	*port-specifier*	5067

This option specifies the network port on which the Gateway should connect to the
Galileo/Apollo Configuration Server.

The *port-specifier* parameter can be specified as either a network <u>port number</u> or <u>service name</u>
If it is specified as a service name, the name must match an entry in the system's network
"**services**" file, which associates the name with a network port number.

Option   **Parameters**

`CLIENT_ID`	*number*

This option specifies the Client ID by which the Gateway identifies itself in communication with
the Galileo/Apollo Configuration Server.

Option	Parameters	Default
DORMANT_TIMEOUT_VALUE	*seconds*	0

If the Dormant Timeout is set to a non-zero value, the Gateway disconnects from the TCP host after the specified number of seconds of continuous inactivity.

If the Dormant Timeout is set to 0, the Gateway will never clear its TCP host connection because of inactivity. This is the default.

Option	Parameters	Default
ATTEMPT_RECONNECT	*seconds*	0

> **Note**: This describes the **ATTEMPT_RECONNECT** option for a TCP connection.
> The **ATTEMPT_RECONNECT** option can also be configured for X.25 connections, as described on page 121.

This option specifies whether and when to restore a connection to the TCP host, after a previous connection has been lost.

If this option is set to a non-zero value, the Gateway will attempt to reconnect to the TCP host, when the specified number of seconds have passed after disconnection.

If this option is set to zero, the ALC Gateway will <u>not</u> attempt to reconnect to the host due to disconnection. This is the default.

However, regardless of how this option is configured, the Gateway will attempt to establish a connection with the host automatically, if and when a client sends data to the Gateway for transmission to the host.

*HOST CONNECTION Options for <u>SABRE TCP connections</u>**:**

The table below lists the options that can be specified in the *HOST CONNECTION
section for SABRE TCP connections.

Option	Parameters	Default
DIRECT_TCP		
PORT_NAME	*name*	
PRIMARY_LOAD_BALANCER	*host-specifier*	151.193.141.1
SECONDARY_LOAD_BALANCER	*host-specifier*	151.193.141.2
LOAD_BALANCER_PORT	*port-specifier*	12001
ATTEMPT_RECONNECT	*seconds*	0

Following are explanations of each option listed above.

Option

DIRECT_TCP

This option specifies a TCP connection to the airline network host
(as opposed to an ALC or X.25 connection).

Option | **Parameters**

PORT_NAME	*name*

This option is not required. If it is configured, the Gateway will include the specified port name
in certain diagnostic messages related to the TCP connection.

Option	Parameters	Default
PRIMARY_LOAD_BALANCER	*host-specifier*	151.193.141.1
SECONDARY_LOAD_BALANCER	*host-specifier*	151.193.141.2

These options specify the <u>host name</u> or <u>IP address</u> of the Primary Load Balancer and the
Secondary Load Balancer servers, respectively.

Option	Parameters	Default
LOAD_BALANCER_PORT	*port-specifier*	12001

This option specifies the network port on which the Gateway should connect to a Load Balancer server.

The *port-specifier* parameter can be specified as either a network <u>port number</u> or <u>service name</u> If it is specified as a service name, the name must match an entry in the system's network "**services**" file, which associates the name with a network port number.

Option	Parameters	Default
ATTEMPT_RECONNECT	*seconds*	0

> **Note**: This describes the **ATTEMPT_RECONNECT** option for a TCP connection.
> The **ATTEMPT_RECONNECT** option can also be configured for X.25 connections,
> as described on page 121.

This option specifies whether and when to restore a connection to the TCP host, after a previous connection has been lost.

If this option is set to a non-zero value, the Gateway will attempt to reconnect to the TCP host, when the specified number of seconds have passed after disconnection.

If this option is set to zero, the ALC Gateway will not attempt to reconnect to the host. This is the default.

Regardless of how this option is configured, the Gateway will attempt to establish a connection with the host whenever a client sends data to the Gateway for transmission to the host.

*HOST CONNECTION Options for <u>Worldspan (Extended MATIP) TCP connections</u>:

The table below lists the options that can be specified in the *HOST CONNECTION
section for Worldspan (Extended MATIP) TCP connections.

Option	Parameters	Default
DIRECT_TCP		
WSEMATIP		
PORT_NAME	*name*	
REMOTE_CFE_NAME	*host-specifier*	
REMOTE_CFE_PORT_TCP	*port-specifier*	350
LOCAL_CFE_PORT_UDP	*port-specifier*	350
PIN	*number*	
SECURITY_MODULE_NAME	*library-name*	wssecmod.dll
OPEN_CONFIRM_WAIT_T0	*seconds*	10
WAKEUP_PENDING_T1	*seconds*	10
STATUS_RESPONSE_PENDING_T2	*seconds*	10
EXPECTED_KEEPALIVE_INTERVAL	*seconds*	0
ATTEMPT_RECONNECT	*seconds*	0
DORMANT_TIMEOUT_VALUE	*seconds*	0

Following are explanations of each option listed above.

Option	Parameters	Default
DIRECT_TCP		

This option specifies a TCP connection to the airline network host
(as opposed to an ALC or X.25 connection).

Option	Parameters	Default
WSEMATIP		

This option specifies a Worldspan Extended MATIP connection
(as opposed to a non-Worldspan MATIP connection).

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Option	Parameters
PORT_NAME	*name*

This option is not required. If it is specified, the Gateway will include the specified port name in certain diagnostic messages.

Option	Parameters
REMOTE_CFE_NAME	*host-specifier*

This option specifies the <u>host name</u> or <u>IP address</u> of the CFE. The required name or address should be found in the configuration instructions obtained from Worldspan.

Option	Parameters	Default
REMOTE_CFE_PORT_TCP	*port-specifier*	350

This option specifies the network port on which the Gateway should connect to the CFE.

The *port-specifier* parameter can be specified as either a network <u>port number</u> or <u>service name</u>. If it is specified as a service name, the name must match an entry in the system's network "**services**" file, which associates the name with a network port number.

The default network port number, 350, should be correct unless Worldspan has specified a different network port number for your connection.

Option	Parameters	Default
LOCAL_CFE_PORT_UDP	*port-specifier*	350

This option specifies the network port on which the Gateway accepts UDP datagrams from the CFE.

The *port-specifier* parameter can be specified as either a network <u>port number</u> or <u>service name</u>. If it is specified as a service name, the name must match an entry in the system's network "**services**" file, which associates the name with a network port number.

The default network port number, 350, should be correct unless Worldspan has specified a different network port number for your connection.

Option	Parameters	Default
PIN	*number*	

This option specifies the PIN value, used for security purposes. The correct value is required in order to gain access through the Worldspan Security Object. Please obtain your PIN value from Worldspan.

Option	Parameters	Default
SECURITY_MODULE_NAME	*library-name*	wssecmod.dll

This option specifies the name of a library (DLL) which provides security functions (via the Worldspan Security Object). The default is: "**wssecmod.dll**".
If configuring this option, please use that default name unless otherwise specified by InnoSys.

Option	Parameters	Default
OPEN_CONFIRM_WAIT_T0	*seconds*	10

This option specifies the maximum amount of time (in seconds) that the Gateway should wait for an Open-Confirmation response from the CFE.

Option	Parameters	Default
WAKEUP_PENDING_T1	*seconds*	10

This option specifies the amount of time (in seconds) that the Gateway should ignore any successive Wakeups received after an initial Wakeup from the CFE.

Option	Parameters	Default
STATUS_RESPONSE_PENDING_T2	*seconds*	10

This option specifies the maximum amount of time (in seconds) that the Gateway should wait for an expected Status Response from the CFE.

Option	Parameters	Default
EXPECTED_KEEPALIVE_INTERVAL	*seconds*	0

This option specifies whether or not the Gateway should expect to receive
Keepalive messages from the CFE. If the parameter is zero, the Gateway
will not expect Keepalives.

If nonzero, the parameter specifies the maximum time interval (in seconds) at which
the Gateway should expect to receive Keepalive messages from the CFE.

If the Gateway receives no Keepalive messages for the specified amount of time,
the Gateway will disconnect from the host. (In that event, the Gateway's
host-status indication will show that the host is no longer available.)

Regardless of this option's setting, the Gateway will send responses to any
Keepalive messages received from the Worldspan host.

Option	Parameters	Default
ATTEMPT_RECONNECT	*seconds*	0

> **Note**: This describes the **ATTEMPT_RECONNECT** option for a TCP connection.
> The **ATTEMPT_RECONNECT** option can also be configured for X.25 connections,
> as described on page 121.

This option specifies whether and when to restore a connection to the CFE,
after a previous connection has been lost.

If the reconnection time is set to a non-zero value, the Gateway will attempt to reconnect to the
CFE, when the specified number of seconds have passed after disconnection.

If the reconnection time is set to 0, the Gateway will not attempt to reconnect to the CFE.
This is the default.

Regardless of how this option is configured, the Gateway will attempt to establish a connection
with the host whenever a client sends data to the Gateway for transmission to the host.

Option	Parameters	Default
DORMANT_TIMEOUT_VALUE	*seconds*	0

If the Dormant Timeout is set to a non-zero value, the Gateway will expect to receive messages from the CFE at intervals no longer than the specified number of seconds. If the specified time passes with no messages received from the CFE, the Gateway disconnects from the CFE.

If the Dormant Timeout is set to 0, the Gateway will never disconnect from the CFE because of inactivity. This is the default.

*HOST CONNECTION Options <u>for ALC connections</u>:

The following options can be specified in the ***HOST CONNECTION** section for ALC connections:

Option	Parameters	Default
BOARD_NUMBER	*board-number*	0
PORT_NUMBER	*port-number*	0
PORT_NAME	*name*	

Following are explanations of each option listed above.

Option	Parameters	Default
BOARD_NUMBER	*board-number*	0

> **Note**: This describes the **BOARD_NUMBER** option for <u>ALC</u> Gateway configuration. For <u>X.25</u> connections, configure the **BOARD_NUMBER** in the X.25 Bridge configuration file, as explained on page 144.

This option is required when there are multiple INSCC-QP PCI boards in the PC on which the Gateway is running. The first board is #0, the second board is #1, etc. The correspondence of board numbers to PCI slots depends on the arrangement of the slots in the particular PC.

For Windows 2000, that correspondence also depends on the order of plug-and-play enumeration. Since the order of the boards may not be immediately obvious, it may be necessary to experiment with the **BOARD_NUMBER** option to determine which board is #0, etc.

Option	Parameters	Default
PORT_NUMBER	*port-number*	0

> **Note**: This describes the **PORT_NUMBER** option for <u>ALC</u> Gateway configuration. For <u>X.25</u> connections, configure the **PORT_NUMBER** in the X.25 Bridge configuration file, as explained on page 144.

This option specifies which serial port this configuration will use on the INSCC-QP board. The default is the first port on the board (#0). This option is required in configurations that use any other port For multi-port Gateway operation, each configuration file uses the **PORT_NUMBER** option to specify the port to which that configuration refers.

The available port numbers for ALC connections are 0, 1, 2 and 3. The INSCC-QP card has one 80-pin physical connector, which supports multiple port connections through a special adapter cable. A six-port adapter cable can be purchased from InnoSys along with the card. On the six-port cable, the connector labeled "Port 1" corresponds to **PORT_NUMBER 0**, the connector labeled "Port 2" corresponds to **PORT_NUMBER 1**, etc.

Option	Parameters	Default
PORT_NAME	*name*	

This option is not required. If it is configured, the Gateway will include the specified port name in certain diagnostic messages.

*HOST CONNECTION Options for X.25 connections:

The following options can be specified in the ***HOST CONNECTION** section of the ALC Gateway configuration file, for an X.25 connection.

Option	Parameters	Default	Notes
X25_GATEWAY	*port-specifier*	x25gate	
PORT_NAME	*port-name*		
PAD_TYPE	*PAD-type-name*		Required for X.25.
PVC_LCN	*LCN-number*		Required for PVCs.
REMOTE_ADDRESS	*X.121-address*		Required for SVCs.
LOCAL_ADDRESS	*X.121-address*		Required for Worldspan SVCs, optional for others.
USER_ID	*Network-User-ID*		Required for SVCs on some hosts.
CUD	*Call-User-Data (hexadecimal values)*	Default depends on host type.	For SVCs only.
PLACE_INITIAL_CALL	0 *or* 1	Default depends on host type.	For SVCs only.
ACTIVITY_TIMER	*minutes*	10 (Worldspan: 15)	For SVCs only.
ATTEMPT_RECONNECT	*seconds*	0	
FREEZE_INITIAL_ADDRESS			For SABRE only.
RSID_STRING	*alphanumeric*		For SABRE (Level 6).
IA_NATIVE_8_BIT			For Worldspan and Galileo.
OVERRIDE_DEFAULT_PVC_IA0			Air New Zealand only.

Following are explanations of each option listed above.

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Option	Parameters	Default
X25_GATEWAY	*port-specifier*	x25gate

This option specifies the TCP/IP network port on which the ALC Gateway connects to an X.25 Bridge.

For an X.25 connection, the ALC Gateway does not communicate directly with an INSCC-QP board. Instead, the ALC Gateway connects to the IATE X.25 Bridge, which communicates with an INSCC-QP board connected to the X.25 network.

The *port-specifier* parameter can be specified as either a network <u>port number</u> or <u>service name</u>. If it is specified as a service name, the name must match an entry in the system's network "**services**" file, which associates the name with a network port number. See the "**Installation**" section for more information about the "**services**" file, and about the default entries that the IATE software installation program places in the file.

The default service name (**x25gate**) is usually correct for a single X.25 physical line.

Multiple X.25 physical lines require separate service names. Each physical line requires a separate instance of the X.25 Bridge, a separate X.25 Bridge configuration file, and a separate ALC Gateway configuration file. The X.25 and ALC configuration files, for a given physical line, specify the X.25 service name for that physical line. The ALC Gateway uses the service name to connect to the X.25 Bridge instance which uses that physical line.

X.25 Bridge configuration files use the **SERVICE** option to specify the X.25 service name. This corresponds to the **X25_GATEWAY** option in the ALC Gateway's configuration file.

Example:

In the following example, each pictured X.25 Bridge uses a separate configuration file. The **SERVICE** options in the two X.25 Bridge configuration files specify separate X.25 service names, such as x25gate1 and x25gate2.
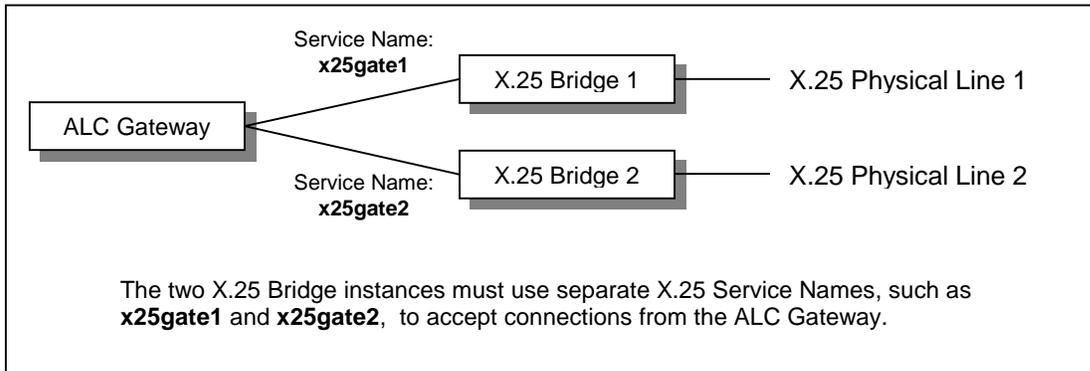
Service Name:
x25gate1

X.25 Bridge 1 — X.25 Physical Line 1

ALC Gateway

Service Name:
x25gate2

X.25 Bridge 2 — X.25 Physical Line 2

The two X.25 Bridge instances must use separate X.25 Service Names, such as **x25gate1** and **x25gate2**, to accept connections from the ALC Gateway.

The pictured ALC Gateway requires two configuration files. In the first ALC configuration file, the **X25_GATEWAY** option specifies the service name x25gate1 for the first instance of the X.25 Bridge. The second ALC configuration file specifies the service name x25gate2 for the second instance of the X.25 Bridge

Option	Parameters	
PORT_NAME	*port-name*	

This option is not required. If it is specified, the Gateway will include the specified port name in certain diagnostic messages.

Option	Parameters	
PAD_TYPE	*PAD-type-name*	Required for X.25.

This option specifies the type of X.25 PAD (Packet Assembler/Disassembler) with which the X.25 Bridge must communicate. The choices are: APOLLO, SABRE, WORLDSPAN, and AIRNZ for Air New Zealand.

Galileo X.25 connections use the Worldspan PAD type. Air New Zealand connections use IATA PVCs. The other supported PAD types use SVCs (Switched Virtual Circuits).

For more information about the various supported X.25 PAD types, see "Appendix E — X.25 PAD Type Specifications", on page 197.

Option	Parameters	Note
PVC_LCN	*LCN-number*	Required for PVCs.

This option specifies a PVC (Permanent Virtual Circuit) connection. The parameter value specifies the Logical Channel Number (LCN) for the PVC.

An X.25 connection uses either SVCs or PVCs. Use the PVC_LCN option only if the connection uses PVCs. (For SVCs, specify the **REMOTE_ADDRESS** and optionally the **LOCAL_ADDRESS**, discussed below.)

Each ALC Gateway configuration file specifies just one PVC LCN or one SVC remote address. To configure a Gateway for more than one PVC LCN or SVC Remote Address, see "*Hints for Configuring Multiple IAs on a Single X.25 Connection*", on page 118

Option	Parameters	Notes
REMOTE_ADDRESS	*X.121-address*	Required for SVCs.
LOCAL_ADDRESS	*X.121-address*	Required for Worldspan SVCs, optional for others.

For SVC connections, use **REMOTE_ADDRESS** to specify the remote X.121 address(es) for SVC Calls. Use **LOCAL_ADDRESS** to specify the local X.121 address, if required.

For purposes of SVC Calls between the Gateway and a remote endpoint, the "Local" address is the X.121 address assigned to the Gateway, and the "Remote" address is the X.121 address assigned to the remote endpoint.

Some airline hosts, such as SABRE, use the term "Hunt Group" to refer to the remote (host-side) X.121 address.

For information about the X.121 address requirements for each X.25 host type, see "***Requirements for X.121 addresses***", on page 118.

If the ALC Gateway initiates an outgoing call (through the X.25 Bridge) to a remote system, the **REMOTE_ADDRESS** specifies the "called" (destination) address, and the **LOCAL_ADDRESS** specifies the "calling" (source) address.

On Worldspan connections, the ALC Gateway checks incoming calls against the configured local and remote X.121 addresses. In that case, the Gateway accepts the call only if the "called" (destination) address matches a configured **LOCAL_ADDRESS**, and the "calling" (source) address matches a configured **REMOTE_ADDRESS**.

Each ALC Gateway configuration file specifies just one PVC LCN or one SVC remote address. To configure a Gateway for more than one PVC LCN or SVC Remote Address, see "***Hints for Configuring Multiple IAs on a Single X.25 Connection***", on page 118.

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Requirements for X.121 addresses:

● The maximum length of an X.121 address is 15 characters.

● For Worldspan X.25, the **LOCAL_ADDRESS** is required in order to accept incoming calls. For other host types, the LOCAL_ADDRESS may or may not be necessary, depending on host system requirements.

● For Worldspan, specify one, two or three Remote X.121 addresses in the configuration file for an X.25 connection.

● For host types other than Worldspan, specify only one Remote X.121 address in the configuration file for an X.25 connection.

● If the X.25 network requires a DNIC, place it at the beginning of the **REMOTE_ADDRESS** parameter value.

 (SABRE in Canada sometimes uses a DNIC of 03156. The combination of the DNIC and the **REMOTE_ADDRESS** is sometimes referred to as the "DNA".)

Hints for Configuring Multiple IAs on a Single X.25 Connection:

When configuring the ALC Gateway for use with X.25, the number of virtual circuits (PVCs or SVCs) is the same as the number of configuration files specified on the Gateway startup command line (with the **–f** command-line option).

For example, the following command starts the Gateway with three virtual circuits, one for each configuration file specified.

```
iate_server -vff -fscfg1.x25 -fscfg2.x25 -fscfg3.x25
```

The SABRE PAD type can support multiple Data IAs per virtual circuit. They can be configured by specifying multiple **DATA_IA** options in the configuration file for each circuit. A maximum of 60 TAs may be configured on each SABRE virtual circuit.

Non-SABRE PAD types support only one Data IA per virtual circuit. Each virtual circuit requires a separate configuration file, which defines one **DATA_IA** (and its associated TAs and other parameters).

For SVCs, virtual circuits are assigned from the top of the range specified by the SVC parameter, proceeding towards the bottom of the range. For example, if an SVC range of 1 through 6 is specified, the first SVC connection will use LCN 6, the second will use LCN 5, etc. The remote X.25 system will reject a call if the LCN is invalid. If the call is cleared, check with your network provider to validate the SVC range.

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Option	Parameters
USER_ID	*Network-User-ID*

This option specifies the Network User ID (NUI) optional user facility for SVC Calls
This option is used only for X.25 SVC connections that require a NUI.

Sometimes a Password is required in addition to a NUI. In that case, the Password is usually
included in the NUI field. For example, on a SABRE dial-up X.25 line, the NUI is concatenated
onto the end of the Password (with no intervening spaces or delimiters) and the resulting string
is entered into the **USER_ID** field.

Option	Parameters
CUD	*Call-User-Data* *(hexadecimal values)*

This option specifies the Call User Data for SVC Calls.

This option is used only for X.25 SVC connections that require user data
(such as Worldspan).

- For SABRE host connections, the default Call User Data sequence is:

    ```
    C1 00 00 00
    ```

- For Worldspan host connections, the default Call User Data sequence is:

    ```
    FE 12 10 A1 00 00 00 00 00
    ```

    Some Worldspan connections require a Call User Data value of `01`.

- For Apollo host connections, the default Call User Data sequence is:

    ```
    D3 54 57 4E
    ```

The Gateway does not supply any default Call User Data
for any host type other than those listed above.

- Galileo host connections also use the Worldspan PAD type.
  The required Call User Data for Galileo will probably be different
  from the Worldspan default. You will need to use the CUD option
  to specify the correct Call User Data for your Galileo connection.
  Here is an example of typical Call User Dara for Galileo:

    ```
    FE 11 00 91 00 00 00 00 00 00 00 00 01 00 00
    ```

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Option	Parameters	Default
`PLACE_INITIAL_CALL`	0 *or* 1	Default depends on host type.

This option applies only to SVCs.

`PLACE_INITIAL_CALL 1`   specifies that the ALC Gateway should initiate a call automatically after starting up.

`PLACE_INITIAL_CALL 0`   specifies that the ALC Gateway should <u>not</u> initiate a call utomatically after starting up.

By default, the Gateway initiates calls on X.25 host types other than Worldspan.

On a Worldspan X.25 connection, if the Gateway should initiate calls, use `PLACE_INITIAL_CALL 1`.   On any other type of X.25 connection, if the Gateway should <u>not</u> initiate calls, use   `PLACE_INITIAL_CALL 0`.

If the Gateway is configured <u>not</u> to initiate a call, the remote system may place the call instead.

If an IATE client (terminal, application, etc.) sends data to the airline host, and if no call is currently established, the ALC Gateway will initiate a call – regardless of the `PLACE_INITIAL_CALL` setting.

Option	Parameters	Default
`ACTIVITY_TIMER`	*minutes*	10 (Worldspan: 15)

The Activity Timer applies only to SVCs.
The Activity Timer does not apply to Apollo X.25 connections.

If the activity timer is set to a non-zero value, the Gateway clears the SVC connection after the specified number of minutes of continuous inactivity. The default is 10 minutes.

If the activity timer is set to 0, the Gateway will never clear the SVC connection because of inactivity.

Option	Parameters	Default
ATTEMPT_RECONNECT	*seconds*	0

> **Note**: This describes the **ATTEMPT_RECONNECT** option for X.25 connections.
> The **ATTEMPT_RECONNECT** option can also be configured for TCP connections,
> such as Galileo/Apollo TCP, as described on page 103.

This option specifies whether and when to restore a connection to the X.25 Bridge,
after a previous connection has been lost.

If this option is set to a non-zero value, the ALC Gateway will attempt to reconnect to the
X.25 Bridge, when the specified number of seconds have passed after disconnection.

If this option is set to zero, the ALC Gateway will not attempt to reconnect to the X.25 Bridge.
This is the default.

Regardless of how this option is configured, the ALC Gateway will attempt to establish a
connection to the X.25 Bridge whenever a client sends data to the Gateway for transmission
to the host.

Option	Note
FREEZE_INITIAL_ADDRESS	For SABRE only.

This option applies only to SABRE X.25 connections.

This option instructs the Gateway to ignore the "calling" address in the "Accept" packet.
If this option is <u>not</u> specified, the Gateway recognizes the Accept packet's calling address
for purposes of "call redirection".

Option	Parameters	Note
RSID_STRING	*alphanumeric*	For SABRE (Level 6).

This option applies only to SABRE X.25 connections, Level 6.

This option specifies the SABRE RSID. The required RSID should be found in the
configuration instructions obtained from SABRE. The RSID may contain letters and numbers.
All letters should be capitalized.

Option	Note
`IA_NATIVE_8_BIT`	For Worldspan and Galileo.

This option is for use with Galileo X.25 connections.
(Note: Galileo X.25 connections use the Worldspan PAD type.)

This option affects the Gateway's processing of IA values in messages sent to and from the host.
If this option is configured, the Gateway treats transmitted or received IA values as full 8-bit
values. If this option is not configured, the Gateway treats IA values as 6-bit ALC.

Option	Note
`OVERRIDE_DEFAULT_PVC_IA0`	Air New Zealand only.

This option applies only to Air New Zealand X.25 connections.

If this option is configured, the ALC Gateway will include the configured IA value in messages
to the Air New Zealand host.

If this option is not specified, the Gateway uses an IA value of 0 (zero) in messages to the host,
regardless of the actual configured IA.

*PROTOCOL DESCRIPTION

The following options can be specified in the Protocol Description section of the ALC Gateway configuration file. Any option not configured will revert to its default value, as shown in the table below.

Most of these options (except for **SUPPORT_LMT**) apply to <u>ALC host connections only</u>, and are not used for TCP or X.25 connections. However, some of these options are similar to others specified in the X.25 Bridge configuration file.

Option	Parameters	Default	Notes
± **DSR_REQUIRED**		–	
± **DCD_REQUIRED**		–	
± **CTS_REQUIRED**		–	
± **TA_POLLING_ENABLED**		–	For SABRE only.
± **AUTO_ANSWER**		+	
± **SEGMENTATION**		*Default depends on host type.*	
± **SYNCS_BETWEEN**		*Default depends on host type.*	
± **LIMIT_SEGS_PER_POLL**		*Default depends on host type.*	
MAX_SEGS_PER_POLL	*number*	30	
DEFAULT_SEG_SIZE	*number*	98	
SUPPORT_LMT	0 *or* 1	1	For Galileo/Apollo TCP.
NOTIFICATION_DELAY	*seconds*	3	For S-bus Gateways only.
TXWAITCOUNT	*number*	0	For S-bus Gateways only.

Following are explanations of each option listed above.

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Option	Default
± **DSR_REQUIRED**	–
± **DCD_REQUIRED**	–
± **CTS_REQUIRED**	–

These options specify whether the indicated signals are required on the modem line. Required signals must be active in order for the INSCC-QP onboard software to communicate with the airline host.

The '+' setting specifies that the signal is required.
The '–' setting specifies that the signal is not required.

Like the other options in this section, these options apply only to ALC host connections, not X.25 or TCP connections. For equivalent X.25 Bridge configuration options, see "**X.25 Bridge Configuration: Details**".

Option	Default	
± **TA_POLLING_ENABLED**	–	For SABRE only.

This option applies to <u>SABRE ALC</u> connections only.

This option specifies whether or not the ALC Gateway and INSCC-QP onboard software should support "TA Polling" on a SABRE line. Leave this option disabled unless otherwise instructed by the airline network provider. TA Polling is used in some instances where an IA is not dedicated to a single terminal cluster.

Option	Default
± **AUTO_ANSWER**	+

This option works in conjunction with the ***PRINTER ANSWERBACKS** and ***CRT ANSWERBACKS** sections described below. The Auto-Answer option specifies whether or not the Gateway should send an automatic acknowledgment for each data segment received from the host.

If **AUTO_ANSWER** is enabled, the Gateway will acknowledge each received segment that requires acknowledgment immediately after forwarding it to a destination terminal/printer or application program. This means that the Gateway will not wait for acknowledgment from the client, but will instead generate an acknowledgment on its own.

In general, the **AUTO_ANSWER** option is not recommended. It must not be used on protected TA objects, where a printer or application should generate end-to-end acknowledgement for each protected segment.

Option	Default
± **SEGMENTATION**	*Default depends on host type.*

This option specifies whether or not messages sent <u>to</u> the host should be broken into <u>segments</u>.

If this option is set to '+', the onboard software will break messages into segments before transmitting them to the ALC host. If this option is set to '–', the onboard software will send complete messages without breaking them into segments.

By default, segmentation is enabled for SABRE connections, and disabled for other host types.

The segmentation option only affects messages sent <u>to</u> the host. Messages received <u>from</u> the host may be segmented, even if this option is set to '–'.

If segmentation is enabled, other options control the handling of segments. See **DEFAULT_SEG_SIZE**, **LIMIT_SEGS_PER_POLL**, and **MAX_SEGS_PER_POLL**, on page 126.

Option	Default
± **SYNCS_BETWEEN**	*Default depends on host type.*

This option specifies whether or not the INSCC-QP onboard software should insert an ALC synchronization sequence (Sync1 Sync2) between successive segments sent to the host in response to an ALC poll.

This option is ignored if message segmentation is not enabled.
(See **SEGMENTATION**, on page 125.)

Option	Parameters	Default
± **LIMIT_SEGS_PER_POLL**		+ (for SABRE), – (for others).
MAX_SEGS_PER_POLL	*number*	30

These options specify limits on the maximum number of data message segments that the INSCC-QP onboard ALC software will send to the host, in response to a single poll.

If **LIMIT_SEGS_PER_POLL** is set to '+' but **MAX_SEGS_PER_POLL** is not specified, then the limit will be 30 segments per poll. If **LIMIT_SEGS_PER_POLL** is set to '+' and **MAX_SEGS_PER_POLL** specifies a number, that number will be the maximum number of segments sent for each poll.

These options are ignored if message segmentation is not enabled.
(See **SEGMENTATION**, on page 125.)

Option	Parameters	Default
DEFAULT_SEG_SIZE	*number*	98

This option specifies the maximum length (in characters) of ALC data message segments that the INSCC-QP onboard software sends to the host.

This option is ignored if message segmentation is not enabled.
(See **SEGMENTATION**, on page 125.)

Option	Parameters	Default	
SUPPORT_LMT	*number*	1	For Galileo/Apollo TCP.

This option applies to <u>Galileo/Apollo TCP</u> connections only.

This option specifies whether or not the ALC Gateway should use the LMT <u>Extended Acknowledgment</u> protocol, in communications with the Galileo or Apollo TCP host.

By default, the ALC Gateway <u>will</u> use Extended Acknowledgments on a Galileo or Apollo TCP host connection.   If this option is configured with a parameter of 0, the ALC Gateway will <u>not</u> use Extended Acknowledgments.

Option	Parameters	Default
NOTIFICATION_DELAY	*seconds*	3

This option is supported on <u>Sun S-bus</u> systems only.   It is not supported on Sun systems with the PCI bus; and it is not supported on Windows systems.

This option specifies how long the INSCC-QP onboard software should wait before informing the Gateway that the ALC host communications have failed. ALC communications failures can occur because the host has stopped polling, or because the Gateway/host connection has been disrupted.

If communications resume before the specified delay time, the onboard software does not notify the Gateway that the failure occurred. A reasonably short delay time allows the Gateway to 'ignore' brief connection outages.

Option	Parameters	Default
TXWAITCOUNT	*number*	0

This option is supported on <u>Sun S-bus</u> systems only.   It is not supported on Sun systems with the PCI bus; and it is not supported on Windows systems.

This option specifies a transmission wait count. For some hosts, this option is required in order to regulate the response rate. Do not use this option unless it is suggested by InnoSys or the airline host/network provider.

*PRINTER ANSWERBACKS

The ***PRINTER ANSWERBACKS** section may contain up to four lines, each specifying a type of
EOM character which requires the ALC Gateway to send a printer answerback message.

When the Gateway sends a printer data message segment to a printer client, if the segment
has one of the specified EOM characters, the Gateway will send an answerback
(automatically if auto-answer is enabled, or else after receiving acknowledgment from the
printer client).

One or more of the following EOM types may be specified, one per line.

```
EOMC
EOMI
EOMU
EOMPB
```

The default printer answerbacks are **EOMI** and **EOMC**.

*CRT ANSWERBACKS

The ***CRT ANSWERBACKS** section may contain up to four lines, each specifying a type of EOM
character which requires the ALC Gateway to send a CRT answerback message.

Normally, CRT answerbacks are not used. *CRT ANSWERBACKS should not be configured unless
the airline host requires CRT answerbacks.

When the ALC Gateway sends a CRT data message segment to a terminal client, if the segment
has one of the specified EOM characters the Gateway will send an answerback (automatically if
autoanswer is enabled, or else after receiving acknowledgment from the terminal client).

One or more of the following EOM types may be specified, one per line.

```
EOMC
EOMI
EOMU
EOMPB
```

The default set of CRT answerbacks depends upon the host type.

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*IAS

The contents of the ***IAS** section vary depending on the type of host connection
(TCP, ALC, or X.25).

For ALC connections:

The following options can be specified in the IAS section for ALC connections.

Option	Parameters	Notes
DATA_IA	*IA (in hexadecimal)*	Required.
POLLING_IA	*IA (in hexadecimal)*	Optional.

At least one **DATA_IA** option line is required. Up to 20 Data IAs may be configured for each
INSCC-QP card. (Current Gateway releases may support up to 20 IAs per configuration file.)

The parameter value is specified in hexadecimal.
For SABRE, the parameter is a 4-digit LNIA value (comprising a Line Number and an IA).
For ALC connections other than SABRE, the parameter is a 2-digit ALC IA value.

POLLING_IA applies only to ALC host connections.
If a **POLLING_IA** is configured:

- No more than one Polling IA may be specified.
- The **DATA_IA** option(s) must precede the **POLLING_IA** in the configuration file.
- Only polls to the **POLLING_IA** will be answered.
- The **POLLING_IA** value must match one of the **DATA_IA** values.
- The **DATA_IA** option must precede the **POLLING_IA** option in the configuration file.
- The airline host must be specifically configured to support the Polling IA.
  (Not all hosts can support a Polling IA.)
- The IA in each inbound data message (to the host) will be the IA associated
  with the client object which generated the message.

If **POLLING_IA** is not configured, the ALC Gateway will answer polls for each **DATA_IA** as it is
polled. A poll to any **DATA_IA** will result in messages from clients associated with that IA
being sent to the host.

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*IAS *(Continued)*

Following is an example for ALC, with three **DATA_IA** option lines specifying Data IAs 01, 02, and 03, and Polling IA 01. The leading zeroes are optional.

```
*IAS
DATA_IA 01
DATA_IA 02
DATA_IA 03
POLLING_IA 01
```

For X.25 connections:

For X.25, the format of the ***IAS** section varies by PAD type.

For the <u>SABRE</u> and <u>Air New Zealand</u> PAD types, specify each **DATA_IA** as a 4-digit <u>LNIA</u> value. For example, to specify Line 01 and IA 02:

```
*IAS
DATA_IA 0102
```

> <u>Note</u>:
> The complete LNIA parameter value must be exactly 4 hex digits long
> (padded with leading zeroes if necessary). There is no blank space between
> the Line Number (01 in this example) and the IA (02 in this example).

For the <u>Apollo</u>, <u>Galileo</u>, and <u>Worldspan</u> PAD types, specify each **DATA_IA** as a 1-digit or 2-digit <u>IA</u>. For example, to specify IA 07 and IA 20:

```
*IAS
DATA_IA 7
DATA_IA 20
```

POLLING_IA is not used for X.25 host connections.

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*IAS *(Continued)*

For TCP host connections:

For TCP host connections, the format of the **DATA_IA** parameter depends on the host type.

For <u>SABRE</u>, specify each **DATA_IA** as a 4-digit LNIA value.
For example, to specify Line 01 and IA 02:

```
DATA_IA 0102
```

> Note:
> The complete LNIA parameter value must be exactly 4 hex digits long
> (padded with leading zeroes if necessary). There is no blank space between
> the Line Number (01 in this example) and the IA (02 in this example).

For <u>Worldspan</u> (Extended MATIP) TCP, the **DATA_IA** option defines a <u>GCID</u> value.
These are 8-digit hexadecimal values. Only one GCID (one **DATA_IA** option)
can be configured per configuration file for Worldspan MATIP. For example:

```
*IAS
DATA_IA 00034A1
```


For other TCP host types, specify each **DATA_IA** as a 1-digit or 2-digit <u>IA</u>.
These are 2-digit hexadecimal values. For example, to specify IA 07 and IA 20:

```
*IAS
DATA_IA 7
DATA_IA 20
```


POLLING_IA is not used for TCP host connections.

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*BROADCAST TAS

In the optional *BROADCAST TAS section, a Broadcast TA can be defined for each Data IA
on an ALC or X.25 line.

Since this section includes *only* Broadcast TA definitions, there is no need for a label on each
line. For each broadcast TA, enter a pair of values specifying the Data IA and the Broadcast TA,
one pair per line. Specify the IAs as ALC values, in hexadecimal.

For example, to define Broadcast TA 08 on IA 01:

```
*BROADCAST_TAS
01 08
```

Do not define more than one Broadcast TA for any given Data IA. The Broadcast TA
option line does not define a Data IA. It refers to a Data IA that has already been defined,
and defines a Broadcast TA to be associated with it. Each Data IA must be defined on a
DATA_IA line in the *IAS section.

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*LINE NUMBERS

The optional ***LINE NUMBERS** section defines Line Numbers for use in addressing
data messages on an X.25 network.

The ***LINE NUMBERS** section is only used with the Apollo, Galileo, and Worldspan PAD types.
For each line number, enter a pair of values specifying the Data IA and the Line Number,
one pair per line. Specify them as ALC values, in hexadecimal.

For example, to define Line Number 92 for IA 1C:

```
1C 92
```

The ALC Gateway places the configured Line Number into the first byte of the address sequence
that begins each data message to the X.25 host for that Line/IA.

*OBJECT CONNECTION DEFAULTS

The ***OBJECT CONNECTION DEFAULTS** section specifies three parameters which affect
communications between the ALC Gateway and each attached client application. These settings
take effect immediately after establishment of each object connection, but an attached client
application can change these settings (through IATE API function calls).

Option	Parameters	Default	Notes
± **HEARTBEAT_REQUIRED**		–	
TA_TIMEOUT	*minutes*	5 minutes	(use 0 to disable)
API_THROTTLE_INTERVAL	*seconds*	1 second	(use 0 to disable)

Following are explanations of each option listed above.

Option	Default
± **HEARTBEAT_REQUIRED**	–

If this option is set to '+', the ALC Gateway will expect "heartbeat" or data messages from each
attached client at least once every 60 seconds. If the ALC Gateway does not receive an expected
heartbeat within 60 seconds, it will disconnect the object.

If this option is disabled (set to '–') or not specified, the Gateway will not expect heartbeat
messages from the client, unless the client begins to send them.

When the Gateway expects heartbeats, the client application should send heartbeats and/or
data messages at periodic intervals no longer than 60 seconds. If 60 seconds elapse with no
message received from the client, the Gateway disconnects the client.

When expecting heartbeats, the Gateway does not use the **TA_TIMEOUT** option, because the
60-second heartbeat timeout overrides it.

The purpose of **TA_TIMEOUT** is to protect against idle applications keeping TAs
occupied. In contrast, the purpose of **HEARTBEAT_REQUIRED** is to detect a "crashed"
application's failure to disconnect from the Gateway.

Option	Parameters	Default	Note
`TA_TIMEOUT`	*minutes*	5 minutes	(use 0 to disable)

This option specifies the "TA Timeout" which the Gateway uses to automatically disconnect idle clients. If a client has not sent any messages for the specified amount of time, the Gateway disconnects that client (subject to the exceptions described below).

If `TA_TIMEOUT` is set to 0, and `HEARTBEAT_REQUIRED` is disabled or not specified, the ALC Gateway will not disconnect any object due to inactivity.

If the `HEARTBEAT_REQUIRED` option is enabled (set to '+'), or if the client has sent a heartbeat message, the Gateway expects the client to send subsequent heartbeats at intervals no longer than 60 seconds. When expecting heartbeats, the Gateway does not use the `TA_TIMEOUT` option, because the 60-second heartbeat timeout overrides it.

The purpose of the `TA_TIMEOUT` option is to protect against idle applications keeping TAs occupied. In contrast, the purpose of the `HEARTBEAT_REQUIRED` is to detect a "crashed" application's failure to disconnect from the Gateway.

Option	Parameters	Default	Note
`API_THROTTLE_INTERVAL`	*seconds*	1 second	(use 0 to disable)

The "API Throttle Interval" defines the minimum time period between any client application's consecutive message transmissions, through the Gateway to the airline host.

The Gateway enforces the API Throttle Interval if this option is set to 1 second or more.

After any client sends a message through the Gateway to the host, that client is not allowed to send another message until the interval has elapsed. If the client sends another message before this interval has elapsed, the Gateway will reject the message. (The client will receive **Error -2103**, **APIOverrunErr**, as described in the **IATE API documentation**.)

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*OBJECT DEFINITIONS

The ***OBJECT DEFINITIONS** section contains client object definitions. Each client object
corresponds to a TA (Terminal Address) or DA (Device Address) in the airline host's
configuration. At least one client object must be defined.

Each object definition occupies one line within the ***OBJECT DEFINITIONS** section.
The format of the object definitions will depend on the type of airline host connection.
It depends on both the protocol (TCP, ALC, or X.25) and the particular airline or network type.

Because ALC host connections use the most basic format for object definitions,
we will explain this format first. On subsequent pages we will discuss the formats for
other host types, and those discussions will refer to some the terms explained here.

For most **ALC host connections**, the Object Definition format is:

```
IA TA          Object-Type     Object-Name     Group-Name
```

The IA is the Interchange Address that is associated with the object.
It must match one of the IA values defined by a **DATA_IA** option in the *IAS section.

The TA is the Terminal Address for the object. The TA value is unique to this object within the
configuration file. Every object defined under one IA must be assigned a different TA.

The Object Type is one of the following:

```
TERMINAL
PRINTER
TERMINAL_API
PRINTER_API
```

The TERMINAL_API and PRINTER_API object types support dynamic linking from programs
using the IATE API. For example, the dynamic-linking function **APILinkToDyCrt** will only
connect to TERMINAL_API objects, whereas **APILinkToName** will connect to any available
TERMINAL or TERMINAL_API object. Refer to the API manual for more information.

The Object Name must not contain spaces. Each object name in the configuration file must be
unique (across all configuration files in use).

The Group Name associates multiple TA objects into one "group". Clients using the IATE API function can use the Group Name to connect to any object in the group.

For every object that belongs in a given group, that group's name should be specified on the object's line in the configuration file. An object that is not a member of any group should have two asterisks `**` in place of the Group Name.

For the sake of clarity, it may be appropriate to list all of a given group's objects contiguously in the configuration file, but this is not required.

An Object Name must be specified regardless of whether or not a Group Name is specified.

For **Galileo/Apollo X.25** host connections, the Object Definition format is:

```
IA TA GTID   Object-Type    Object-Name   Group-Name
```

The GTID is the Global Terminal Identifier for the object. It is 8 characters long.

For **Galileo/Apollo TCP** host connections, the Object Definition format is:

```
IA TA GTID   Object-Type    Object-Name   Group-Name   Type  LDV  LDVCHG
```

The Gateway configuration procedure for Galileo/Apollo TCP differs from the procedures for other host types. For Galileo/Apollo TCP, the **gconfig** utility assists in generating the Gateway configuration file.

The Type code, LDV, and LDVCHG contain information that the **gconfig** utility received from the Galileo/Apollo Configuration Server. The Type code is a number that corresponds to the Object-Type (terminal or printer).

For **SABRE X.25** host connections, the Object Definition format is:

```
LNIATA        Object-Type    Object-Name   Group-Name
```

The SABRE LNIATA is the combination of the Line Number, the IA, and the TA for the object. It is 6 characters long.

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For **SABRE TCP** host connections, the Object Definition format is:

```
Type  LNIATA-or-CLASS  Object-Type  Object-Name  Group-Name  Use-Keepalives
```

The first field in this format, the <u>Type</u> code, contains a keyword: either "**CLASS**" or "**LNIATA**".

CLASS and **LNIATA** specify the type of connection that the Gateway will request from the SABRE Load Balancer:

- If **LNIATA** is specified, the Gateway will request the specified LNIATA (Line number, IA, and TA) for the new connection.

- If **CLASS** is specified, the Gateway will request a connection of the specified <u>class</u>; and the SABRE Load Balancer will assign an LNIATA to the connection.

The second field contains either the Class name (for a **CLASS** definition) or the LNIATA value (for a **LNIATA** definition).

A LNIATA value is the combination of the Line Number, the IA, and the TA for an object; it is 6 characters long.

The rightmost field specifies whether or not to use Keepalive messages. This field contains a number which can be either zero or nonzero. If it is nonzero, the Gateway will request Keepalives for this object.

For **Worldspan (Extended MATIP) TCP** host connections, the Object Definition format is:

```
GCID    DA    Object-Type    Object-Name    Group-Name
```

The GCID is an 8-digit hexadecimal value. It must match one of the GCID values defined by a **DATA_IA** option in the ***IAS** section.

The DA is a 2-digit hexadecimal value, unique to the object being defined. The DA is analogous to an ALC TA.

For **Air New Zealand X.25** host connections, the Object Definition format is:

```
TA             Object-Type    Object-Name    Group-Name
```

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*IPC CONNECTION
*PORT TABLE AND MULTIPLEXING CONTROL

These sections are used in <u>Galileo/Apollo TCP</u> configurations only. The **gconfig** utility writes these sections to the configuration file.

If these sections are present in your configuration file for Galileo/Apollo TCP,
<u>please do not modify or remove any of the text in these sections</u>.
After the **gconfig** utility writes them to the file, these sections and the
options within them should be left unchanged.

The `*IPC CONNECTION` section contains the `TAG151` option, which specifies IPC addresses.
The `*PORT TABLE AND MULTIPLEXING CONTROL` section contains the `TAG190` option, which
specifies network port numbers and associated information. The **gconfig** utility obtains all of
this information from the Configuration Server, and writes it to the configuration file.
The administrator should not edit these entries in the configuration file.

*X25 GATEWAY CONFIGURATION

The `*X25 GATEWAY CONFIGURATION` section is used only in
<u>combined ALC/X.25 configuration files</u>.

A combined ALC/X.25 configuration file specifies options for both the ALC Gateway and the
X.25 Bridge.
Such a file can be used with both the ALC Gateway and the X.25 Bridge – so that a separate
X.25 configuration file is not necessary.

The `*X25 GATEWAY CONFIGURATION` section marks the location in the file
where the ALC options end and X.25 options begin. This is the form of the
combined ALC/X.25 configuration file:

```
... ALC configuration sections and options ...
...
*X25 GATEWAY CONFIGURATION
... X.25 configuration options ...
...
```

The combined ALC/X.25 configuration facility is provided for convenience.
Combined configuration files are useful for multiple X.25 connections, as they make it easier
to keep track of the correspondence between each X.25 connection's configuration options
for both the ALC Gateway and the X.25 Bridge.

X.25 Bridge Configuration: Details

To establish an X.25 connection, the ALC Gateway works with the X.25 Bridge. Like the ALC Gateway, the X.25 Bridge requires configuration options specified in a file.

The X.25 Bridge configuration options are listed below. These options belong in the X.25 Bridge configuration file, or in the "***X25 GATEWAY CONFIGURATION**" section of a combined ALC/X.25 configuration file.

Some options require additional parameters. Numeric or text parameters are listed in italics. Numeric parameters use decimal numbers, except where specified as hexadecimal.

Parameters marked "±" indicate switches: Use '+' to turn the option on, or '–' to turn it off. A switch option configured without '+' or '–' will be turned on by default, as if '+' had been specified.

Option for the X.25 Bridge's communications with the ALC Gateway:

Option	Parameters	Default
SERVICE	*name*	x25gate

Options for INSCC-QP PCI Board and Port selection:

Option	Parameters	Default
BOARD_NUMBER	*number*	0
PORT_NUMBER	*number*	0

Physical port connection options:

Option	Parameters	Default
± **INTERNAL_CLOCK**		*(Default is external clocking)*
LINE_SPEED	*baud-rate*	
± **CTS**		–
± **DCD**		–
± **DSR**		–
± **FLAG**		–

Logical Channel ranges for PVCs and SVCs:

Option	Parameters	Default
PVC	*low-LCN high-LCN*	0 0
SVC	*low-LCN high-LCN* *(decimal values)*	0 0

Packet-level options:

Option	Parameters	Default
PACKET_SIZE	*number*	256
WINDOW_SIZE	*number*	2
± **PACKET_SIZE_NEGOTIATION**		+
± **WINDOW_SIZE_NEGOTIATION**		–
± **EXTENDED_PACKET**		–

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LAPB options:

Option	Parameters	Default
DCE or **DTE**		DTE
± **START_SABM**	*number*	+
± **EXTENDED_LAPB**	*number*	−

LAPB counter values:

Option	Parameters	Default
N2	*number*	2
K	*number*	7

LAPB timer values:

Option	Parameters	Default
T1	*seconds*	10
T2	*milliseconds*	1500
T3	*seconds*	10
T4	*seconds*	10
T10	*seconds*	60
T11	*seconds*	120
T12	*seconds*	60
T13	*seconds*	60
T24	*seconds*	0

Following are explanations of each option listed above.

Option	Parameters	Default
SERVICE	*name*	`x25gate`

This option specifies the TCP/IP service on which the X.25 Bridge listens for connections from the ALC Gateway.

The specified name must match an entry in the system's network "**services**" file.
See the "**Installation**" section for more information about the "**services**" file, and about the default entries that the IATE software installation program places in the file.

The default service name (`x25gate`) is usually correct for a single X.25 physical line.
Multiple X.25 physical lines require separate service names. Each physical line requires a separate instance of the X.25 Bridge, a separate X.25 Bridge configuration file, and a separate ALC Gateway configuration file (or a combined ALC/X.25 configuration file).

The X.25 and ALC configurations, for a given physical line, specify a network service name or network port number corresponding to that X.25 physical line. The ALC Gateway uses that network service name or port number to connect to the X.25 Bridge instance which uses that physical line. ALC Gateway configuration files use the **X25_GATEWAY** option to specify this network service name or port number, whereas X.25 Bridge configuration files use the **SERVICE** option to specify it.

Example:

In the following example, each pictured X.25 Bridge uses a separate configuration file.
The **SERVICE** options in the two X.25 Bridge configuration files specify different X.25 service names, such as `x25gate1` and `x25gate2`.
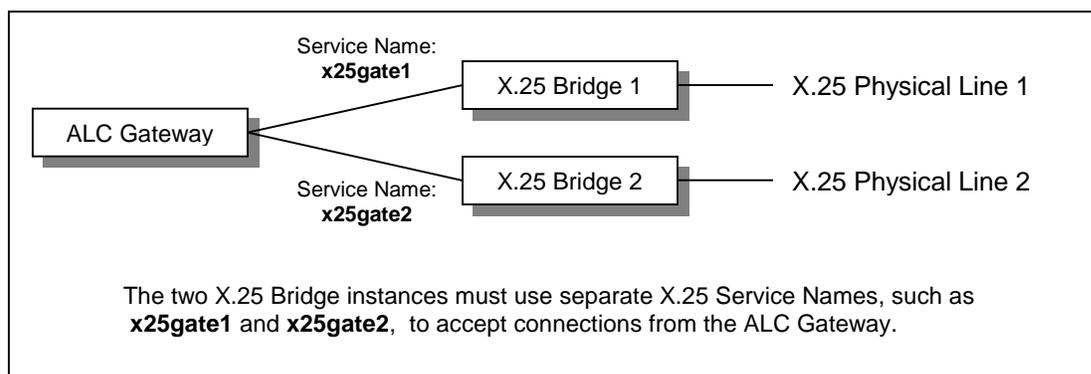
The two X.25 Bridge instances must use separate X.25 Service Names, such as
x25gate1 and **x25gate2**, to accept connections from the ALC Gateway.

The pictured ALC Gateway requires two configuration files. In the first ALC configuration file, the **X25_GATEWAY** option specifies the service name `x25gate1` for the first instance of the X.25 Bridge. The second ALC configuration file specifies the service name `x25gate2` for the second instance of the X.25 Bridge.

Option	Parameters	Default
BOARD_NUMBER	*number*	0

> **Note**: This describes the **BOARD_NUMBER** option for <u>X.25 Bridge</u> configuration.
> For <u>ALC</u> connections, configure the **BOARD_NUMBER** in the ALC Gateway configuration file, as explained on page 111.

This option is required when there are multiple INSCC-QP PCI boards in the PC on which the Gateway is running. The first board is #0, the second board is #1, etc. The correspondence of board numbers to PCI slots depends on the arrangement of the slots in the particular PC.

For Windows 2000, that correspondence also depends on the order of plug-and-play enumeration. Since the order of the boards may not be immediately obvious to the eye, it may be necessary to experiment with the **BOARD_NUMBER** option to determine which board is #0, etc.

Option	Parameters	Default
PORT_NUMBER	*number*	0

> **Note**: This describes the **PORT_NUMBER** option for <u>X.25 Bridge</u> configuration.
> For <u>ALC</u> connections, configure the **PORT_NUMBER** in the ALC Gateway configuration file, as explained on page 111.

This option specifies which serial port this configuration will use on the INSCC-QP board. The default is the first port on the board (#0). This option is required in configurations that use any other port (other than the first one on the board). For multi-port Gateway operation, each configuration file uses the **PORT_NUMBER** option to specify the port to which that configuration refers.

The available port numbers are 0, 1, 2 and 3. The INSCC-QP card has one 80-pin physical connector, which supports multiple port connections through a special adapter cable. On the InnoSys supplied cable, the connector labeled "Port 1" corresponds to PORT_NUMBER 0, the connector labeled "Port 2" corresponds to PORT_NUMBER 1, etc.

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Option	Parameters	Default
± `INTERNAL_CLOCK`		*(Default is external clocking)*

This option controls the **X.25 onboard's** serial interface line clocking.

The X.25 serial interface on the INSCC-QP PCI board can use either internal clocking or external clocking. If this option is set to '+', the interface uses internal clocking.
If this option is set to '-', the interface uses external clocking.

With internal clocking, the INSCC-QP PCI board supplies the serial clock signal.
With external clocking, the connected modem supplies the clock signal.

If this option is set to '+' for internal clocking, the `LINE_SPEED` option must also be configured, to specify the baud rate for the line clock.

Note: The term "**X.25 onboard**" refers to the InnoSys X.25 serial line-driver software that runs on the INSCC-QP PCI board.

Option	Parameters	Default
`LINE_SPEED`	*baud-rate*	

This option sets the baud rate for internal clocking.
Configure this option only if `INTERNAL_CLOCK` is also configured.

The supported rates for internal clocking are:
1200, 2400, 4800, 7200, 9600, 19200, 38400, 56000, and 64000 bps.

(Do not specify this option for external clocking.
Note: Externally clocked line speeds should not exceed 64000 bps.)

Option	Parameters	Default
± CTS		–

This option controls the **X.25 onboard's** sensitivity to the CTS (Clear-To-Send)
signal from the modem.

If this option is set to '+', the X.25 onboard considers the X.25 line unavailable when the CTS
signal from the modem is not active. If this option is set to '–', the X.25 Bridge ignores the CTS
signal state.

Option	Parameters	Default
± DCD		–

This option controls the **X.25 onboard's** sensitivity to the DCD (Data-Carrier-Detect)
signal from the modem.

If this option is set to '+', the X.25 onboard considers the X.25 line unavailable when the DCD
signal from the modem is not active. If this option is set to '–', the X.25 Bridge ignores the DCD
signal state.

Option	Parameters	Default
± DSR		–

This option controls the **X.25 onboard's** sensitivity to the DSR (Data-Set-Ready)
signal from the modem.

If this option is set to '+', the X.25 onboard considers the X.25 line unavailable when the DSR
signal from the modem is not active. If this option is set to '–', the X.25 Bridge ignores the DSR
signal state.

Option	Parameters	Default
± **FLAG**		–

This option controls the **X.25 onboard's** sensitivity to received X.25/LAPB Flags.
(The term "flags" describes the bit pattern normally issued on a connected but idle X.25 line.)

If this option is set to '+', the X.25 onboard considers the X.25 line unavailable when Flags are not being received. If this option is set to '–', the X.25 Bridge does not consider the Flag receipt status to determine the X.25 line status.

Option	Parameters	Default
PVC	*low-LCN high-LCN*	0 0

This option sets the LCN (Logical Channel Number) range for PVCs. The first parameter is the lower LCN number for the PVC range, and the 2nd parameter is the higher LCN number for the range. These values are in decimal.

LCNs can range from 1 to 4096. The default range "0 0" for PVCs means that no PVCs are available by default.

Option	Parameters	Default
SVC	*low-LCN high-LCN* *(decimal values)*	0 0

This option sets the LCN (Logical Channel Number) range for SVCs. The first parameter is the lower LCN number for the PVC range, and the 2nd parameter is the higher LCN number for the range. These values are in decimal.

Logical channel numbers (LCNs) range from 1 to 4096. Contact the airline host or X.25 network administrator to determine the correct ranges required for the PVC and/or SVC channels that should be used.

When the DCE (usually the host) originates a call, it uses on the lowest available LCN of the SVC. When the DTE (usually the Gateway) originates a call, it uses the highest available LCN.

Up to 20 Virtual Circuit channels can be defined on one INSCC-QP card.
For SABRE connections using SVCs, the SVC range must include at least two SVCs.

Option	Parameters	Default
PACKET_SIZE	*number*	256

This option specifies the size of the information portion of input and output packets. The default is 256 octets. The supported values are: 16, 32, 64, 128, 256, 512, 1024, 2048, and 4096. Packet sizes larger than 4096 are not supported. (See also: PACKET_SIZE_NEGOTIATION)

Option	Parameters	Default
± PACKET_SIZE_NEGOTIATION		–

If this option is set to '+', the **X.25 onboard** permits Packet Size Negotiation procedures to change the packet size, during SVC connection establishment. The PACKET_SIZE option sets the maximum size permitted.

If this option is set to '–', the X.25 onboard rejects Packet Size Negotiation. In this case, the X.25 onboard enforces the packet size configured by the PACKET_SIZE option (even if the remote X.25 attempts to negotiate a different size).

Option	Parameters	Default
WINDOW_SIZE	*number*	2

This option specifies the "Packet Window Size". This determines the maximum number of input or output packets outstanding before acknowledgment. The default is 2. The supported window sizes are: 1 to 8 for the normal packet mode, or 1 to 128 for Extended packet mode (if the EXTENDED_PACKET option is configured). (See also: WINDOW_SIZE_NEGOTIATION)

Option	Parameters	Default
± WINDOW_SIZE_NEGOTIATION		–

If this option is set to '+', the **X.25 onboard** permits Window Size Negotiation procedures to change the packet-window size, during SVC connection establishment. The WINDOW_SIZE option sets the maximum size permitted.

If this option is set to '–', the X.25 onboard rejects Window Size Negotiation. In this case, the X.25 onboard enforces the Packet Window Size configured by the WINDOW_SIZE option (even if the remote X.25 attempts to negotiate a different window size).

Option	Parameters	Default
± **EXTENDED_PACKET**		–

If the remote X.25 requires Extended (Modulo 128) sequence numbering at the Packet level, set this option to '+'. Otherwise set it to '–' or leave it unspecified.
(See also: **EXTENDED_LAPB**)

Option	Parameters	Default
DCE		DTE

If this option is set to '+', the local X.25 LAPB address is logical DCE.
If this option is set to '–', the local X.25 LAPB address is logical DTE.

(Use either the **+DCE** or **-DTE** option to specify DCE operation.
Use either the **+DTE** or **-DCE** option to specify DTE operation.
Do not use both the **DCE** and **DTE** options together in the same configuration file.)

Option	Parameters	Default
DTE		DTE

If this option is set to '+', the local X.25 LAPB address is logical DTE.
If this option is set to '–', the local X.25 LAPB address is logical DCE.

(Use either the **+DCE** or **-DTE** option to specify DCE operation.
Use either the **+DTE** or **-DCE** option to specify DTE operation.
Do not use both the **DCE** and **DTE** options together in the same configuration file.)

Option	Parameters	Default
± **START_SABM**	*number*	+

This option determines which LAPB command code the **X.25 onboard** will transmit
to initiate communications on the X.25 line. The correct setting depends upon
which LAPB command the remote X.25 is configured to receive.

If this option is set to '+':
The X.25 onboard sends SABM (Set Asynchronous Balanced Mode),
or SABME (if **+EXTENDED_LAPB** is in effect), to initiate LABP communications.

If this option is set to '–':
The X.25 onboard transmits DM (Disconnect Mode). This requests the remote X.25 to send
SABM or SABME to establish further LAPB communications. (If the X.25 onboard receives
DM from the remote X.25, then the X.25 onboard sends SABM or SABME to establish further
LAPB communications.)

Option	Parameters	Default
± **EXTENDED_LAPB**	*number*	–

If the remote X.25 requires Extended (Modulo 128) sequence numbering at the LAPB level,
set this option to '+'. Otherwise set it to '–' or leave it unspecified.
(See also: **EXTENDED_PACKET**)

Option	Parameters	Default
N2	*number*	2

This option sets the value for the LAPB counter N2.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
K	*number*	7

This option sets the value for the LAPB counter K.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T1	*seconds*	10

This option sets the value for the LAPB counter T1.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T2	*milliseconds*	1500

This option sets the value for the LAPB counter T2.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T3	*seconds*	10

This option sets the value for the LAPB counter T3.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T4	*seconds*	10

This option sets the value for the LAPB counter T4.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T10	*seconds*	60

This option sets the value for the LAPB counter T10.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T11	*seconds*	120

This option sets the value for the LAPB counter T11.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T12	*seconds*	60

This option sets the value for the LAPB counter T12.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T13	*seconds*	60

This option sets the value for the LAPB counter T13.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

Option	Parameters	Default
T24	*seconds*	0

This option sets the value for the LAPB counter T24.
Refer to X.25/LAPB protocol documentation for information on LAPB counters and timers.

The Gateway Monitor

The IATE Gateway Monitor is a diagnostic tool which reports the ALC Gateway's host connections and client connections.

Start at least one instance of the ALC Gateway before starting the Gateway Monitor. To start the Gateway Monitor, double-click the "**Gateway Monitor**" shortcut in the InnoSys folder.

The Gateway Monitor presents the **Open Connection** dialog, in which you can specify the ALC Gateway that you wish to monitor.

In the **Machine Address** field, specify the host name or IP address of the system on which the Gateway is running.

In the **Service Address** field, specify the Gateway's network service name (such as "**ialcserver**"), or network port number (such as 1413).
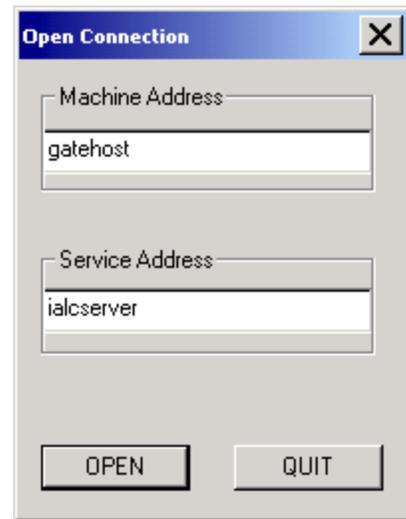
The Gateway Monitor connects to just one running Gateway at a time. The monitored Gateway may be running on the same system as the Monitor, or any other system that the Monitor can reach over the IP network.. If you want to monitor an additional Gateway , start up another instance of the Monitor (double-click the shortcut again).

Gateway Monitor *(Continued)*

The Gateway Monitor's windows

After the Gateway Monitor establishes a connection to the specified Gateway,
it displays host and client connection status in the **Hosts & Clients window**:

The upper part of the window includes a summary of the Gateway's configured connections to
the airline host(s), and the line status of each host connection.

In the lower part of the window, the **Client View** area shows the status of the configured
client-objects. Each client object appears on one line in this display area. Each client object has
a connection status: if it is "Free", no client is connected. If it is "Linked", the client-object is
currently connected to client software (or has a leftover stale connection, discussed below).

Connected clients may include: IATE terminal software (on a CRT object), IATE printing
software (on a printer object), or a custom client application (written with the IATE API).

Gateway Monitor *(Continued)*

The Gateway Monitor also provides additional windows to display any client/Gateway message traffic, and important events as they occur. These windows can be accessed through commands in the **Window** menu: "**Open the Message Log**" and "**Open the Event Log**".

Here is an example of the display in the **Message Log window**. (In this example, the Hosts & Clients window is also visible, behind the Message Log window, within the Gateway Monitor's main window.)
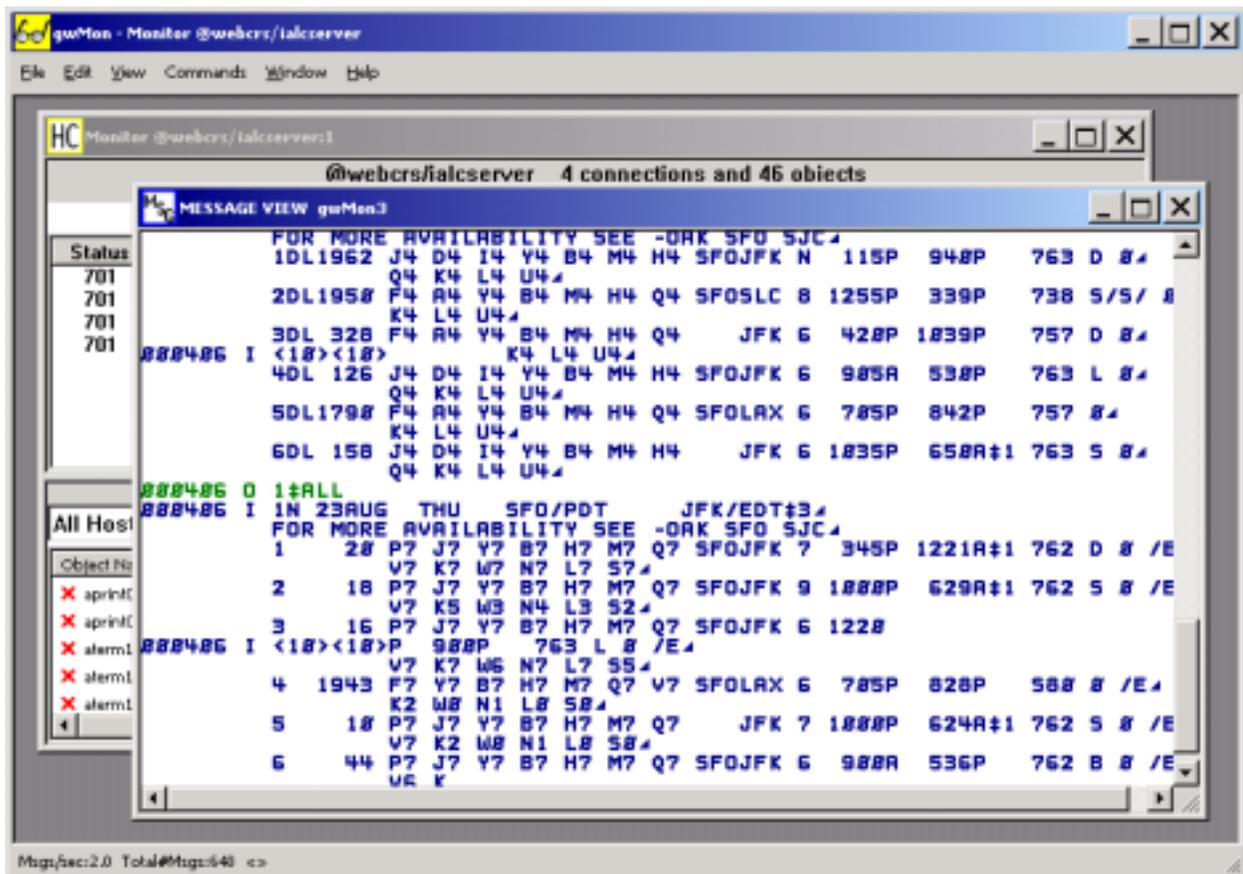
You can save the contents of the Message Log to a file by using the "**Save the Message Log**" command in the **File** menu, or by pressing **Ctrl-S**.

Gateway Monitor *(Continued)*

The Hosts & Clients window, the Message Log window, and the Event Log window are displayed in standard windows within the Gateway Monitor's main window. When multiple windows are open, you can use the mouse to switch between them minimize or maximize them, or resize them. You can also use the **Window** menu to arrange multiple windows in "Cascade" or "Tile" format; or select any particular window from a list at the bottom of the **Window** menu. These standard window control facilities are similar to other Windows applications that use the same type of window management (an "MDI" user-interface).

Gateway Monitor: **Message Filtering**

In the client view area, there is a green or red symbol at the left side of the line for each client object. The green or red symbol is a switch which you can use to <u>control the display of messages and events</u> for that client:

- A <u>green dot</u> at the left side of client object's display indicates that the Message and Event logs will display any message traffic for that client object.

- If you wish to suppress the display of Messages and Events for any particular client object, click its green dot, so that the dot changes to a <u>red X</u>.

- Whenever you want to resume the display of Message and Event logging for a client object, click its red X, so that the X changes back to a green dot.

You can also turn the message/event display on or off for <u>all client objects</u> at once. In the **Commands** menu, select "**Set Message Filters**" if you wish to disable or enable the message/event display for all client objects. If you disable all logging, <u>all</u> of the green dots will change to red X symbols, indicating that no messages or events will be displayed. If you enable all logging, the red X symbols will all change back to green dots, indicating that messages and events will be displayed for all client objects.

Gateway Monitor *(Continued)*

Gateway Monitor: **Disconnecting a Client**

The Gateway Monitor can tell the Gateway to disconnect any client. To disconnect a client, first click its line in the **Client View** area, so that the client's line is highlighted. Then select "**Disconnect Client**" from the Commands menu.

The "**Disconnect Client**" command is a powerful control feature, for use only by your authorized system administrators. Exercise caution when using this command.
Take care in selecting the particular client that you wish to disconnect.

Typical uses of this command are to disconnect client software that is no longer being used, or to eliminate a 'stale' connection left-over by client software that failed to disconnect normally (due to unexpected termination or a crash).

If this command is ever used to disconnect clients which may still be in use, it may be important to inform the users before disconnecting their clients.

Supplemental Utilities

The major diagnostic tool provided with the IATE Gateway is the **Gateway Monitor**.
For information about the Gateway Monitor, see page 153.

In addition to the Gateway Monitor, the following supplemental diagnostic utilities are also
provided. These utilities can be used on any workstation that has TCP/IP network access
to the system running IATE Gateway.

Supplemental Utility: **testterm**

Testterm is an IATE client demonstration application. As a minimal <u>terminal emulator</u>,
testterm demonstrates usage of the IATE API to connect to an airline host.

Testterm is not intended for general production usage, but it can be used as a test tool,
to verify that a client system can connect to the airline host. Source code is provided
with **testterm** (as with all of the supplementary utility programs).

Testterm displays a <u>System Available or Unavailable</u> indication, and a
<u>Keyboard Locked or Unlocked</u> indication. Commands can be sent to the host by
typing at the keyboard and pressing the **Enter** key. To unlock the keyboard,
press the exclamation point '**!**' key.

The **testterm** command-line options are listed in the following table.

Option and Parameters	Default	Notes
-o@*Host\Service\Object*	*Host*: `localhost` *Service*: `ialcserver` *Object*: *(no default)*	Specifies the Gateway client object to which **testterm** should connect.
-h		Displays the list of command-line options.

Usage of the **-o** option is explained further on the next page.

Testterm *(Continued)*

Using the −o option to Specify a Client Object

In order to communicate with the airline host, **testterm** must connect through the ALC Gateway to a Terminal Address (TA) or Device Address (DA) at the airline host. IATE provides that connectivity through the <u>client objects</u> that are listed in the ALC Gateway's configuration file(s). **Testterm** must be told which Gateway to connect with, and which client object to use.

The **−o** option's parameters specify the Gateway and the client object to use. This includes: the name of the <u>host</u> system on which the Gateway is running, the network <u>service</u> name (or network port number) to contact the Gateway, and the name of the client <u>object</u>.

After connecting to the specified Gateway and client object, **testterm** can communicate with the airline host through the Gateway. **testterm** accepts keyboard input as for an airline terminal, and displays host responses and connection status messages as necessary.

The **−o** option's parameters specify the Gateway and client object to which **testterm** should connect:

> **−o**@*Host\Service\Object*

The **Host** and **Service** parameters specify the Gateway to which **testterm** should connect. The **Object** parameter specifies one of the client objects configured at that Gateway. **testterm** will attempt to connect to the specified Gateway and client object.

- The **Host** parameter indicates the name or IP address of the system on which the Gateway is running.

  The default host name is "`localhost`". If you are using **testterm** on the system that is running the Gateway, you can omit the **Host** parameter, or specify it as "`localhost`", or specify the local system's network host name.

  If the Gateway is running on a separate system, the **Host** parameter must specify that system's network host name.

- The **Service** parameter indicates the network <u>service name</u> or network <u>port number</u> for connection to the ALC Gateway. This should match the service name or port number configured in the Gateway's `LISTEN_ON` or `SERVER_NAME` option.

  The default service name is "**ialcserver**", which is normally assigned to port `1413`. If the Gateway is using that port to accept client connections, you can omit the **Service** parameter.

  If a service name is specified, it must match one that is listed in the system's network "**services**" file.

Testterm *(Continued)*

- The **Object** part of the parameter specifies the name of the client object
  that **testterm** should use to communicate with the airline host.

  This must match one of the object names configured in the ***OBJECT DEFINITIONS**
  section of the ALC Gateway configuration file. The client object represents a specific
  airline terminal address (TA) or device address (DA), as specified in the Gateway
  configuration file.

  Like any IATE client application, **testterm** is built upon the IATE API.
  testterm passes the client-object specifier to the **IateOpen** API function, in order to
  establish a connection to the client object at the Gateway. With a connection established,
  testterm can communicate with the airline host through the Gateway.

  More information about client-object specifiers can be found in the **IATE API manual**,
  in the description of the **IateOpen** function.

Example 1:

This command starts **testterm**, attempting connection to the "**term2**" client object,
using a Gateway that is running on the same system as **testterm**:

```
testterm –oterm2
```

- The **Host** portion of the object specifier has been omitted. **testterm** will attempt to connect
  to a Gateway on the same system where **testterm** is running. If there is no Gateway running
  on this system, the connection will fail.

- The **Service** portion of the object specifier has been omitted. **testterm** will use the default
  network service name, "**ialcserver**", to connect to the Gateway. This normally corresponds
  to network port number `1413`. If the Gateway is not configured to accept
  client connections on the same port number, the connection will fail.

Testterm *(Continued)*

Example 2:

This command starts **testterm**, attempting connection to the "**term3**" client object,
using a Gateway that is running on a different system:

```
testterm –o@GatewayHost\AirlineService\term3
```

- The **Host** portion of the object specifier has been included. **testterm** will attempt to
  connect to a Gateway on the specified system, named "GatewayHost". If the system named
  GatewayHost cannot be reached from the local machine, or if the Gateway is not running on
  GatewayHost, the connection will fail.

- The **Service** portion of the object specifier has been included. **testterm** will use the
  specified network service name, "AirlineService", to connect to the Gateway.
  The connection will fail if that service name is not defined in the local system's "**services**"
  file, or if the Gateway is not configured to accept client connections on the network
  port number indicated by that service name.

Supplemental Utility: **showcfg**

The **showcfg** utility displays current configuration information from the ALC Gateway.

No command-line parameters are needed if **showcfg** is used on the same machine where the Gateway is running, and the Gateway is listening on the default network port number `1413`. To display information from a Gateway that is running on a separate machine, or using a different network port, use the `-g` command-line option with a Gateway host and service name, as illustrated below.

The **showcfg** command-line options are listed in the following table.

Option and Parameters	Default	Notes
-g@*Host\Service*	*Host*: `localhost` *Service*: `ialcserver`	Specifies the Gateway to which **showcfg** should connect.
-c		If this option is specified, **showcfg** displays information for <u>connected</u> client objects only.
-h		Displays the list of command-line options.

Usage of the `-g` option is explained on the next page.

Showcfg *(Continued)*

The **‑g** option's parameters specify the Gateway to which **showcfg** should connect:

  ‑g@*Host\Service*

- The **Host** parameter indicates the name or IP address of the system
  on which the Gateway is running.

  The default host name is "localhost". If you are using **showcfg** on the
  system that is running the Gateway, you can omit the **Host** parameter,
  or specify it as "localhost", or specify the local system's network host name.

  If the Gateway is running on a separate system, the **Host** parameter must
  specify that system's network host name.

- The **Service** parameter indicates the network <u>service name</u> or network <u>port number</u>
  for connection to the ALC Gateway. This should match the service name or
  port number configured in the Gateway's **LISTEN_ON** or **SERVER_NAME** option.

  The default service name is "**ialcserver**", which is normally assigned to port 1413.
  If the Gateway is using that port to accept client connections, you can omit the
  Service parameter.

  If a service name is specified, it must match one that is listed in the system's network
  "**services**" file.

<u>Examples</u>:

In the simplest form of the **showcfg** command, no parameters are specified:

```
showcfg
```

In that case, **showcfg** will attempt to connect to a local Gateway, on the same machine
where **showcfg** is running, using the IATE default network service "**ialcserver**".

To specify a Gateway on a separate system, or on a different network port,
use the **-g** option. For example, suppose a Gateway is running on a remote machine
named **gatesys;** and that the Gateway is listening for connections on the IATE default
network port, 1413. The following command should display configuration information
from the remote Gateway:

```
showcfg -g@gatesys\ialcserver\
```

When the service name is "**ialcserver**", the **Service** parameter can be omitted:

```
showcfg -g@gatesys\
```

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Supplemental Utility: **showval**

The **showval** program displays message names and their numeric codes. The program displays a list of messages that can pass between two endpoints in IATE software. The command-line options select the two endpoints, as described in the table below.

Option and Parameters	Notes
a decimal value (such as `-2217`)*,* ***or:*** *a hexadecimal value preceded by 0x (such as* `0x35`)	Specifies a single message code, in hexadecimal or decimal. Only one numeric message code can be specified, in either hexadecimal or decimal. If a numeric message code is specified, it must be the first option on the command line. If a numeric message code is not specified, the program will display a complete list of messages under the category that is specified by any one of the other options listed below.
`cs`	Displays client/server messages that can pass between the ALC Gateway and the IATE API library.
`api`	Displays IATE API messages related to the IateControl API function.
`link`	Displays IATE API messages related to the IateOpen API function.
`peer`	Displays peer-to-peer messages related to the printer program.
`err`	Displays error messages that the API library can return to an IATE client application.
`alc`	Displays messages that can pass between the ALC Gateway and the ALC onboard software.
`x25`	Displays messages that can pass between the ALC Gateway and the X.25 Bridge.
`all`	Displays all types of messages that can pass between IATE software components.

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Showval *(Continued)*

The **showval** utility is primarily intended for internal use by developers, but it may sometimes be useful to users who need to understand a numeric error or diagnostic message.

Examples:

The following command will display a listing of all of the types of messages that can pass between an ALC Gateway and an IATE client application:

```
showval cs
```

The following command will display the name of the IATE API error code `-2217`:

```
showval -2217 err
```

That command's output is:

```
-2217:TooMuchDataQueued
```

The following command will display the name of the message `0x35` hexadecimal, as passed between the ALC Gateway and the X.25 Bridge:

```
showval 0x35 x25
```

That command's output is:

```
0x35:CLEARREQUEST
```

The following command will display a listing of all types of messages that can pass between IATE software components:

```
showval all
```

Supplemental Utility: **showdef**

The **showdef** utility displays the defaults for a given host type.
To use it, enter the command:

> **showdef** *host-type*

The *host-type* argument can be any one of the following:

```
SABRE, PARS, APOLLO, DATAS, SODA, SHARES, KLM, JAL, ANA, EGYPT,
ABACUS, AMADEUS, GALILEO, CPARS, SWISSAIR, SITACARGO, BABS,
OLYMPIC, KOREAN, SINGAPORE, UNIPARS, OTHER
```
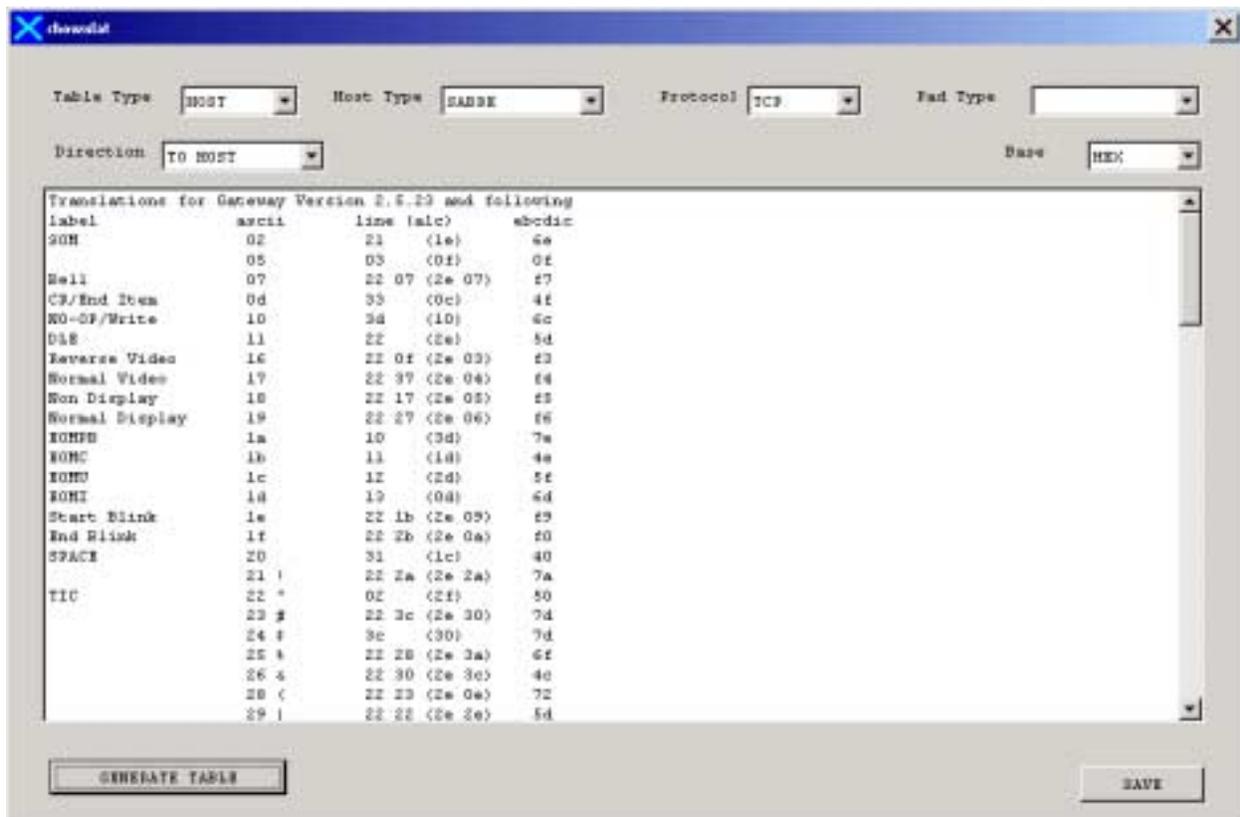
Upper or lower case is not significant. in the *host-type* argument.

Supplemental Utility: **showxlat** (Character Translations)

The **showxlat** utility displays translation tables.

To start this utility, double-click the "**Character Translations**" Shortcut in the Diagnostic Tools folder of InnoSys IATE software, or select it in the InnoSys programs menu.
See the next page for further instructions.

The utility displays a window containing six drop-down menus, a central display area. and two buttons at the bottom. The example below shows a SABRE TCP translation table, as it would appear based on the menu options as shown. Initially, the central area of the window will be blank. See the next page for instructions on how to generate the table.

```
X showxlat                                                                    X

Table Type  [HOST      ▼]   Host Type [SABRE      ▼]   Protocol [TCP   ▼]   Pad Type [        ▼]

Direction [TO HOST      ▼]                                              Base [HEX  ▼]

Translations for Gateway Version 2.6.23 and following                                  ▲
label          ascii      line (alc)      ebcdic
90M            02         21   (1e)       6a
               05         03   (0f)       0f
Bell           07         22 07 (2e 07)   f7
CR/End Item    0d         33   (0c)       4f
NO-OP/Write    10         3d   (10)       6c
DLE            11         22   (2e)       5d
Reverse Video  16         22 0f (2e 03)   f3
Normal Video   17         22 37 (2e 04)   f4
Non Display    18         22 17 (2e 05)   f5
Normal Display 19         22 27 (2e 06)   f6
IOMFD          1a         10   (3d)       7a
IOMC           1b         11   (1d)       4e
IOMU           1c         12   (2d)       5f
IOMI           1d         13   (0d)       6d
Start Blink    1e         22 1b (2e 09)   f9
End Blink      1f         22 2b (2e 0a)   f0
SPACE          20         31   (1c)       40
               21 !       22 2a (2e 2a)   7a
TIC            22 "        02   (2f)       50
               23 #        22 3c (2e 30)   7d
               24 $        3c   (30)       7d
               25 %        22 28 (2e 3a)  6f
               26 &        22 30 (2e 3c)  4c
               28 (        22 13 (2e 0e)  72
               29 )        22 22 (2e 2e)  5d              ▼

  [ GENERATE TABLE ]                                         [ SAVE ]
```

This GUI version of **showxlat** replaces the older text-mode (console) version
of the utility, which was provided with earlier releases of IATE software.

Showxlat *(Continued)*

To use the utility, begin by making selections from the drop-down menus near the top of the window:

- Select a <u>table type</u>, which specifies the type of character translation table to display.
  is can be `HOST`, `EBCDIC`, `ASCII`, or `LINE`.

- Select a <u>host type</u>. This drop-down menu includes all of the airline host types that the IATE software supports.

- Select a <u>protocol</u>: "`ALC`", "`X.25`", or "`TCP`".
  If you selected the X.25 protocol, select a <u>PAD type</u>.

- Select a <u>direction</u>: either "`TO HOST`" or "`FROM HOST`".
  "`TO HOST`" selects translations for characters that the Gateway transmits to the airline host. "`FROM HOST`" selects translations for characters that the Gateway receives from the airline host.

- Select a numeric <u>base</u> for the character codes to display:
  "`HEX`" for hexadecimal, "`DEC`" for decimal, or "`OCT`" for octal.

Press the **`GENERATE TABLE`** button to display the translation table.
The selected translation table should appear in the large white area of the window.

If you want to save the output in a file, press the **`SAVE`** button. This will create a text file in the same folder where you invoked showxlat. If you used a shortcut to run showxlat, the file will be in the folder that contains the shortcut.

The name of the file will depend on the type of translations listed. The file's name will end with the "`.txt`" suffix. For example: If you selected a HOST translation for the SABRE host type and TCP protocol, with the HEX numeric base, the resulting file will be named "`SABRE.TCP.TO.HEX.TXT`".

If you see the following error message, it means that you selected an unsupported combination of host type and protocol (and/or PAD type for X.25). You may need to make different selections from the menus, and then press the **`GENERATE TABLE`** button again.

Supplemental Utility: **stopta**

The **stopta** utility disconnects a specified client from the ALC Gateway

Before using this utility, use `showcfg -c` to find the object number of the
client that you wish to disconnect. (Refer to the description of **showcfg** on page 162.)

The **stopta** command-line options are listed in the following table.

Option and Parameters	Default	Notes
–g@*Host\Service*	*Host*: localhost *Service*: ialcserver	Specifies the ALC Gateway to which the client is connected (the client that you wish to disconnect).
–o*number*		Specifies the object-number (in decimal) of the object that you wish to disconnect from the ALC Gateway.
–h		Displays the list of command-line options.

Usage of the **–g** option is explained on the next page.

Stopta (*Continued*)

The **-g** option's parameters specify the Gateway to which **stopta** should connect:

   -g@*Host**Service*\\

- The **Host** parameter indicates the name or IP address of the system
  on which the Gateway is running.

  The default host name is "`localhost`". If you are using **stopta** on the
  system that is running the Gateway, you can omit the **Host** parameter,
  or specify it as "`localhost`", or specify the local system's network host name.

  If the Gateway is running on a separate system, the **Host** parameter must
  specify that system's network host name.

- The **Service** parameter indicates the network <u>service name</u> or network <u>port number</u>
  for connection to the ALC Gateway. This should match the service name or
  port number configured in the Gateway's **LISTEN_ON** or **SERVER_NAME** option.

  The default service name is "**ialcserver**", which is normally assigned to port `1413`.
  If the Gateway is using that port to accept client connections, you can omit the
  Service parameter.

  If a service name is specified, it must match one that is listed in the system's network
  "**services**" file.

<u>Examples</u>:

In the simplest form of the **stopta** command, only an object number is specified:

```
stopta -o7
```

In that case, **stopta** will attempt to connect to a local Gateway, on the same machine
where **stopta** is running, using the IATE default network service "**ialcserver**".
If the connection succeeds, the example above will disconnect client object #7.

To specify a Gateway on a separate system, or on a different network port,
use the **-g** option. For example, suppose a Gateway is running on a remote machine
named **gatesys;** and that the Gateway is listening for connections on the IATE default
network port, `1413`. The following command should disconnect object #7
from the remote Gateway:

```
stopta  -g@gatesys\ialcserver\  -o7
```

When the service name is "**ialcserver**", the **Service** parameter can be omitted:

```
stopta  -g@gatesys\  -o7
```

Supplemental Utility: **innoping**

This utility repeatedly sends messages to an ALC Gateway, and reports responses received.

innoping can be used to test connectivity to the Gateway. Consistent receipt of responses confirms that the Gateway is running, and that it is accessible through the network from the system on which **innoping** is running.

innoping also retrieves and displays current configuration information from the Gateway.

The name "**innoping**" is derived from the name of a network utility, **ping**. The basic function of **ping** is to verify connectivity to a remote system over the network. If a Gateway running on a remote system does not respond to **innoping**, it may also be appropriate to use **ping** to find out whether or not the remote system is accessible over your network.

The **innoping** command-line options are listed in the following table.

Option and Parameters	Default	Notes
-g@*Host\Service*	*Host*: `localhost` *Service*: `ialcserver`	Specifies the ALC Gateway which **innoping** should try to contact.
-nNumber	If this parameter is not specified, **innoping** will continue running until interrupted by a **Ctrl-C** keystroke.	If this parameter is specified, **innoping** will stop automatically after attempting to send the specified *Number* of messages to the Gateway.
-h		Displays the list of command-line options.

These options are explained further on the next page.

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Innoping *(Continued)*

The **−n** option specifies how many messages **innoping** should send to the Gateway:

    −n*Number*

Number is a decimal value, which determines how **innoping** will test connectivity to the Gateway, and how many messages it will send:

- If the specified *Number* is <u>greater than 1</u>, **innoping** will attempt to send the specified number of messages to the Gateway (at a rate of one message per second), and will then stop.

- If the specified *Number* is 1, **innoping** will merely attempt to contact the Gateway, and will report whether or not the connection succeeded. Then **innoping** will stop, without sending any further messages.

- If the **−n** option is not specified, **innoping** will continue sending messages to the Gateway, and reporting any responses, until interrupted by a **Ctrl-C** keystroke.

The **−g** option's parameters specify the Gateway which **innoping** should try to contact:

    −g*@Host\Service*

- The **Host** parameter indicates the name or IP address of the system on which the Gateway is running.

  The default host name is "`localhost`". If you are using **innoping** on the system that is running the Gateway, you can omit the **Host** parameter, or specify it as "`localhost`", or specify the local system's network host name.

  If the Gateway is running on a separate system, the **Host** parameter must specify that system's network host name.

- The **Service** parameter indicates the network <u>service name</u> or network <u>port number</u> for connection to the ALC Gateway. This should match the service name or port number configured in the Gateway's **LISTEN_ON** or **SERVER_NAME** option.

  The default service name is "**ialcserver**", which is normally assigned to port `1413`. If the Gateway is using that port to accept client connections, you can omit the **Service** parameter.

  If a service name is specified, it must match one that is listed in the system's network "**services**" file.

***Innoping** (Continued)*

Examples:

In the simplest form of the **innoping** command, no command-line options are specified:

```
innoping
```

In that case, **innoping** will attempt to connect to a local Gateway, on the same machine where **showta** is running, using the IATE default network service "**ialcserver**".
If the connection succeeds, **innoping** will send messages and report responses received, until interrupted by a **Ctrl-C** keystroke.

To specify a Gateway on a separate system, or on a different network port, use the **-g** option. For example, suppose a Gateway is running on a remote machine named **gatesys;** and that the Gateway is listening for connections on the IATE default network port, 1413. The following command will test connectivity to the remote Gateway:

```
innoping  -g@gatesys\ialcserver\
```

That command should display information from the specified Gateway, if the Gateway is running on the specified system ("**gatesys**"), and if it is listening for client connections on the network port corresponding to "**ialcserver**" (normally port 1413).

When the service name is "**ialcserver**", the **Service** parameter can be omitted:

```
innoping  -g@gatesys\
```

The following command is similar to the last one above, but with the added option **-n5**, which instructs **innoping** to stop after sending 5 messages:

```
innoping  -g@gatesys\  -n5
```

The following command, with the option **-n1**, instructs **innoping** to try to contact the Gateway, and report the result (without sending any further messages).

```
innoping  -g@gatesys\  -n1
```

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Appendix A — Diagnostic Message Classes

For purposes of troubleshooting, the ALC Gateway and the X.25 Bridge can output diagnostic messages to their console windows, or to disk files. Various types of messages can be enabled for output. Following are lists of the diagnostic message classes for the ALC Gateway and the X.25 Bridge.

Using Diagnostic Messages

The **–v***level* command-line option selects the diagnostic messages that the ALC Gateway will output to its console window. The **–l***level* option can be added to copy the messages into a disk file. These options can be specified in the <u>Target</u> field of the Gateway shortcut's Properties. These options, and other command-line options, are listed under **Command-Line Options for the ALC Gateway**, on page 22.

The **–v***level* and **–l***level* command-line options specify a diagnostic *level*, ranging from 0 through 1ffff in hexadecimal. The diagnostic level is a combination of bit-values, where each bit that is set to 1 will enable a specific class of diagnostic messages.

The X.25 Bridge supports similar command-line options, with a different set of diagnostic message classes. The first table below lists the ALC Gateway's diagnostic messages classes. The diagnostic message classes for the X.25 Bridge are listed in the second table.

Here is an examples of ALC Gateway startup commands
using a typical diagnostic level (0x100ff) for purposes of troubleshooting:

    iate_server **–v**100ff **–f***ConfigFile*

For more information, see **Command-Line Options for the ALC Gateway**, on page 22.

Diagnostic Message Classes for the ALC Gateway

Message Class Code in Hexadecimal	Description of Message Class
00001	Show network data transfer activity.
00002	Show Gateway startup activity.
00004	Show general Gateway-specific activity.
00008	Show general Client-specific activity.
00010	Show activity specific to X.25.
00020	Show text of data messages.
00040	Show Error messages. *(Error messages should be enabled during troubleshooting.)*
00080	Show Warning messages. *(Warning messages should be enabled during troubleshooting.)*
00100	Show timer-related activity.
00200	Show network activity specific to TLI transport.
00800	Show internal message-routing information.
01000	Show memory-buffer activity.
04000	Show activity specific to Windows NT & 2000 platforms.
08000	Show additional operational details.
10000	Show network activity specific to TCP host connections.

Diagnostic Message Classes for the X.25 Bridge

Message Class Code in Hexadecimal	Description of Message Class
01	Show Client TCP connection & disconnection.
02	Show message traffic between X.25 Bridge & client.
04	Show message traffic between X.25 Bridge & onboard software.
08	Show Alarm conditions.
10	Show SVC Calls, Accepts, and Clears.
40	Show onboard software startup activity.
80	Show message traffic between X.25 Bridge & client.

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Appendix B — Cables

Each INSCC-QP card supports a maximum of six serial ports. To use the six ports, it is necessary to use a six-port adapter cable available from InnoSys.

The first four ports can be used for ALC or X.25 connections on an EIA-232 serial interface. (Some other interface modes for X.25 are available on only the first two ports.)

The adapter cable connects to the card's 80-pin connector. The cable has six extensions, each of which has a DB-25 connector at the opposite end. On one side of each connector, there is an embossed label reading "INSCCQP-6". On the other side of each connector, there is another embossed label which indicates a port number: #1 through #6. Select the appropriate port(s) and connect the 25-pin connectors to your airline host network modem(s) or FRAD(s).

Each DB-25 connector provides a DTE interface, with pin signal assignments as listed below. The DTE interface is appropriate for most modem or FRAD connections in nearly all cases. (If a DCE interface is needed, add a "null modem" adapter cable, with full support for all required signals, including clocks. Null modem cables are available from InnoSys.)

The DB-25 DTE connector pin signal assignments are as follows:

Pin	Signal
1	Shield/Ground
2	TxD (Tx Data)
3	RxD (Rx Data)
4	RTS
5	CTS
6	DSR
7	Signal Ground
8	DCD
15	TxC (Tx Clock)
17	RxC (Rx Clock)
20	DTR

Appendix C — Solving Common Gateway Problems

Common Gateway Error Messages

Following are explanations of some of the most common error messages which indicate conditions that can prevent the Gateway from starting or operating properly.

Error message:	`Connect failed: wserrno XX`
	`Connect to host failed`
	(or other "Connection Failed" messages)

Explanation:	These errors may indicate that an airline network host system is unavailable or unreachable over the IP network. Another possibility is that TCP/IP networking is not properly installed or configured on the Gateway system. Use the system's **ping** utility to test connectivity to the airline host system. If necessary, contact with your network administrator, or the airline host system help desk, to check the current network status.
Error message:	`gethostbyname for `*`host-name`*` failed`
Explanation:	This error may indicate that TCP/IP networking is not properly installed or configured on the Gateway system.
Error message:	`getservbyname for `*`service-name`*` failed`
Explanation:	This error indicates that the ALC Gateway (or X.25 Bridge) cannot find the entry it is looking for in the "**services**" file.' • Verify that the "**ialcserver**" and "**x25gate**" entries are present in the "**services**" file. The IATE installation program placed those entries into the file. • If the ALC Gateway's `LISTEN_ON` or `SERVER_NAME` option specifies a non-standard name for the Gateway service (a name other than "**ialcserver**"), verify that the specified name is defined in the "**services**" file. • If the X.25 Bridge `SERVICE` option specifies a non-standard name for the X.25 service (a name other than "**x25gate**"), verify that the specified name is defined in the "**services**" file.

(Continued)

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Common Gateway Error Messages (Continued)

Error message:	`Unable to open device \\.\innopci0_0 error 2`
Explanation:	This error indicates that the ALC Gateway (or X.25 Bridge) cannot open the INSCC-QP PCI device. This means that the device driver has not been properly installed, or is not loaded or not running correctly. For <u>Windows NT 4</u>, use the "**Load Driver**" Shortcut to load the device driver. In <u>Windows 2000</u>, check the system's Device Manager and verify that the InnoSys "**InnoPCI**" driver is present; if it is not, reinstall the software. If the error persists, contact InnoSys.
Error message:	`NO OBJECTS CONFIGURED - CHECK YOUR CONFIGURATION FILE(S)`
Explanation:	The three most likely causes for this error are: • The "Host Type" that is entered in the Gateway configuration file does not match the "Host Type" shown in the currently installed license file. • None of the object definitions in the Gateway configuration file use the IA(s) defined in the Gateway configuration file. • The configuration file cannot be found.

Client/Gateway Connectivity Issues

If a workstation or client application cannot connect to the ALC Gateway, the following suggestions may help to isolate the problem.   (This discussion focuses on Windows systems. For other operating systems, please adapt these suggestions according to the networking configuration procedures that apply on your systems.)

To check basic network connectivity between the workstation/client system and the Gateway system, use the workstation system's "**ping**" utility to test connectivity to the Gateway system. (The "**ping**" utility is generally available on Windows as well as UNIX systems.) Example:

> ping   *Name or IP Address Of Gateway System*

(Contact your network administrator if you require assistance with the "**ping**" utility.)
If this test is not successful, it indicates a networking problem which must be solved in order to use your IATE workstation software with your IATE Gateway.

Check the workstation system's network configuration. In Windows, check the "Network" or "Network and Dial-up Connections" control panel. Verify that the system's networking configuration is complete. Following are some of the items that may need to be checked.

- The workstation and Gateway systems must be set up with a local area network connection, using the TCP/IP protocol. If this has not been done, set up the network connection before attempting to use the IATE software. Contact your network administrator for assistance if necessary.

- The "Internet Protocol (TCP/IP)"should be configured in the Network Control Panel. The <u>workstation</u> system may be set up to "<u>Obtain an IP address automatically</u>", for a dynamic (DHCP) configuration. Or it may require a static configuration, with a specified <u>IP address</u>, <u>network mask</u>, and possibly a <u>default Gateway</u>. The <u>Gateway</u> system will typically require a static configuration, in order to maintain a consistent IP address.

  <u>Note</u>: The "default Gateway" mentioned in the system's network settings is <u>not</u> the IATE Gateway. The system's "default Gateway" refers to the "router" or "Gateway" which systems on your local office network may use to access outside networks (such as the Internet).

- Contact your network administrator or system documentation if you require additional information about the necessary settings for TCP/IP networking.

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Client/Gateway Connectivity Issues *(Continued)*

If you make any changes to the network configuration, try the "**ping**" test again. If the "**ping**" command still cannot contact the system that runs the IATE Gateway, perhaps it may be necessary to restart the system(s) on which you changed the network settings. Also check for any IP addressing conflicts, cabling or network-hardware problems, or any other problems which may be identified by your network administrator.

If networking problems persist, they will need to be solved before the IATE workstation/client software can be used successfully.

After establishing network connectivity between the workstation/client and Gateway systems, it is also necessary to properly configure the IATE client and Gateway software so that the client software can connect to the ALC Gateway software. Check the following items to verify the correct configuration and to establish a connection.

In order to use any workstation client software or diagnostic utility that connects to the Gateway, the user must specify the Gateway system to which connection is sought. Because the connection will be made through the IP network, the client user must also specify the IP network port on which to contact the Gateway.

Therefore, the two basic parameters required for contacting the Gateway are:

- the Gateway system's name on the network, or its IP address, and

- the Gateway system's IP network port for client connections, specified as a service name (such as "**ialcserver**") or a network port number (such as `1413`).

For example, **The Gateway Monitor** (discussed on page 153) requires those two parameters in order to connect to a Gateway and report on its status.

The network service name or network port number must match one that is configured by the Gateway's `LISTEN_ON` or `SERVER_NAME` option. If a service name is specified, the name must match an entry in the system's network "**services**" file, which associates the name with a network port number. See the "**Installation**" section for more information about the "**services**" file, and about the default entries that the IATE software installation program places in the file.

(Continued)

Client/Gateway Connectivity Issues *(Continued)*

<u>Terminal or Printer</u> workstation client software must connect to an IATE client-object configured at the Gateway. This requires an additional parameter:

- the IATE client object's name (or group name).

In sum, the three basic configuration items required for terminal/printer application connectivity are: the <u>Gateway system name or IP address</u>, the <u>network port number or service name</u>, and the <u>client object name</u> (or group name).

For example, these three connection parameters can be specified in the <u>WinIATE Terminal</u> application's **Link Configuration** dialog (as discussed in the **WinIATE Terminal reference manual**). These parameters establish the terminal's connection to a client-object that is configured as a `TERMINAL` in the `*OBJECT DEFINITIONS` section of the ALC Gateway configuration.

The <u>IATE Printer</u> client software uses a configuration item to specify the three connection parameters. (This configuration item, called OBJECT_NAME, is discussed in the **IATE Printer Client reference manual**.) These parameters establish the printer client's connection to a client-object that is configured as a `PRINTER` in the `*OBJECT DEFINITIONS` section of the ALC Gateway configuration.

Some IATE console-mode <u>diagnostic utilities</u> use command-line options to specify their connection parameters. For example, refer to the discussion of the **testterm** utility, on page 158 of this manual.

<u>Special applications</u>, written by IATE users with the IATE API, will also need to use configuration parameters in order to establish connections. For API applications, the usage of these parameters is explained in the documentation for the **IateOpen** function, in the **IATE API reference manual**.

(Continued)

Client/Gateway Connectivity Issues *(Continued)*

All IATE client applications (whether provided by InnoSys or written by the customer) use the IATE API library in order to contact the Gateway. The IATE workstation/client software installation program installs this library (named "**iate32.dll**") into the Windows **system32** folder.

(Developers' installations have additional components related to software development, but all IATE client installations include the DLL for purposes of client software operation.)

If any client application reports an error indicating that it cannot contact the Gateway, or an error with a number below #–2000, this may indicate a problem condition detected by the IATE API library. Such errors are most often caused by configuration or network problems related to one or more of the configuration items discussed above.

If connectivity problems persist after you have checked those items, or if the application reports an error in loading "**iate32.dll**", try reinstalling the IATE client software package. Whenever you install the IATE client software, use the provided installation program – do not attempt to copy the client software files "by hand".

If none of the foregoing suggestions lead to a solution, please contact InnoSys technical support for prompt assistance under your warranty or service agreement.

Appendix D — Typical Gateway Startup Sequences

Gateway Startup for ALC

The following text is sample output from the ALC Gateway (**iate_server.exe**) on a
<u>Windows 2000</u> system. Parts of the output on <u>Windows NT</u> systems will be different.

In this example, the Gateway has been configured with an ALC connection, and started with
diagnostic options `-vff -lff`. This output is taken from the resulting log file, "**server.log**".

Many of the diagnostic messages in the output begin with a type code: "C" for Comments
(general information), "W" for Warning messages, and "E" for severe Error messages. Such
lines also show queue (memory buffer) diagnostics in the format '**xx:yy**', where **xx** and **yy** are
decimal values. Also shown are time stamps in the format '**day:hour:minute:second**'.

Note: The banner message on the second line of the output states "Windows NT" even though
this example was run on a Windows 2000 system.

```
C (17:-1) 06:16:39:12 log.c:91  {----} Turning logging on at 0x00ff

@(#)InnoSys IATE_SERVER Version 2.5.35 (Windows NT) as of Jun 22 2001 13:27:10

This Gateway is licensed as follows:
    300 SABRE connections
    300 WORLDSPAN connections
    300 APOLLO connections
    50 DATAS connections
    50 SODA connections
    50 SHARES connections
    50 UNIPARS connections
    50 OTHER connections
    50 KLM connections
    50 JAL connections
    50 ANA connections
    50 EGYPT connections
    50 ABACUS connections
    50 AMADEUS connections
    50 GALILEO connections
    50 CPARS connections
    50 SWISSAIR connections
    50 SITACARGO connections
    50 BABS connections
    50 OLYMPIC connections
    50 KOREAN connections
    50 SINGAPORE connections
    50 ISEA connections
```

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```
C (17:-1) 06:16:39:12 debug.c:172   {----} Setting Gateway debugging to 0x00ff
C (17:-1) 06:16:39:12 log.c:91  {----} Turning logging on at 0x00ff
C (17:-1) 06:16:39:12 vport.c:352   {----} vport tables has room for 2048 entries
C (17:-1) 06:16:39:12 socket.c:90   {----} Socket table has room for 2048 entries
C (17:-1) 06:16:39:12 monitor.c:220 {----} Allocated storage for 1 connection records
C (125:-1) 06:16:39:12 qhighnt.c:194    {----} Allocated storage for 125 queues of 76 bytes each. (total
9500)
C (125:-1) 06:16:39:12 qhighnt.c:213    {----} Allocated storage for 36 queue_items of 2412 bytes each.
(total 86832)
C (125:-1) 06:16:39:12 qhighnt.c:229    {----} Qi HEADER_SZ:36  CONTROL_SZ:10  TOTAL:46
C (123:36) 06:16:39:12 config.c:721 {----} Processing configuration file <scfg.aas>.
C (123:36) 06:16:39:12 config.c:5228    {----} Validating configuration file <scfg.aas>.


C (123:36) 06:16:39:12 pnp.c:720    {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855    {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_0":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_0"

C (123:36) 06:16:39:12 pnp.c:720    {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855    {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_1":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_1"

C (123:36) 06:16:39:12 pnp.c:720    {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855    {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_2":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_2"

C (123:36) 06:16:39:12 pnp.c:720    {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855    {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_3":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_3"

C (123:36) 06:16:39:12 pnp.c:720    {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855    {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_4":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_4"

C (123:36) 06:16:39:12 pnp.c:720    {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855    {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_5":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_5"

C (123:36) 06:16:39:12 pnp.c:720    {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855    {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_6":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_6"
```

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```
C (123:36) 06:16:39:12 pnp.c:720      {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855      {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_7":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_7"

C (123:36) 06:16:39:12 pnp.c:720      {----} PnP_EnumInterfaces: Handle 0x1320d0, state 0x1, GUID 827c0dbd
fb76 41e0 9be0a2444b13d3d

C (123:36) 06:16:39:12 pnp.c:855      {----} PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_8":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_8"

C (123:36) 06:16:39:12 pnp.c:886      {----} PnP_EnumInterfaces: Enumerated #9 INSCCQP interfaces

C (123:36) 06:16:39:12 pnp.c:971      {----} PnP_OpenInterface: "\\.\INNOPCI0_8"


Opened board device \\.\innopci0_8
The load image is relative to the system root <C:\WINNT>
The load image file configured in the registry is <C:\WINNT\System32\drivers\PAX5LOA.ROM>
The load image contains System Services: < SYS Services version 1.0.1>
This application is using offboard appId:48 (0x30) and onboard appId:17 (0x11)


port 00 is using appid 00:BUS_APID
port 01 is using appid 00:BUS_APID
port 02 is using appid 00:BUS_APID
port 03 is using appid 00:BUS_APID
port 04 is using appid 00:BUS_APID
port 05 is using appid 07:CONSOLE_APID
port 06 does not have an apid assigned
port 07 does not have an apid assigned
port 08 does not have an apid assigned
port 09 does not have an apid assigned
port 10 does not have an apid assigned
port 11 does not have an apid assigned


appid 00:BUS_APID          is registered
appid 02:ASYN_APID         is registered
appid 04:ALC_APID          is registered
appid 05:ECHO_APID         is registered
appid 09:X25_EVENT_APID    is registered
appid 10:ALC_EVENT_APID    is registered
appid 15:MON_APID          is registered
appid 17:SYS_SERV_APID     is registered
appid 18:X25_PACKET_APID   is registered


magic:0xab1d3ac1  verhigh:0x3  verlow:0x1


This is a current onboard.
This onboard supports X25_PACKET_APID on apid:18.
```

```
C (123:36) 06:16:39:12 vport.c:132  {----} Assigned vport 0 for use by vport type 1:HOST
C (123:36) 06:16:39:12 config.c:866  {----} Configuring line for protocol SABRE.
C (123:36) 06:16:39:12 config.c:1041    {----} Configuring ALC line on board:0 port:0 vport:0 for windows
NT.  Using device \\.\innopci0_0.
C (123:36) 06:16:39:12 config.c:2767    {----} Will respond to polls with data for polled IA only.
C (123:36) 06:16:39:12 object.c:360 {0001} Stored object <aaterm02:**>
C (123:36) 06:16:39:12 object.c:360 {0002} Stored object <aaterm04:**>
C (123:36) 06:16:39:12 object.c:360 {0003} Stored object <aaprint36:**>
C (123:36) 06:16:39:12 object.c:360 {0004} Stored object <aaterm30:**>
C (123:36) 06:16:39:12 object.c:360 {0005} Stored object <aaterm06:**>
C (123:36) 06:16:39:12 object.c:360 {0006} Stored object <aaterm08:**>
C (123:36) 06:16:39:12 config.c:925  {----} Line configured for 1 ias, 6 tas, and 0 polling tas.
C (123:36) 06:16:39:12 vport.c:799   {----} Added vport 0:<alc_port_0> to alc_list


-------------------- begin report for configuration file <scfg.aas> --------------------

  001 <#>
  002 <#       configuration for an Alc host>
  003 <#>
  004 <>
  005 <*HOST TYPE>
  006 <SABRE                                                            >
  007 <>
  008 <#       alc connection>
  009 <#>
  010 <*HOST CONNECTION>
  011 <BOARD_NUMBER                 0>
  012 <PORT_NUMBER                      0>
  013 <PORT_NAME                        alc_port_0>
  014 <>
  015 <*IAS>
  016 <DATA_IA 04>
  017 <>
  018 <*OBJECT CONNECTION DEFAULTS>
  019 <TA_TIMEOUT                       0>
  020 <>
  021 <*PROTOCOL DESCRIPTION>
* 022 <+CTS_REQUIRED>
* 023 <-DCD_REQUIRED>
* 024 <-DSR_REQUIRED>
* 025 < >
  026 <*OBJECT DEFINITIONS>
  027 <4      02      TERMINAL     aaterm02  **>
  028 <4      04      TERMINAL     aaterm04  **>
  029 <4      36      PRINTER      aaprint36 **>
  030 <4      30      TERMINAL     aaterm30  **>
  031 <4      06      TERMINAL     aaterm06  **>
  032 <4      08      TERMINAL     aaterm08  **>

-------------------- end report for configuration file <scfg.aas> --------------------
```

```
This Gateway has objects configured for the following host types:
    6 SABRE objects

A total of 6 objects are defined.

C (98:36) 06:16:39:12 netws.c:2001  {----} Trying to set up a listen on port:<ialcserver> at
address:<INADDR_ANY>
C (98:36) 06:16:39:12 netws.c:2063  {----} Binding socket 188 to <INADDR_ANY:0.0.0.0> at port
<ialcserver:1413>
C (98:36) 06:16:39:12 socket.c:245  {----} Initializing socket record for socket:188 type:5:LISTEN_SOCK
C (98:36) 06:16:39:12 pnp.c:971 {----} PnP_OpenInterface: "\\.\INNOPCI0_0"

C (95:36) 06:16:39:12 socket.c:245  {----} Initializing socket record for socket:228
type:10:HOST_DIRECT_NT
C (95:36) 06:16:39:12 hostio.c:310  {----} vport:0 name:<alc_port_0> device:<\\.\innopci0_0> fd:228
C (95:35) 06:16:39:12 vport.c:132   {----} Assigned vport 1 for use by vport type 2:OTHER
C (92:35) 06:16:39:12 socket.c:245  {----} Initializing socket record for socket:288 type:4:CLIENT
C (92:35) 06:16:39:12 vport.c:132   {----} Assigned vport 2 for use by vport type 2:OTHER
C (92:35) 06:16:39:12 netws.c:975   {----} socket:288 local end -  port:1413 ip:64.171.244.92
C (92:35) 06:16:39:12 netws.c:991   {----} socket:288 remote end - port:1032 ip:64.171.244.92
C (92:35) 06:16:39:12 socket.c:245  {----} Initializing socket record for socket:280
type:11:SIGNAL_SOCKET
C (92:35) 06:16:39:12 hostio.c:310  {----} vport:1 name:<> device:<> fd:280
C (92:34) 06:16:39:12 hostiont.c:2427   {----} Switching socket type to READ_WAKEUP for socket 288
C (92:35) 06:16:39:12 alcdata.c:1115    {----} Host status: hostup:0x0  linkstat:0x7  miscstat:0x0
IA:0x4  <\\.\innopci0_0> <alc_port_0>
```

Note the "Host Status" in the last line. The "hostup:0x1" and the "linkstat:0x7" indicate that
the Gateway is properly started and that it is being polled by the host on at least one of the
IA's that are configured.

If the Gateway starts and the host is polling, but none of the IA's that the Gateway is
configured for are being polled, the "hostup" value will be "0x0" instead of "0x1".

If the Gateway starts and the host is not polling or is not properly cabled to the Gateway,
the "Host status" line will not appear.

The "Linkstat" indicator has the following possible values:

    0x7 means that all required modem signals are present.
    0x6 means that DCD is missing.
    0x5 means that DSR is missing.
    0x4 means that DCD and DSR are missing.
    0x3 means that RTS/CTS handshaking is missing.
    0x2 means that RTS/CTS handshaking and DCD are missing.
    0x1 means that RTS/CTS handshaking and DSR are missing.
    0x0 means that no modem control signals are present.

The "Hostup" indicator has the following possible values:

    0x1 means that at least one of the IAs that the Gateway is configured for is being polled.
    0x0 means that none of the I's that the Gateway is configured for are being polled.

Gateway Startup for X.25

The following text is sample output from the ALC Gateway (**iate_server.exe**) on a
<u>Windows 2000</u> system. Parts of the output on <u>Windows NT</u> systems will be different.

In this example, the Gateway has been configured for an X.25 connection, and started with
diagnostic options **–vff -lff**.   This output is taken from the resulting log file, "**server.log**".

Many lines in the output begin with a type code: "C" for Comments (general information),
"W" for Warning messages, and "E" for severe Error messages. Such lines also show queue
(memory buffer) diagnostics in the format '**xx:yy**', where **xx** and **yy** are decimal values. Also
shown are time stamps in the format '**day:hour:minute:second**'.

Notes: The banner message on the second line of the output states "Windows NT" even though
this example was run on a Windows 2000 system.

For X.25 operation, the X.25 Bridge must be started before the ALC Gateway.
(A separate instance of the X.25 Bridge must be started for each X.25 physical port.)
Sample X.25 Bridge diagnostic output is provided following the
sample ALC Gateway output below.

```
C (17:-1) 06:16:38:01 log.c:91   {----} Turning logging on at 0x00ff

@(#)InnoSys IATE_SERVER Version 2.5.35 (Windows NT) as of Jun 22 2001 13:27:10

This Gateway is licensed as follows:
    300 SABRE connections
    300 WORLDSPAN connections
    300 APOLLO connections
    50 DATAS connections
    50 SODA connections
    50 SHARES connections
    50 UNIPARS connections
    50 OTHER connections
    50 KLM connections
    50 JAL connections
    50 ANA connections
    50 EGYPT connections
    50 ABACUS connections
    50 AMADEUS connections
    50 GALILEO connections
    50 CPARS connections
    50 SWISSAIR connections
    50 SITACARGO connections
    50 BABS connections
    50 OLYMPIC connections
    50 KOREAN connections
    50 SINGAPORE connections
    50 ISEA connections

C (17:-1) 06:16:38:01 debug.c:172   {----} Setting Gateway debugging to 0x00ff
```

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```
C (17:-1) 06:16:38:01 log.c:91   {----} Turning logging on at 0x00ff
C (17:-1) 06:16:38:01 vport.c:352   {----} vport tables has room for 2048 entries
C (17:-1) 06:16:38:01 socket.c:90   {----} Socket table has room for 2048 entries
C (17:-1) 06:16:38:01 monitor.c:220 {----} Allocated storage for 1 connection records
C (218:-1) 06:16:38:01 qhighnt.c:194   {----} Allocated storage for 218 queues of 76 bytes each. (total
16568)
C (218:-1) 06:16:38:01 qhighnt.c:213   {----} Allocated storage for 49 queue_items of 2412 bytes each.
(total 118192)
C (218:-1) 06:16:38:01 qhighnt.c:229   {----} Qi HEADER_SZ:36  CONTROL_SZ:10  TOTAL:46
C (216:49) 06:16:38:01 config.c:721 {----} Processing configuration file <scfg.amex.x25>.
C (216:49) 06:16:38:01 config.c:5228   {----} Validating configuration file <scfg.amex.x25>.
E (216:49) 06:16:38:01 config.c:5251   {----} Line 13: Option <NOTIFICATION_DELAY> is not a valid option
for key <*GATEWAY DEFAULTS>

C (216:49) 06:16:38:01 vport.c:132  {----} Assigned vport 0 for use by vport type 1:HOST
C (216:49) 06:16:38:01 config.c:866 {----} Configuring line for protocol SABRE.
C (216:49) 06:16:38:01 config.c:1009   {----} Configuring X25 (Gateway) connection on "board":21 port:0
vport:0.
C (216:49) 06:16:38:01 config.c:1013   {----} Using Gateway/service <X25gate>.
C (216:49) 06:16:38:01 config.c:1014   {----} Configuring line for pad type SABRE.
Setting CUD for port <0:x25_port> len:4: c1 00 00 00
C (216:49) 06:16:38:01 object.c:360 {0001} Stored object <sterm02:**>
C (216:49) 06:16:38:01 object.c:360 {0002} Stored object <sterm04:**>
C (216:49) 06:16:38:01 object.c:360 {0003} Stored object <sterm06:**>
C (216:49) 06:16:38:01 object.c:360 {0004} Stored object <sterm08:**>
C (216:49) 06:16:38:01 object.c:360 {0005} Stored object <sterm0a:**>
C (216:49) 06:16:38:01 object.c:360 {0006} Stored object <sprinter0c:**>
C (216:49) 06:16:38:01 object.c:360 {0007} Stored object <sprinter0e:**>
C (216:49) 06:16:38:01 object.c:360 {0008} Stored object <sprinter10:**>
C (216:49) 06:16:38:01 object.c:360 {0009} Stored object <sprinter12:**>
C (216:49) 06:16:38:01 object.c:360 {0010} Stored object <sterm16:**>
C (216:49) 06:16:38:01 object.c:360 {0011} Stored object <demo22:**>
C (216:49) 06:16:38:01 object.c:360 {0012} Stored object <sterm1a:**>
C (216:49) 06:16:38:01 object.c:360 {0013} Stored object <sterm1c:**>
C (216:49) 06:16:38:01 object.c:360 {0014} Stored object <sterm1e:**>
C (216:49) 06:16:38:01 object.c:360 {0015} Stored object <sterm20:**>
C (216:49) 06:16:38:01 object.c:360 {0016} Stored object <sterm22:**>
C (216:49) 06:16:38:01 object.c:360 {0017} Stored object <sterm24:**>
C (216:49) 06:16:38:01 object.c:360 {0018} Stored object <sterm26:**>
C (216:49) 06:16:38:01 object.c:360 {0019} Stored object <sterm28:**>
C (216:49) 06:16:38:01 config.c:912 {----} Line configured for 1 ias, 19 tas.
C (216:49) 06:16:38:01 vport.c:765 {----} Added vport 0:<x25_port> to x25_list
```

```
-------------------- begin report for configuration file <scfg.amex.x25> --------------------

   001 <>
   002 <*HOST TYPE>
   003 <SABRE>
   004 <>
   005 <*HOST CONNECTION>
   006 <X25_GATEWAY X25gate>
   007 <PAD_TYPE SABRE>
   008 <PORT_NAME   x25_port>
   009 <REMOTE_ADDRESS 9188328410>
   010 <>
   011 <*GATEWAY DEFAULTS>
   012 <SERVER_NAME ialcserver>
*  013 <NOTIFICATION_DELAY 3>
   014 <>
   015 <*OBJECT CONNECTION DEFAULTS>
   016 <>
   017 <API_THROTTLE_INTERVAL   0>
   018 <TA_TIMEOUT              0>
   019 <>
   020 <*IAS>
   021 <DATA_IA 06ba>
   022 <>
   023 <*OBJECT DEFINITIONS>
   024 <06ba02  TERMINAL_API     sterm02    **>
   025 <06ba04  TERMINAL_API     sterm04    **>
   026 <06ba06  TERMINAL_API     sterm06    **>
   027 <06ba08  TERMINAL_API     sterm08    **>
   028 <06ba0a  TERMINAL_API     sterm0a    **>
   029 <06ba0c  MAC_PRINTER      sprinter0c    **>
   030 <06ba0e  MAC_PRINTER       sprinter0e    **>
   031 <06ba10  MAC_PRINTER      sprinter10    **>
   032 <06ba12  MAC_PRINTER      sprinter12    **>
   033 <06ba16  TERMINAL_API     sterm16    **>
   034 <06ba18  TERMINAL_API     demo22     **>
   035 <06ba1a  TERMINAL_API     sterm1a    ** >
   036 <06ba1c  TERMINAL_API     sterm1c    ** >
   037 <06ba1e  TERMINAL_API     sterm1e    **>
   038 <06ba20  TERMINAL_API     sterm20    **>
   039 <06ba22  TERMINAL_API     sterm22    ** >
   040 <06ba24  TERMINAL_API     sterm24    ** >
   041 <06ba26  TERMINAL_API     sterm26    **>
   042 <06ba28  TERMINAL_API     sterm28    **  >

-------------------- end report for configuration file <scfg.amex.x25> --------------------


This Gateway has objects configured for the following host types:
    19 SABRE objects

A total of 19 objects are defined.
```

```
C (137:49) 06:16:38:02 netws.c:2001 {----} Trying to set up a listen on port:<ialcserver> at
address:<INADDR_ANY>
C (137:49) 06:16:38:02 netws.c:2063 {----} Binding socket 164 to <INADDR_ANY:0.0.0.0> at port
<ialcserver:1413>
C (137:49) 06:16:38:02 socket.c:245 {----} Initializing socket record for socket:164 type:5:LISTEN_SOCK
C (134:49) 06:16:38:02 socket.c:245 {----} Initializing socket record for socket:204 type:2:HOST_GATE
C (134:49) 06:16:38:02 netws.c:975  {----} socket:204 local end -  port:1031 ip:64.171.244.92
C (134:49) 06:16:38:02 netws.c:991  {----} socket:204 remote end - port:1412 ip:64.171.244.92
C (134:49) 06:16:38:02 hostio.c:310 {----} vport:0 name:<x25_port> device:<X25gate> fd:204
C (134:49) 06:16:38:02 x25cmn.c:1232    {----} State change for <x25_port> vport:0 0:IXNULL->1:IXSESSION
C (134:48) 06:16:38:03 x25sabre.c:1067  {----} State change for <x25_port> vport:0 1:IXSESSION-
>2:IXCALLED
C (134:48) 06:16:38:03 x25sabre.c:1090  {----} CALLing <9188328410> <> <>
C (134:48) 06:16:38:03 route.c:852  {----} Routing X25 message on <x25_port> vport:0 cmd:0x31:CALL
len:298
C (134:48) 06:16:38:03 hostio.c:1190     {----} Sending on <x25_port> fd:204 vport:0 cmd:0x31:CALL
(298:12:310)
C (134:48) 06:16:38:03 hostio.c:902 {----} Receiving on <x25_port> fd:204 vport:0 cmd:0x32:ACCEPT
C (134:48) 06:16:38:03 x25cmn.c:128 {----} Processing message from <X25gate> <x25_port> vport:0
cmd:0x32:ACCEPT
 ----- start call packet -----
called_addr:        <9184968743>
calling_addr:       <41539614>
flow_negot:         0x0
in_pkt_size:        0x200
out_pkt_size:       0x200
in_window_size:     0x0
out_window_size:    0x0
in_thruput_class:   0x0
out_thruput_class:  0x0
fast_select:        0x0
reverse_chg:        0x0
transit_dly:        0x0
cug:                0x0
bcuge:              0x0
bcuge:              0x0
rpoa_id:            < 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 >
reset_confirm       0x0
data_confirm        0x0
clear_confirm       0x0
interrupt_confirm   0x0
net_userid:         < >
user_len:              0
user_data:          < >
cause:              0x0
diag:               0x0
magic               0xfeed
clinemod            0x7
 ----- end call packet -----
```

```
C (134:48) 06:16:38:03 x25sabre.c:131   {----} State change for <x25_port> vport:0 2:IXCALLED->3:IXSVC
C (134:48) 06:16:38:03 x25sabre.c:396   {----} will use calling address from ACCEPT.  called <9188328410>
new calling <41539614>
C (134:48) 06:16:38:03 route.c:852   {----} Routing X25 message on <x25_port> vport:0 cmmd:0x3b:DATA
len:87
C (134:48) 06:16:38:03 x25cmn.c:893 {----} Routing (immediate) on <x25_port> vport:0 cmmd:0x3b:DATA
len:87
C (134:48) 06:16:38:03 hostio.c:1190   {----} Sending on <x25_port> fd:204 vport:0 cmmd:0x3b:DATA
(87:12:99)
C (134:48) 06:16:38:03 hostio.c:902 {----} Receiving on <x25_port> fd:204 vport:0 cmmd:0x3f:XON
C (134:48) 06:16:38:03 x25cmn.c:140 {----} Processing message from <X25gate> <x25_port> vport:0
cmmd:0x3f:XON
C (134:48) 06:16:38:03 hostio.c:902 {----} Receiving on <x25_port> fd:204 vport:0 cmmd:0x3b:DATA (q_bit)
C (134:48) 06:16:38:03 x25cmn.c:140 {----} Processing message from <X25gate> <x25_port> vport:0
cmmd:0x3b:DATA
C (134:48) 06:16:38:03 x25sabre.c:881   {----} State change for <x25_port> vport:0 3:IXSVC->8:IXDATA
C (134:48) 06:16:38:03 x25cmn.c:1172   {----} Setting host status:0x701


----- Start Configuration Acknowlegment Packet -----
This is a Phase 1A Config Ack Package:  0x00 0x03 0x00 0x01
------ End Configuration Acknowlegment Packet ------


C (134:47) 06:16:38:03 alcdata.c:1115   {----} Host status: hostup:0x1  linkstat:0x7  miscstat:0x0
IA:0xba  <X25gate> <x25_port>
C (134:48) 06:16:38:03 route.c:852   {----} Routing X25 message on <x25_port> vport:0 cmmd:0x3f:XON len:0
C (134:48) 06:16:38:03 hostio.c:1190   {----} Sending on <x25_port> fd:204 vport:0 cmmd:0x3f:XON
(0:12:12)
C (134:49) 06:16:38:14 signalsnt.c:62   {----} Interupt (sigint)...
C (134:49) 06:16:38:14 server.c:134 {----} Exiting from d:\ver2_32\server\signalsnt.c:91 with exit code 0
Exiting through cleanupServer
C (134:49) 06:16:38:14 socket.c:872 {----} Closed socket/fd 164
C (134:49) 06:16:38:14 socket.c:872 {----} Closed socket/fd 204
E (134:49) 06:16:38:14 ntevents.c:240   {----} WaitForMultipleObject fails.  error:87
```

X.25 Bridge Startup

The following text is sample output from the X.25 Bridge (**x25gate.exe**) on a <u>Windows 2000</u>
system. Parts of the output on <u>Windows NT</u> systems will be different.

In this example, the X.25 Bridge has been started with diagnostic options **–vff -lff**.
This output is taken from the resulting log file, "**x25gate.log**".

Note: For X.25 operation, the X.25 Bridge must be started before the ALC Gateway.
(A separate instance of the X.25 Bridge must be started for each X.25 physical port.)

```
  InnoSys INSCC-Sbus X.25 Gateway
  x25gate ver 2.3.10 as of Apr 27 2001 11:57:32
DTE 1
BOARD_NUMBER 0
PORT_NUMBER 3
SVC 1 3
PACKET_SIZE 512
WINDOW_SIZE 5
PACKET_SIZE_NEGOTIATION 1
FLAG 1
CTS 1
DCD 1
DSR 1


PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_0":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_0"
PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_1":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_1"
PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_2":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_2"
PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_3":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_3"
PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_4":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_4"
PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_5":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_5"
PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_6":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-
a20444b13d3d}\innopci0_6"
PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
```

PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_7":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-a20444b13d3d}\innopci0_7"
PnP_EnumInterfaces: Handle 0x1361a0, state 0x1, GUID 827c0dbd fb76 41e0 9be0a2444b13d3d
PnP_EnumInterfaces: Enumerated "\\.\INNOPCI0_8":
"\\?\pci#ven_11a9&dev_4240&subsys_00000000&rev_03#4&24ab0d93&0&40f0#{827c0dbd-fb76-41e0-9be0-a20444b13d3d}\innopci0_8"
PnP_EnumInterfaces: Enumerated #9 INSCCQP interfaces
PnP_OpenInterface: "\\.\INNOPCI0_8"
Opened board device \\.\innopci0_8
The load image is relative to the system root <C:\WINNT>
The load image file configured in the registry is <C:\WINNT\System32\drivers\PAX5LOA.ROM>
The load image contains System Services: < SYS Services version 1.0.1>
This application is using offboard appId:48 (0x30) and onboard appId:17 (0x11)

port 00 is using appid 00:BUS_APID
port 01 is using appid 00:BUS_APID
port 02 is using appid 00:BUS_APID
port 03 is using appid 00:BUS_APID
port 04 is using appid 00:BUS_APID
port 05 is using appid 07:CONSOLE_APID
port 06 does not have an apid assigned
port 07 does not have an apid assigned
port 08 does not have an apid assigned
port 09 does not have an apid assigned
port 10 does not have an apid assigned
port 11 does not have an apid assigned

appid 00:BUS_APID   is registered
appid 02:ASYN_APID   is registered
appid 04:ALC_APID   is registered
appid 05:ECHO_APID   is registered
appid 09:X25_EVENT_APID is registered
appid 10:ALC_EVENT_APID is registered
appid 15:MON_APID   is registered
appid 17:SYS_SERV_APID   is registered
appid 18:X25_PACKET_APID is registered

magic:0xab1d3ac1 verhigh:0x3 verlow:0x1

This is a current onboard.
This onboard supports X25_PACKET_APID on apid:18.
The X25 Gateway will use onboard appid:18

hostname:<webcrs> servicename:<x25gate> IP address:<64.171.244.92> port:<1412>
PnP_OpenInterface: "\\.\INNOPCI0_3"
Opened board device \\.\innopci0_3 on board:0 port:3
Pid:1128 Setting apid. Onboard:0x12 offboard:0x23
Downloading config...

```
16:37:55  nonDataToBoard 0  dataToBoard 0  fromBoard 0  fromClients 0
(cor chn fre len off)  BOARD   <--->     GATEWAY    <--->  CLIENT
( 0   0 499   1   0)                      <--- LINKSTOP
( 0   0 499 100   0)                      <--- LINKINIT
Starting server...
New Client <0>, socket <276> from 64.171.244.92
16:37:56  nonDataToBoard 0  dataToBoard 0  fromBoard 0  fromClients 0
( 0   0 498   2   0)  RESTARTPENDING --->
*** Alarm 103, 13  Severity 2  LCN 0  Restart Pending
( 0   0 498   2   0)                      <--- RESTARTALLOWED
( 0   0 498   0   0)                          RESTARTPENDING --->
( 0   0 498   0   2)  RESTARTCOMPLETE --->
*** Alarm 104, 13  Severity 2  LCN 0  Restart Complete
( 0   0 497   0   0)                          RESTARTCOMPLETE --->
(0 0): (free 498) BOARD  to GATEWAY  info 0  cmmd (2f)  len 0  off 0
New Client <1>, socket <296> from 64.171.244.92
16:38:03  nonDataToBoard 0  dataToBoard 0  fromBoard 0  fromClients 0
( 1   0 498 298   0)                                    <--- CALL
SVC Call: from   to 9188328410  user len 4: c1 00 00 00
( 1 65535 498 298   0)              <--- CALL
( 1   3 498 428   0)  ACCEPT --->
( 1   3 498 428   0)                      ACCEPT --->
( 1   0 498  87   7)                                   <--- DATA
( 1   3 498  87   7)              <--- DATA
( 1   3 498   0   0)  XON --->
( 1   3 498   0   0)                      XON --->
( 1   3 498   9   5)  DATA --->
( 1   3 498   9   5)                      DATA --->
( 1   3 498   0   0)              <--- XON
( 1   0 498   0   0)                                   <--- XON
```

In the sample X.25 Bridge output above, the RESTARTCOMPLETE indication shows that the X.25 line is up. The ACCEPT packet indicates a successful SVC Call.

Appendix E — X.25 PAD Type Specifications

This section describes the characteristics of the various PAD types that the ALC Gateway supports for X.25 connections.

If you do not yet know the proper PAD type for your X.25 connection, the following information should help determine which PAD type to use.

The ALC Gateway's **PAD_TYPE** configuration option selects the PAD type (in the ***HOST CONNECTION** section of the ALC Gateway configuration file). Note that it is an ALC Gateway configuration option, not an X.25 Bridge option.

The terminology used in this section is specific to the X.25 protocol. Refer to X.25 protocol or host system documentation for additional information.

(Continued)

The <u>Apollo</u> X.25 PAD Type

This PAD type is used only for Apollo X.25 host connections.
This PAD type is selected by the following ALC Gateway configuration option:

```
PAD_TYPE   APOLLO
```

Following are the salient features of the Apollo PAD type:

- IA and TA values are configured for the ALC Gateway's use,
  but are not sent to the host. TIDs (Terminal IDs) identify the client objects.

- SVCs are used. PVCs are not used.
- Q-BIT messages are not used.
- M-BIT messages are supported.
- The character set for data is ASCII.

- One remote (host) X.121 address must be configured.

- At least one local X.121 address must be configured.
  No more than 3 can be configured for each virtual circuit.

- By default, the Gateway will automatically issue calls
  to a configured remote X.121 address.

- Call User Data (CUD) is used in SVC Call packets (but not in Accept packets).
  Up to 16 octets are allowed, but typical Call User Data for Apollo consists of
  the following four octets: `d3 54 57 4e`

- The Activity Timeout is not enabled for SVC connections.

- The No-Op character value is `10` hexadecimal.
  (The Gateway removes No-Op characters from the data stream.)

- Each data message has a twelve-byte header.
  The format of the header is:

      <u>Octets 1 through 8</u>: TID (Terminal ID).
      <u>Octet 9</u>:   Code set selector: 31 hexadecimal (selecting the ASCII codeset).
      <u>Octet 10</u>:   Data format selector: 31 hexadecimal (selecting the 2915 terminal type),
                  or 32 hexadecimal (selecting the 2915 printer type).
      <u>Octet 11</u>:   Status code: 30 hexadecimal (indicates "good" status)
      <u>Octet 12</u>:   Reserved; set to zero.

- Only one IA should be configured for each virtual circuit.
  (Each ALC Gateway configuration file configures one virtual circuit.)

- In messages received from the host, the C1 and C2 characters are represented as follows:
  C1 is in ALC. C2 is in ALC for lines 1 through 12; or ALC modulo 38 hexadecimal for
  lines 13 through 15.

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The <u>SABRE</u> X.25 PAD Type

This PAD type is used only for SABRE X.25 host connections.
This PAD type is selected by the following ALC Gateway configuration option:

    PAD_TYPE   SABRE

Following are the salient features of the SABRE PAD type:

- SVCs and PVCs are supported.
- Q-BIT messages are supported.
- M-BIT messages are supported.

- One SVC Remote (host) X.121 address (or "Hunt Group") must be configured.
- Optionally, one SVC Local X.121 address can be configured.

- By default, the Gateway will automatically issue calls
  to the configured remote X.121 (Hunt Group) address.

- Call User Data (CUD) is allowed in SVC Call and Accept packets.
  The Call User Data value consists of six octets:
  The first four octets are configured by the ALC Gateway's **CUD** option:

        CUD c1 00 00 00

  When making a call, the Gateway automatically appends the configured
  LNIA (Line and IA) values to the Call User Data.

- The default Activity Timeout for SVC connections is 15 seconds.

- The character set for data is EBCDIC
  (with the exception of the Data Header discussed below).

- Each data message has a three-byte header.
  The data header is coded in ALC (not EBCDIC).
  The format of the header is:

    <u>Octet 1</u>: Line number.
    <u>Octet 2</u>: IA (in octal).
    <u>Octet 3</u>: TA.

- One or more IAs should be configured for each virtual circuit.
  (Each ALC Gateway configuration file configures one virtual circuit.)

The <u>Worldspan</u> (IATA SVC) X.25 PAD Type

This PAD type is used only for Worldspan X.25 host connections.
This PAD type is selected by the following ALC Gateway configuration option:

```
PAD_TYPE   WORLDSPAN
```

Following are the salient features of the Worldspan PAD type:

- SVCs are used. PVCs are not used.
- Q-BIT messages are not used.
- M-BIT messages are supported.
- The character set for data is padded ALC.

- At least one remote (host) X.121 address(es) must be configured.
  No more than 3 can be configured for each virtual circuit.

- A local X.121 address must also be configured.

- By default, the Gateway will <u>not</u> automatically issue calls
  to a configured remote X.121 address.

- The Gateway may accept an incoming call if:
  - the <u>called</u> address matches the configured local X.121 address, and
  - the <u>calling</u> address matches one of the 3 configured remote (host) X.121 addresses.

- Call User Data (CUD) is used in SVC Call packets (but not in Accept packets).
  The Call User Data value consists of nine octets:

  ```
  fe 12 10 00 a1 00 00 00 00
  ```

- The default Activity Timeout for SVC connections is 15 seconds.

- Each data message has a three-byte header.
  The format of the header is:

  <u>Octet 1</u>: Line number.
  <u>Octet 2</u>: IA.
  <u>Octet 3</u>: TA.

  (The TA value in the third octet may use 'Native plus 40' encoding.)

- Only one IA should be configured for each virtual circuit.
  (Each ALC Gateway configuration file configures one virtual circuit.)

The <u>Galileo</u> X.25 PAD Type

Galileo X.25 host connections should be configured with the Worldspan PAD type:

    PAD_TYPE   WORLDSPAN

Following are the salient features of this PAD type for Galileo connections:

- This PAD type is also called "EMTOX" and "ASTOX".

- SVCs are used. PVCs are not used.
- Q-BIT messages are not used.
- M-BIT messages are supported.
- The character set for data is padded ALC.

- At least one remote (host) X.121 address(es) must be configured.
  No more than 3 can be configured for each virtual circuit.

- A local X.121 address must also be configured.

- By default, the Gateway will automatically issue calls
  to a configured remote X.121 address.

- Call User Data (CUD) is used in SVC Call packets (but not in Accept packets).
  Typical Call User Data for Galileo is as follows:

      FE 11 00 91 00 00 00 00 00 00 00 00 01 00 00

  <u>Note</u>:   The Call User Data required for Galileo often differs
          from the default CUD value provided by the Gateway.

- The default Activity Timeout for SVC connections is 15 seconds.

- Each data message has a three-byte header.
  The format of the header is:

      <u>Octet 1</u>: Line number.
      <u>Octet 2</u>: IA.
      <u>Octet 3</u>: TA.

  (The TA value in the third octet may use 'Native plus 40' encoding.)

- Only one IA should be configured for each virtual circuit.
  (Each ALC Gateway configuration file configures one virtual circuit.)

The <u>Air New Zealand</u> (IATA PVC) X.25 PAD Type

This PAD type is used only for Air New Zealand X.25 host connections.
This PAD type is selected by the following ALC Gateway configuration option:

```
PAD_TYPE   AIRNZ
```

Following are the salient features of the Air New Zealand PAD type:

- PVCs are used. SVCs are not used.
  (Therefore, X.121 addresses do not apply.)

- Q_BIT messages are not used.
- M_BIT messages are supported.
- The character set is padded ALC.

- Each data message has a three-byte header.
  The format of the header is:
  <u>Octet 1</u>: Line number.
  <u>Octet 2</u>: 0 (zero).
  <u>Octet 3</u>: TA.

Note: An index to Gateway configuration options can be found on page 81.

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