

ORCA GX-SERIES SOFTWARE MANUAL

**Release 8.0
Beta**

N U E R A™

CONFIGURING A GATEWAY

After the hardware has been assembled and the basic gateway settings have been entered into the console port, it is time to fully configure your ORCA gateway. Gateways are configured through the configuration software called the Nuera Configurator, which is sometimes bundled into NueraView, allowing the Configurator to work with HP OpenView.

Overview

This section illustrates the most commonly-used screens in the Configurator, explaining each element of the screens and the possible configuration options.

Main Screen

The first time the Nuera Configurator is opened, the *Storage File Error* dialog appears. This dialog indicates a mismatch between the unit's configuration and the Nuera Configurator storage file representing that unit, because the storage file does not yet exist. To resolve the mismatch, select one of the following options:

Upload: Select this option to transfer the actual configuration as it exists in the GX to the Nuera Configurator

storage file. This is the normal response to a mismatch when a unit is first accessed.

Unit Only: Select this option to configure the unit's configuration directly by sending commands to the unit. This option does not update the Configurator storage file. To resolve the mismatch after configuring a unit in this mode, you must execute an *Upload* to copy the newly configured unit's configuration into the storage file.

Storage Only: Select this option to configure the storage file directly by sending commands to the storage file. This option does not update the ORCA GX's configuration.

Abort: Select this option to quit the application.

The gateway can be configured either directly, in unit only mode, or by configuring a storage file then downloading that file to the gateway.

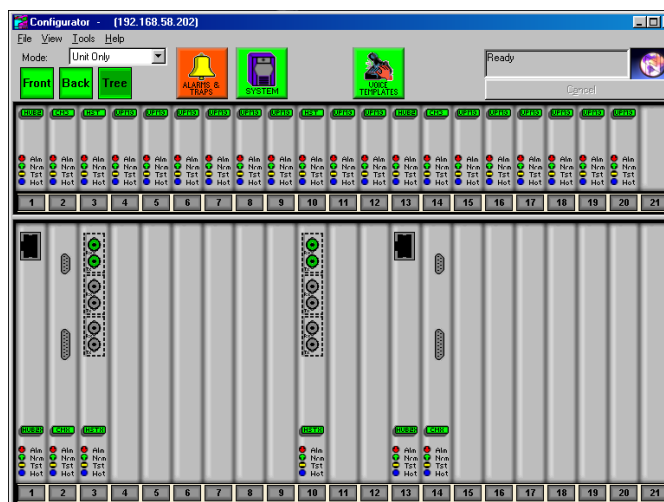


Figure 11. Nuera Configurator Main Screen

The main screen has a number of key elements:

- the main menu,
- the mode selection list

- the view buttons,
- the major operation buttons,
- the status window,
- and the card view.

Main Menu

The main menu contains a number of simple functions that most programs also have.

File Menu

The file menu's *Save File As* option enables you to save a copy of the current configuration as a storage file. The name of the storage file must be in the form of an IP address. The *Exit* option ends the Configurator session.

View Menu

The *Front Card Numbering* option controls how front cards are numbered on the NueraView main screen. Numbering can be set to descend left-to-right (to match the gateway's labeling), or descend right-to-left.

The *Refresh Alarms and Views* option updates the current alarms and card status.

The *Tree List Control Extended* option controls how the directory structure is displayed.

The *Properties* option enables you to set how the cards display on the screen.

Tools Menu

The *Upload (From Unit)* option enables you to copy the ORCA GX's configuration to the local storage file.

The *Download (To Unit)* option enables you to copy the local storage file configuration to the ORCA GX. This is intended for pre-configuring a unit or for restoring configuration to a gateway in a catastrophic situation. DS1s

should be removed from service at the switch before performing a configuration download.

The *Download Code (TFTP)* option launches the TFTP utility that enables you to load code updates to the ORCA GX.

The *Condense Storage File* option writes an optimized version of the current (in-memory) configuration to the storage file.

Help Menu

The *Help Topics* option provides a pull-down, online ORCA GX help facility. (Contextual help is provided for each ORCA screen.)

The *About orcanms* option provides information regarding the release of the ORCA GX NMS currently running.

Mode Selection List

Use this pull-down list to change the operational mode.

Normal

In this mode, the Configurator stores all of an ORCA gateway's configuration settings in the storage file. When you query the target ORCA GX, the Configurator obtains the chassis data from the configuration file in its own storage, thereby eliminating the network delay that would be encountered when communicating between the computer and the chassis. In this mode, commands to a gateway are sent to the storage file and the gateway simultaneously.

Unit Only

In this mode, the Configurator communicates directly with the ORCA gateway through the IP connection in order to obtain status information and issue commands. The storage file is not accessed in this mode. This communication mode is slower than the *Normal* mode because all data must pass through the network.

First, go to the main screen in the Nuera Configurator. Double-click on the DS3's port on the HSTX in slot 3. The following screen will open:

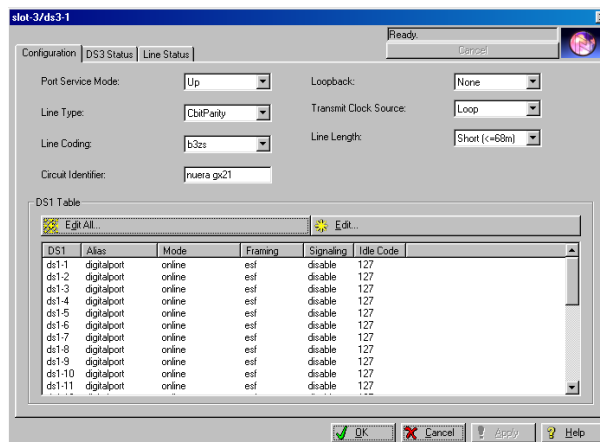


Figure 18. DS3 Configuration Screen

Note



Multiple DS3 ports can be selected at the same time from the main screen by using the Control key. Select multiple ports if they will have the same configuration.

Configure the DS3 settings to match your network requirements. The list below explains each parameter.

Port Service Mode

This setting allows you to turn the circuit on or off. Choose **Up** or **Down**.

Line Type

Choose the same line type that the DS3s are currently running: **M13** or **CbitParity**.

Line Coding

Choose the appropriate line encoding. Currently, **b3zs** is the only encoding available.

Circuit Identifier

This field allows you to enter in a descriptive name for the circuit to help with quick identification. This name is not recognized by an external controller.

Loopback

Choose the loopback state you prefer: **none**, **PayloadLoop**, **InwardLoop**, or **LineLoop**.

- The **PayloadLoop** is a DS3 subscriber loop where the loop is performed after the DS3 has been demuxed into DS1s.
- The **LineLoop** is a DS3 subscriber loop where the loop is performed before any operations are performed on the DS3.
- The **InwardLoop** is a DS3 network loop where the loop is performed after the DS3 has been muxed.

Transmit Clock Source

This setting identifies the source of the clock used by the DS3 link. Choose from **local** or **loop**. **Local** uses the gateway's internal clock as the transmit clock source. **Loop** uses the recovered receive DS3 clock source as the transmit clock source. The **loop** setting is recommended.

Line Length

This setting refers to the length of the DS3 cable. If you have a long line, compensations will be made for signal degradation. Choose **Short** [$\leq 68\text{m}$] or **Long** [$> 68\text{m}$].

After configuring the DS3, you must configure the DS1s that are being carried within the DS3. Keep the *DS3 Configura-*

tion screen open, click *Apply*, and continue to the next section.

Configuring the DS1s

Open the *DS3 Configuration* screen to configure the DS1s (T1s). Click on a single DS1, or on multiple DS1s by using the control key or the shift key. Click the *Edit* button. The *DS1 Configuration* screen will appear.

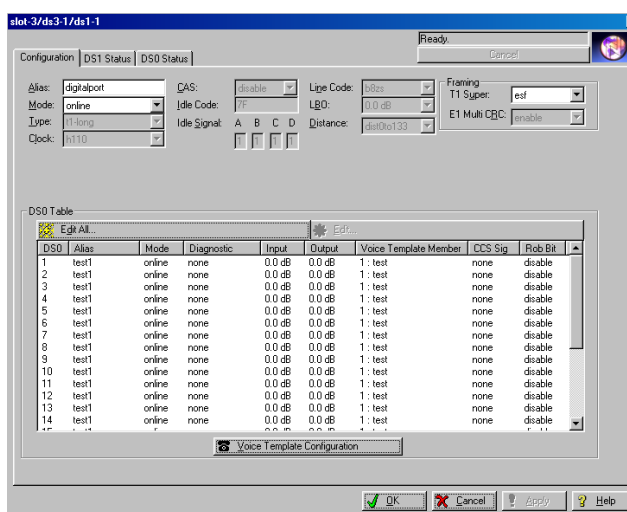


Figure 19. DS1 Configuration Screen

Configure the DS1(s) to your network specifications. Use the explanations below to make the correct selections.

Alias

This field allows you to enter in a descriptive name for the DS1 to help with quick identification. This name is not recognized by an external controller.

Mode

This setting allows you to turn the circuit on or off remotely, as well as perform troubleshooting and diagnostic tasks.

TYPICAL NETWORK APPLICATION CONFIGURATION

This chapter presents a possible network application of the ORCA GX 8.0 gateway. The gateway is designed for voice over Internet Protocol (VoIP) and for voice over Digital Circuit Multiplication Equipment (DCM3E) gateways.

In addition, the ORCA gateway, if supported by a softswitch, can interoperate with Nuera's F-Series gateways, which are designed for low-density applications.

The example in this chapter requires the addition of a softswitch, such as Nuera's SSC, into the domain. For more information about the Nuera ORCA SSC, see the *ORCA SSC User's Guide*.

Carrier-Switched Network Application

Overview

When an ORCA GX 8.0 gateway is coupled with the Nuera SSC Softswitch 7.0 and partner vendor class 5 softswitches, international and domestic long distance and local carriers

can benefit from the cost savings brought by compressed and uncompressed voice and the replacement of tandem and local telephony switches. Using an SS7 network, this is the primary application of GX, release 8.0:

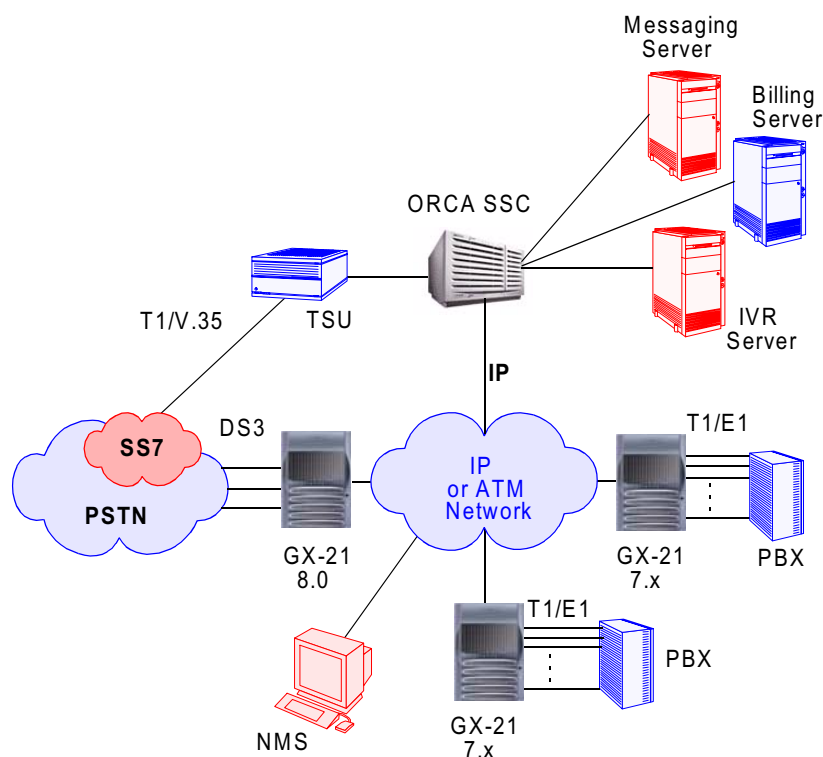


Figure 26. Carrier-Switched Network Application

An ORCA GX and an ORCA SSC can be combined to produce a carrier-class switching platform. One or more soft-switches can provide all call control and signaling services to a network of ORCA gateways. In addition, the call agent provides a SIP interface to third-party systems that support custom, enhanced network services. ORCA gateways are fully interoperable with soft switches produced by other manufacturers.

The ORCA gateway communicates with the ORCA SSC using the industry-standard Media Gateway Control Protocol (MGCP).

Nuera's ORCA SSC softswitch is built upon the Hewlett Packard L1000 server platform and uses HP OpenCall as its foundation. The ORCA SSC provides a wide variety of tele-com signaling protocols: SS7, ISDN, R2, and CAS signaling.

Note

The ORCA SSC only provides SS7 signaling for the GX-21 Release 8.0. To utilize ISDN, R2, or CAS signaling, a GX-21 Release 7.x gateway is necessary.

Softswitch Functionality

The SSC is essentially a real-time switching application resident on an external computing platform that assumes basic call-control and implementation of supplementary services for multiple ORCA voice gateways. In this scheme, the voice gateways are client elements performing repetitive voice packetization and de-packetization; whereas, the complex call switching and routing functions are delegated from the voice gateway to the SSC.

The ORCA SSC centralizes and simplifies dynamic switching, routing, management, and call processing feature operations. While providing the network call processing and routing abilities, the SSC also provides a portal to enhanced services such as Interactive Voice Response (IVR), voice, and fax messaging.

Using the MGCP protocol, the SSC can control all GX-Series units within its domain and thereby provide the functionality of a traditional telecommunications switch. The relationship between the ORCA SSC and the GX-Series voice gateway is that of server and client, respectively.

The main tasks performed by the ORCA SSC are:

- Communicating with other domains using SIP.
- Routing calls to and from the ORCA SSC-managed network from other networks.

- Managing call-related resources such as ports, trunks, and routes.
- Recording call accounting data.

Configuration

Use the Nuera Configurator or NueraView to follow the procedure below. This procedure outlines step-by-step how to configure a gateway to work in the network application illustrated above. In order to complete this configuration procedure correctly, make sure you have familiarized yourself with “Configuring a Gateway” on page 37.

1. Verify the gateway hardware is installed correctly and that the console port configuration has been done. Refer to the *ORCA Gateway Hardware Manual* for more information.
2. Add the HUB, HUBX, CM3 and CMX cards. Refer to “Adding Cards” on page 49 for more information.
3. Set the *ORCA Gateway Name* on the system screen under the Config tab. Be sure to set the gateway name to match the settings in your softswitch.

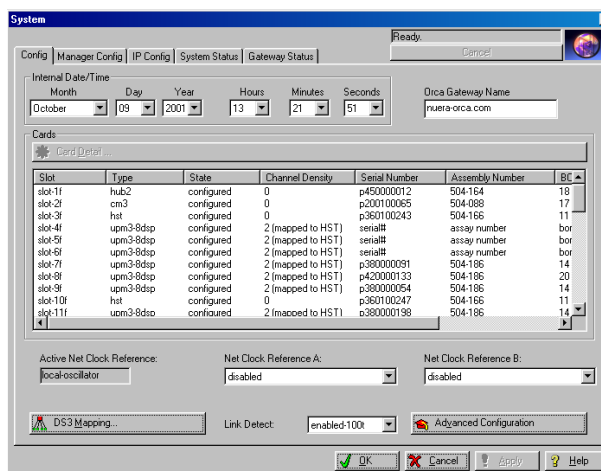


Figure 27. Nuera Configurator System Screen

4. Add a Manager and a Softswitch. Refer to “Add a Manager” on page 63 and “Add a Softswitch” on page 65 for more information.

5. Add and configure the HST and HSTX cards. See “Adding the HST/HSTX Cards” on page 50.
6. Configure the voice templates. Set the *Call Processing Type* to **mgcp-trunk**, and the *Packet Protocol* to **rtp**. Make sure the voice template settings parallel the *Density* setting selected in step 5. See “Creating Voice Templates” on page 56.
7. Configure the DS3s. Make sure to correctly set the *Transmit Clock Source* and *Line Type*. These settings depend on the configuration of the equipment on the other end of the connection. If possible, Nuera recommends the **loop** setting for *Transmit Clock Source*. See “Configuring DS3s” on page 52. After configuring the DS3s, make sure to turn them **Up**.
8. Configure the DS1s. Set the *T1 Super* to match the framing type of the DS3. Refer to “Configuring the DS1s” on page 55.
9. Configure the DS0s. Refer to “Configure DS0s” on page 62.

6. Go to the *Options* menu and select *Event Configuration*.
7. In the upper window (*Enterprises*), scroll down and select **orcaTrap**. In the lower window (*Events for Enterprise orcaTrap*), select each new alarm in turn and do the following:
 - Double click on the alarm.
 - Click on the *Event Message* tab.
 - Click the *Log & Display* radio button.
 - Select *Error Alarms*.
 - Click *OK*.
8. When all the new alarms have been updated, close the dialog box. When you are prompted to save the changes, click *Yes*.

Viewing Alarms

The purpose of this section is to provide some general knowledge and direction for the user to select an appropriate technique for using OpenView to isolate a problem. The nature of every network is different, and the approach to solving a problem on that network will be different for every problem. It is up to the operator to determine the correct path for designing their network's fault isolation procedure.

General Information About Fault Isolation

There are two utilities available for use in fault isolation: NueraView and HP OpenView. As a general rule, HP OpenView's Alarm Browser feature is used to monitor the system, while NueraView's AlarmSheet will report the GX's alarm state. OpenView is also used to log and store all events, to aid in pinpointing any problem. The Alarm Traps section of OpenView configures alarms so that all alarms are logged into the Error Alarms section of the Alarm Browser. The Alarm Browser automatically launches each time OpenView is launched.

During normal operation, NueraView should be closed and HP OpenView's Alarm Browser window should be open and displaying traps. If a trap appears in this window, or problems are suspected, NueraView can be launched to view the current alarm state of the system. There are two tabs on this sheet: *Alarm* and *GX*. The *GX* tab shows subscriber-related alarms. The *Alarm* tab shows all other alarms, such as hardware and T1 alarms.

As alarms occur, traps will be sent to NueraView and displayed on the AlarmSheet. Most alarms have corresponding set and clear events. When an alarm clear occurs, the corresponding alarm set will be replaced with the clearing trap. Some traps record transient events that do not have clearing events. If these traps occur, they will be displayed on the AlarmSheet until the user acknowledges them or chooses *Refresh Alarms and Views* from the *View* menu under the main menu.

The AlarmSheet can only display a limited number of traps. If a large number of trap are generated due to a system power-up or a card insertion, the complete trap list is in OpenView. OpenView is also the best place to determine if a single alarm is being set and cleared in rapid succession.

OpenView's Alarm Browser is ideal for viewing and saving the alarm history of the GX. Loss of IP connectivity will turn the GX icon red in OpenView. Other alarms have no effect upon the icon. There is third-party software available from HP that can page or e-mail an operator when alarms occur. To access alarm information about the objects on the map, select the object and then go to the Fault menu and select Alarms. The All Alarms Browser window displays automatically, filtering out all alarms not associated with the selected object or objects.

Since OpenView is unable to reread trap information from the GX, traps should not be deleted from the Alarm Browser. If it is necessary to close OpenView, an alarm log should be generated, as the current traps will not be retained when the program is closed. Deleting alarms or

closing OpenView may cause OpenView to report everything as clear while NueraView displays an alarm.

The Alarm Browser Window

The Alarm Browser window lists all alarms for the indicated category. The alarms are in reverse chronological order. Each alarm displays:

Ack

Indicates whether or not the alarm is acknowledged.

Cor

Indicates this alarm is the root cause of a group of alarms identified by the Event Correlation System (ECS).

Severity

The level of the alarm, ranging from Low to Critical.

Date/Time

A timestamp marking when the alarm was generated.

Source

An identifier (e.g., a node name) for the network object where the alarm originated.

Message A

A brief description of the alarm.

The Alarm Browser can be manipulated to isolate a problem. Alarms remain visible in the Browser window until they are deleted or until the maximum number of alarms has been reached. You can configure the Alarm Browser by:

- Setting the maximum size of the event database (the default is 16 M).
- Setting the maximum number of alarms in the

Alarm Browser's state file (the default is 3500).

- Setting the number of alarms that should be deleted when the state file reaches maximum capacity.
- Copying or restoring the Alarm Browser's state file.
- Controlling the look and behavior of the Alarm Browser.
- Assigning alarm categories.

Filtering alarms in the Browser allows you to limit the number of alarms displayed. For example, you can choose to display only those alarms relevant to your troubleshooting efforts, like alarms generated from a specific node. Each person using NNM Broker can dynamically filter their alarm list as they desire. The information displayed is based on specific criteria. All the set criteria must be true for the alarm to display. The criteria options are:

- Severity level
- Source IP address (allows the use of wildcards to specify a range of addresses)
- Acknowledged or unacknowledged alarms
- Alarm time span
- Message string word search
- Event type

Nuera recommends creating several Alarm Browsers: one with all alarms, one with all alarms for a specific ORCA GX, and one which only displays critical alarms for each GX.

Nuera also recommends correlating each alarm with its clear and to put those entries right next to each other to make it easier to sort through the Alarm Browser to see if an alarm has been cleared.

Displaying Alarms For a Map Symbol

To access alarm information about objects on the map, select the object and then go to the Fault menu and select Alarms. The All Alarms Browser window displays automatically, filtering out all alarms not associated with the selected object(s).