



HPX-1600 USER GUIDE

Chapter 3-3: Digital Access Cross Connect Switch (DACS)

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1. INTRODUCTION

The Digital Access Cross-Connect Switch (DACS) is standard in the HPX-1600-IA and HPX-1600-SS models.

The DACS is used to groom voice interfaces and serial data in multiples of DS0 (nx64Kbps) into composite E1 or T1 trunks for local termination or transport over a High Speed Optic trunk. The DACS is configured in software, using the Cross Connect Configuration Window in HPXView.

2. CROSS CONNECT CONFIGURATION WINDOW

The Configuration Summary box in the main HPXView screen has a "Cross Connect" button, which when selected displays the cross connect configuration window. The DACS configuration is reached immediately in a HPX-1600-IA and the HPX-1600-SS requires an additional step by selecting the "DACS" button.

For all products the resulting DACS window is as shown below in Figure 1.

A dialog will also open automatically which asks the user if they would like to overwrite the current configuration with the HPX-1600 node's cross connect. If the "yes" button is selected, HPXView will read the cross connect configuration from the connected node and display it. If the "no" button is selected, the default cross connect will be loaded and displayed. If the file default.XCN does not exist, the most recently used cross connect will be displayed on the screen.

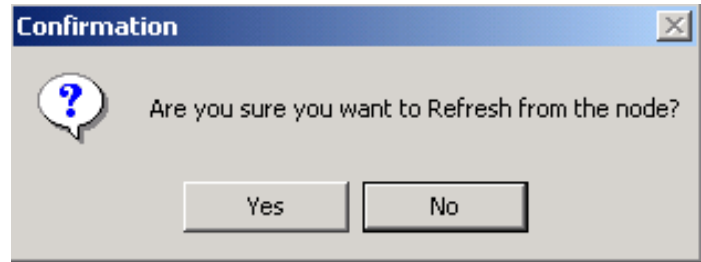


Figure 1: HPXView Cross Connect Configuration

The T and F columns refer to a "To" and "From" DS0 for which any particular time slot has a cross connect.

This DACS screen depicts the status of every DS0 connected to the DACS. Each IM has a connection to a number of DS0s for each port. The port details are configured within each specific interface window. The default display mode shows only usable timeslots for the installed interface modules. In figure 1 above this is illustrated by,

- slot 07=2xT1,
- slot 08=2xE1,
- slot 09=1Ethernet,
- slot 10=2xMPS
- slot 11=2xFXS.

Identify an IM slot then select a DS0 in the "From" column by clicking with the Left mouse button. The destination stream is selected by dragging, with the Left mouse button held, to the destination "To" DS0. This establishes a simplex channel only. Most data and voice applications will require full-duplex operation. To establish a full-duplex cross connect, simply repeat the initial process and configure the cross connect in the reverse direction.

A connection can be aborted before it is completed by a click of the right mouse button, or a press of the escape key while the origin DS0 is being "dragged."

If many DS0s with a particular connection are to be cross connected by a super rate or many parallel DS0s, the initial source DS0 selection process involves the same process as above although many DS0s are selected and then dragged in a single operation to connect to the selected IM slot and "To" DS0 time slots.

A "From" DS0 may be selected as a common source for multiple "To" DS0s. This feature allows the cross connect to support broadcasting for applications such as video.

2.1. DISPLAYING A CROSS CONNECT SOURCE

Upon release of the mouse button, the connection is complete, and the connections of every DS0 in the destination IM are shown.

Clicking on the "To" button for any IM slot, toggles the display of the connections to each destination DS0 in that IM. Clicking on the "From" button for any IM selects every origin DS0 within that IM.

Checking the tick-box to the left of IM 01, will change the display to show the full matrix of 1024 x 1024 x Ds0 timeslots. Refer to figure 2.

Clicking the asterisk button to the right of IM16 will toggle the "Show all" command. (Refer to Figure 2)

Clicking once will show all connections. Clicking a second time will show none of the connections. Clicking on the "T" button of each E1 stream will toggle the display or hide feature of the cross connects to this slot.

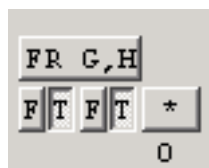


Figure 2: "Show All" toggle buttons

2.2. SETTING CONNECTION COLOURS

The colour palette shown on the cross connect screen can be used to show different connections in different colours. (Refer to Figure 3).

Clicking on one of the coloured squares will mean that cross connects will be drawn in that colour. The ticks below each coloured box show whether cross connects of the corresponding colour are being displayed. Clicking on this tickbox toggles the display for the given colour.

The asterisk button to the right of the tick boxes toggles between showing selected cross connects as connection lines, or by placing a dot in each DS0 that has been cross connected to another.



Figure 3: Cross connect colour palette

2.3. DELETING A SINGLE CROSS CONNECT

To delete a cross connect without disturbing other connections that are using a common source, follow these steps. Identify the "From" IM DS0 slot. Left click to select the slot then Right click to display the menu box as displayed in Figure 4. To delete the link simply click on "delete links" from the drop down menu.

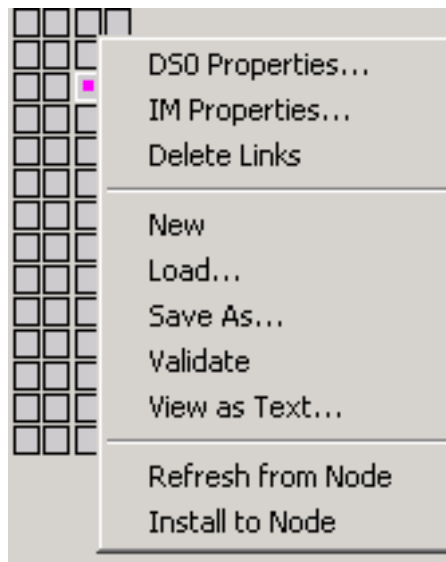


Figure 4: Delete Cross Connect

2.4. CROSS CONNECT CONTROLS

Cross Connect controls are available as buttons at the bottom edge of the DACS windows or by a right click on any part of the grey background of the Cross Connect Window.

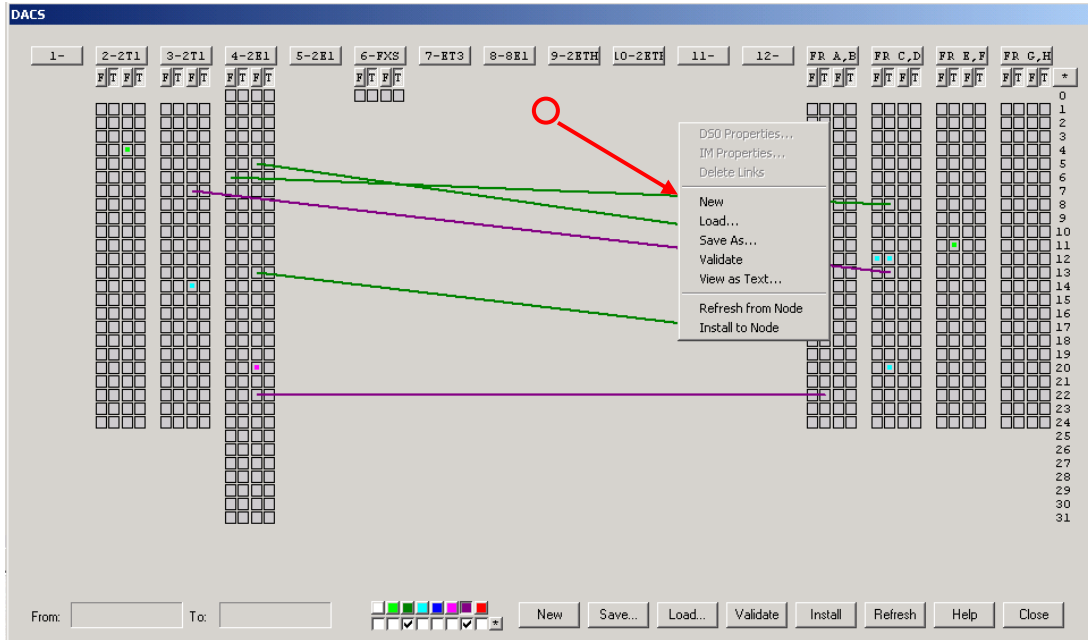


Figure 5: Cross connect controls

- NEW** Creates a new cross connect table, contains no connections, prompts for save file name.
- LOAD** Opens a nominated Windows (*.XC2) file and displays it in the cross connect table.
- SAVE** Saves the cross connect table to the current Windows (*.XC2) file.
- SAVE AS** Saves the cross connect table to the nominated Windows (*.XC2) file.
- INSTALL to Node** Writes the currently displayed cross connect table to the connected, target HPX-1600.
- REFRESH from Node** Reads from the currently connected target HPX-1600 and displays the cross connect table.
- VALIDATE** Compares the current cross connect to the configured Interface Modules, removing cross connections where no IM configuration exists.

2.5. IM TYPES AND DSO TIMESLOTS

Each interface slot has two TDM bus connections to the DACS. Each TDM bus carries the equivalent of a 2Mbps (E1) signal. Dual port interface modules connect the “A” port to the left side and the “B” port to the right side 2Mbps TDM bus of each slot as displayed in HPXView. The cross connect switch and table display the full 32 DS0 time slots for all types of IM. Not all IM types are able to access all of the 32 time slots. Refer to Table 1 when you configure your cross connections.

IM Types / Time slots	E1	T1	MPS	All Voice IM E&M FXS
0	Uses All timeslots 0 to 31		Uses timeslots 0 to 31 as required	Timeslot 0
1 to 24		Uses timeslots 1 to 24		
25 to 31				

Table 1: IM types and DS0 time slots

2.6. TIMESLOT RESERVATION AND NOTATION

Individual or groups of time slots may be marked as reserved or have an application note attached. Simply marking time slot 15 also makes it easier to locate time slot 16 when cross connecting for Port B on an MPS IM.

To notate or reserve a time slot;

- Left Click on the “From” DS0
- Right click on the same DS0
- Select Properties
- The DS0 Attribute Window is displayed

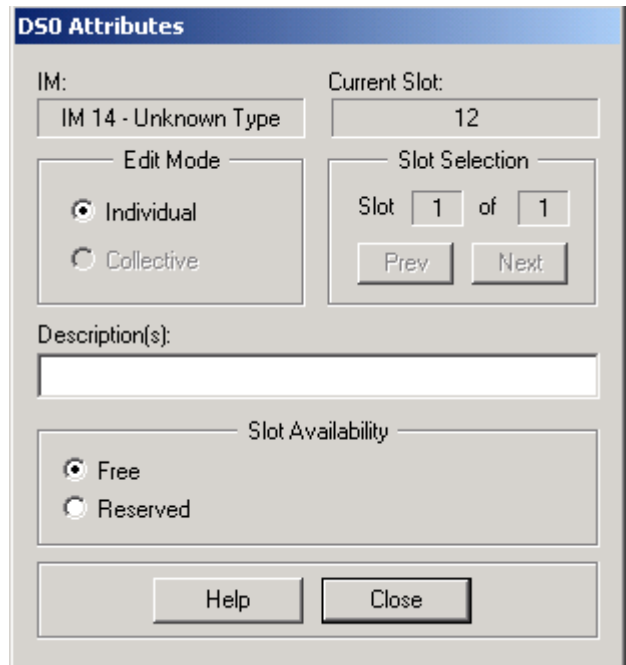


Figure 6: DS0 Attribute Window

2.7. TEXT CROSS CONNECT DISPLAY TABLE

A text display is an alternative to the graphical representation of the active cross connects. The text table is selected by clicking the "View as Text" button.

	IM 01 A - B	IM 02 A - B	IM 03 A - B	IM 04 A - B	IM 05 A - B	IM 06 A - B	IM 07 A - B	IM 08 A - B	IM 09 A - B	IM 10 A - B	IM 11 A - B
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Figure 7 - HPXView Display as Text - Cross connect

2.8. HPX-1600-SS CHARACTERISTICS

When the DACS is used in the HPX1600-SS, interface slots 01 to 12 are mapped to the matching DACS slot numbers. The remaining four DACS slots which contain a total of eight ET1 streams are mapped to the Framer before being mapped to the SDH or SONET payload. These eight streams are referenced as "A", "B", "C", "D", "E", "F", "G" and "H". If the HPX-1600-SS is configured for SDH, these streams configured as E1 streams, for SONET the configuration is as T1 streams.

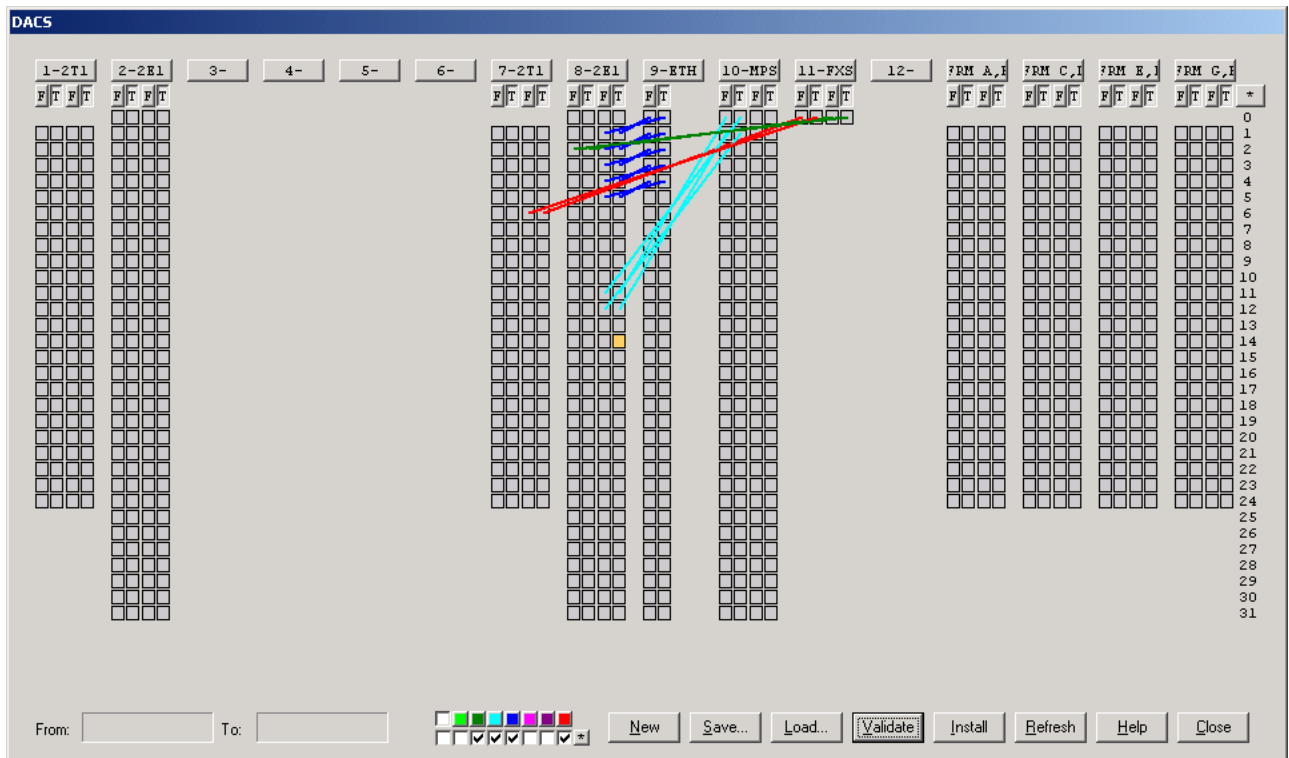


Figure 8 : HPX-1600-SS DACS Framer slot number plan