GRASS VALLEY GROUP

Configuration Manual

software release **8.0**

071053302
FIRST PRINTING: **NOVEMEBER 1991**
REVISED PRINTING: **JULY 2001**

SERIES 7000
SIGNAL MANAGEMENT SYSTEM

Contacting Grass Valley Group

Region	Voice	Fax	Address	Web Site
North America	(800) 547-8949 530-478-4148	(530) 478-3347	Grass Valley Group P.O. Box 599000 Nevada City, CA 95959-7900 USA	www.grassvalleygroup.com
Pacific Operations	+852-2585-6688 Support: 852-2585-6579	+852-2802-2996		
U.K., Europe, Asia, Middle East	+44 1753 218 777	+44 1753 218 757		
France	+33 1 45 29 73 00			
Germany	+49 221 1791 234	+49 221 1791 235		

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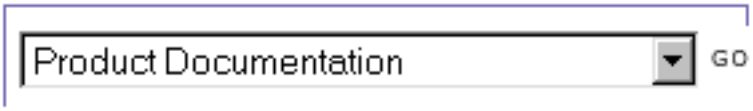

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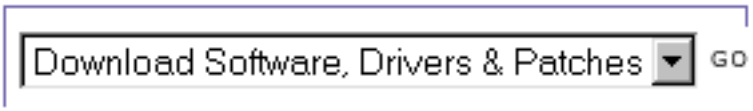

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Preface

About This Manual

This manual provides configuration information specific to Series 7000 Signal Management Systems.

Documentation Set

This Configuration Manual is part of the Series 7000 manual set which also includes an Installation Manual, a Service Manual, and a User Manual. An electronic copy of the manual set is on the Documentation CD ROM.

Conventions Used In This Manual

Menu selections, soft buttons, or other software generated items in the Series 7000 Configuration Editor GUI are shown in the following type:

- Click **OK**.
- Under **ONLINE**, select **CONTROL**, then **TAKE** to access the Take window.
- **EXCLUDED** (software generated item) momentarily appears in the **PRESET** (control panel label text) display if a Take is attempted of a valid Source that is excluded by the system.

Button text and other labels on the Series 7000 Control Panels are shown in the following type:

- Press the **Protect** button.
- Press the **SRC** button.

Code text is shown in the following type:

- `SMS7000> booted`
- Enter **`booted`** at the prompt.

Section 1

Getting Started

Introduction

The Series 7000 has applications that reside on a Windows95/98/NT PC-compatible computer. The Configuration Editor Graphical User Interface (GUI) is used to create the configuration files that control how the Series 7000 System functions. The Print Config application will create configuration reports in various selectable formats to be viewed, printed, or saved as text files. The Visual Status Display can be customized to present views in user-selectable colors and formats. In the Series 7000 documentation the PC where these applications reside is referred to as the GUI computer.

Configuration Overview

Because every facility is unique, the Series 7000 must be configured to operate efficiently in the routing environment. Figure 1-1 illustrates the steps to follow to configure the router.

Figure 1-1. Configuration Process Overview

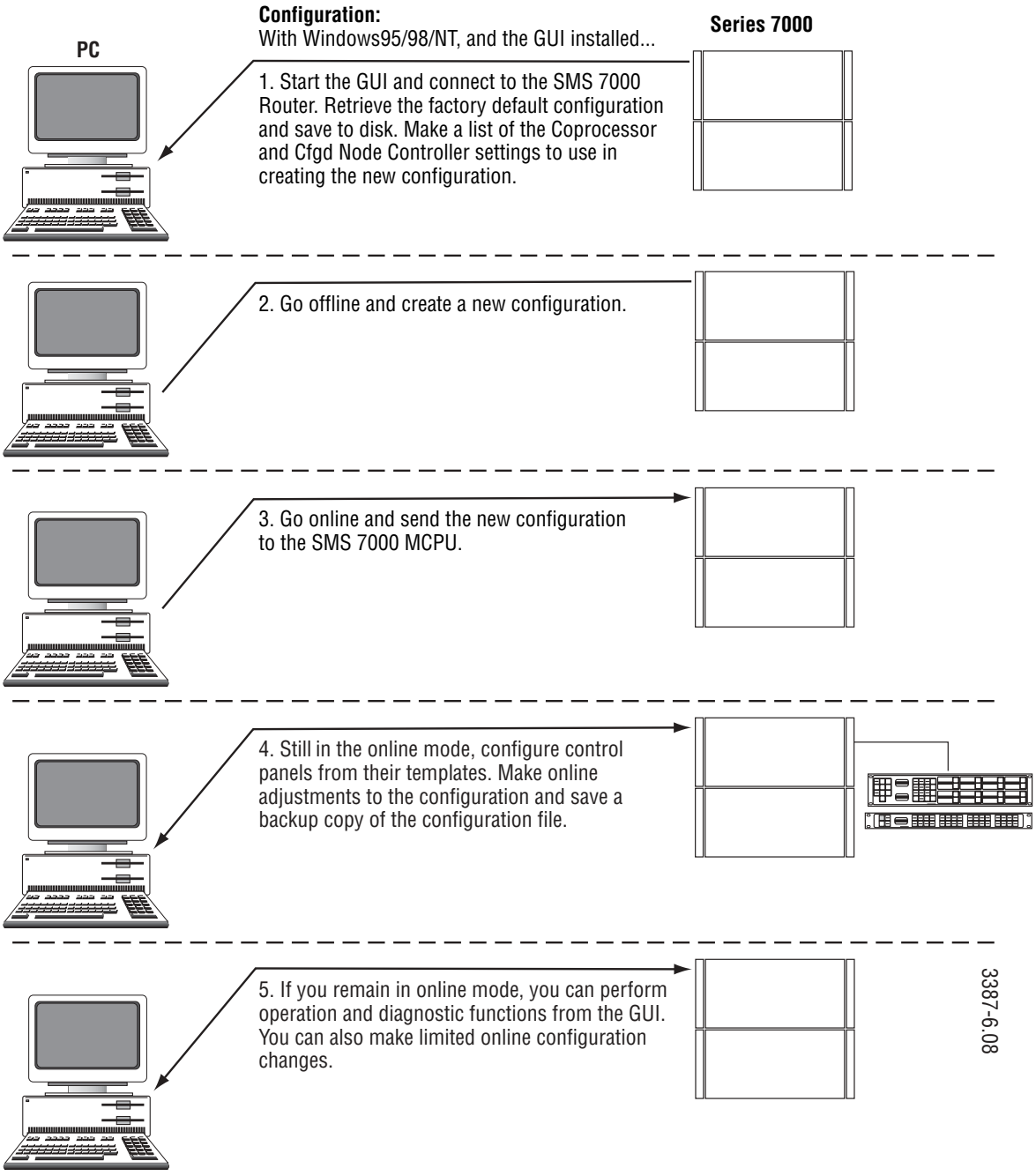


Figure 1-2 and Table 1-1 show the relationship between the physical hardware and the software in a system. The elements shown are required to create a Salvo containing Video, Audio Left, and Audio Right signals.

The Node Bus is the coaxial bus through which the MCPU communicates with the Node Controller modules.

The two Audio matrices use a combined Node Controller record using a Slice for each matrix, they have separate Physical and Virtual matrices, and then use a combined Level.

The Video matrix uses a single Node Controller record with 1 Slice, a single Physical matrix, and then spilts the Virtual component into 4 matrices. Three of the Virtual matrices are then combined into 1 Level.

Figure 1-2. Hardware Elements

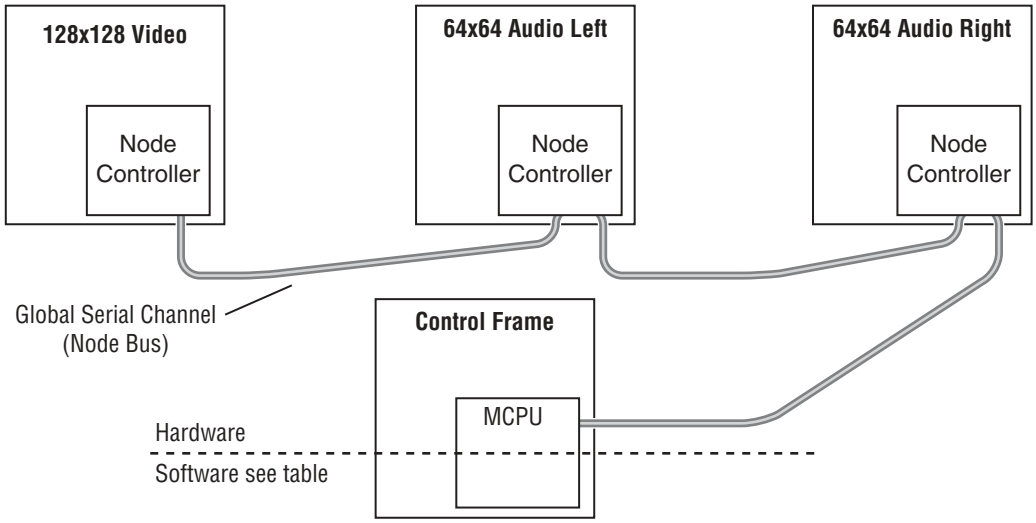


Table 1-1. Software Elements

NC_Vid with 1 Slice				NC_Audi Slice 1 (Left Audio) and Slice 2 (Right Audio)		1) Set Memory Limits
						2) Create Node Controller record
Video				AudioL	AudioR	3) Create Physical Matrix record (within a physical matrix, any output can connect to any input)
Video	R	G	B	AudioL	AudioR	4) Create Vitual Matrix record (Logical Signal Type)
Video	RGB			Stereo		5) Create Level record
Source/Destination Connector Mapping						6) Create Source and Destination record
Salvo Table						7) Create Salvo record

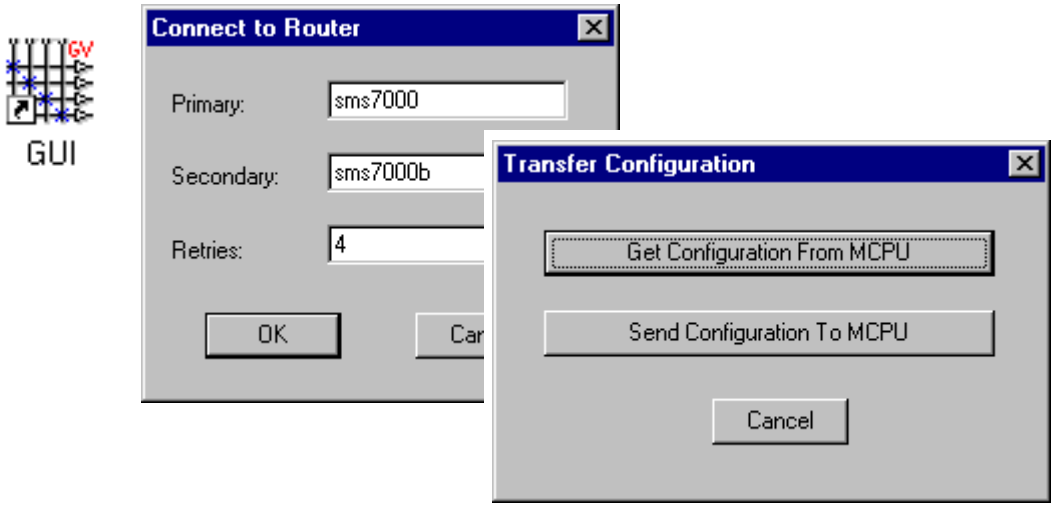
Default Configuration File

The first time you connect to a SMS 7000 router using the GUI, you should save the factory default configuration file. This file which uses default names and settings can be used to assist in troubleshooting configuration items and contains the default names and settings of the Coprocessors and Node Controllers. It is recommended that you start building a custom configuration file using a new blank configuration file with custom names and settings to better fit the design of the installation.

To Save the Default Configuration File

1. Double-click on the SMS 7000 icon to access the Connect to Router window.

Figure 1-3. GUI Icon, Connect to Router, and Transfer Configuration Windows



2. Click on **OK** to cause your GUI computer to connect to the router and establish communications with the MCPU. The Transfer Configuration window will appear.
   Clicking on **CANCEL** will return to the OffLine configuration building or editing mode.

3. Click on **GET CONFIGURATION FROM MCPU** to transfer default configuration file to the GUI computer.

4. Under the **ONLINE** menu, select **DISCONNECT** to go OffLine.

5. Under the **FILE** menu, select **SAVE AS** to save a copy of the factory default configuration as a fall-back configuration to the GUI computer hard drive or to other media such as a floppy diskette.

The next sections discusses how the GUI works and Series 7000 naming conventions. If you are familiar with these then you can proceed to Section 2-Building a New Configuration.

Using the GUI

The Series 7000 GUI allows you to create a configuration file which can then be loaded into the MCPU of a router. The creation of the configuration file involves making selections and entering settings for all the components that the MCPU will control. To ease in the creation of the configuration file the GUI uses windows called dialog boxes to collect the information needed for the configuration file. The dialog boxes are set up to appear as uniform as possible for similar functions.

There are three basic functions and corresponding dialog box types:

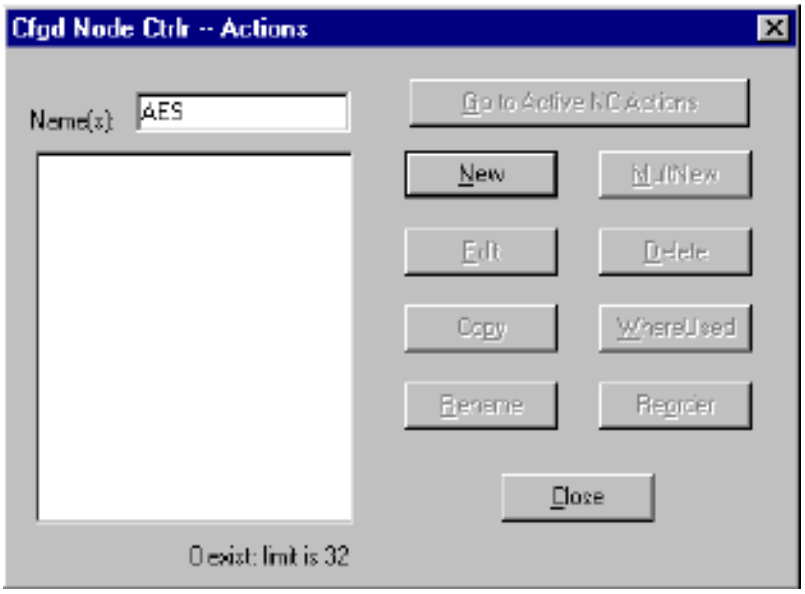
- Select a kind of item to configure from the pull-down menu from the main menu bar (mostly uses the **CONFIGURATION** or **SETUP** menus).
- Select the item and an action to perform on the item from an Actions dialog box.
- Configure the item from the New or Edit dialog box.

In most cases, you simply click in a box and enter data. Some dialog boxes have multiple columns in which to enter data, or lists of multiple selections. In these cases, there are unique key presses to use to add or delete data rows or perform other functions (key press information is available under the **HELP** menu.

Actions Window

Node Controller configuration is the first of many configuration items which use the Actions Window, a dialog box which provides a set selection of actions to perform on the selected item.

Figure 1-4. Cfgd Node Ctrlr Actions Window



Not all actions are available for each menu option. Unavailable actions are dimmed and cannot be selected. In other instances, you must first click on and highlight an item in the existing items list before the desired action becomes available, e.g. the **EDIT** function.

Table 1-2. Actions Windows Selections

Selection	Action
Name(s):	Give the Node Controller a name of up to eight alphanumeric characters.It should be named logically, to make sense with your routing system. Use a combination like VidNC (Video Node Controller) which identifies what the device is and where it is located or you may use the default names.
Go To Active NC Actions	Unique to Node Controller Action Window. In on-line mode only, select this to move directly to the Active Node Controller Action Window. On other Actions windows a different command may be in this space.
New	Configure a new item.
Edit	Modify an existing item.
Copy	Copy an existing item to use as a starting point in setting up another.
Rename	Rename one or more existing items.
MultNew	Creates groups of new items employing the same prefix and consecutive numeric suffixes. (Sources, Destinations, TieLines, etc.)
Delete	Erases one or more existing items.
WhereUsed	Finds where an item is used in configuration. If you attempt an action during configuration and are sent an error message indicating the item is already in use, WhereUsed can be useful in tracking down the conflict.
Reorder	Reorders names in a list.
Close	Closes the window when you are finished.

To Enter or Change Existing Information

1. Click on the desired entry
2. Type in the information or select from a pull-down list
3. You may need to click outside the box to close.

When you close the box, the new value appears in the box.

Multiple Selections from Lists

Some windows display a list of items from which you can make more than one selection. The following key commands are shortcuts you can use while working within multiple selection lists.

Table 1-3. Key Command Shortcuts

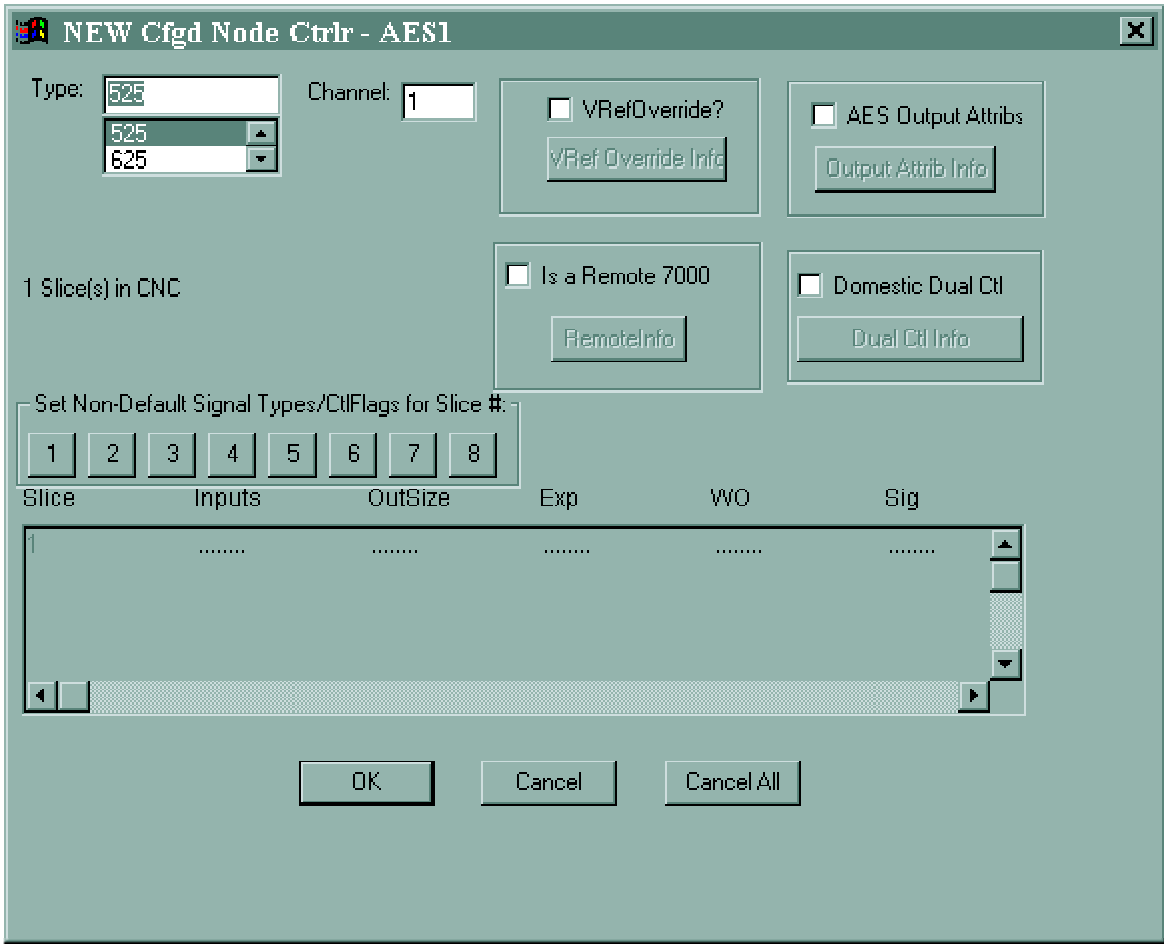
Key Command	Shortcut
Ctrl + n	Moves cursor to next highlighted item.
Ctrl + t	Toggles highlighting of all the items in the list.
Ctrl + z	Clears all highlighted items in the list.

Press the first letter of an item to move the cursor to the first item beginning with that letter.

Multiple Column Lists

Multiple Column Lists consist of rows of information. You may add several pieces of information in each row. It may be necessary to add or delete rows. When configuring a new individual item, you begin with one blank row.

Figure 1-5. New Cfgd Node Ctrlr Window



If a value is needed in each column in an information row and you do not enter them all, that row will be discarded. If a horizontal scroll bar is present there are more fields than are currently visible.

To Add Rows

1. Click on the leftmost column of the row above or below where you want to add a new row. (The existing row will highlight.)
2. Press the **Insert** key (or <**i**>) to add a row before the highlighted row.
3. Press <**a**> to add a row after the highlighted row.
4. Repeat to add rows as needed.

To Delete Rows

1. Highlight the row by clicking on its leftmost column

2. Press the **<d>** key.

Main Menu Bar

When using the GUI, the main window has a menu bar listing the primary addressable topics. Topics subordinate to these are displayed in dark print if they are currently accessible or in light print (grayed out) if they are not accessible or not yet pertinent to your configuration. Topics become accessible at appropriate times as you proceed. Figure 1-6 shows the main menu bar.

The menu bar lists the following:

Figure 1-6. SMS 7000 GUI Menu Bar

Table 1-4. Menu Bar Selections

Selection	Action
File	Lists selections which operate on the entire configuration; fully defined in File Topic Items.
Online	Lists functions available only when the GUI is actively communicating with the 7000.
Configuration	Lists items which you will define in the course of building the Configuration.
Setup	Lists additional user-configurable items.
Help	Provides access to functions detailed in Help.

File Topic Items

The actions accessible under File affect the entire configuration. It is important to distinguish between those actions which affect only the configuration on the GUI computer and those which affect the Series 7000 MCPU.

Click **FILE** to see the following:

Table 1-5. File Menu Selections

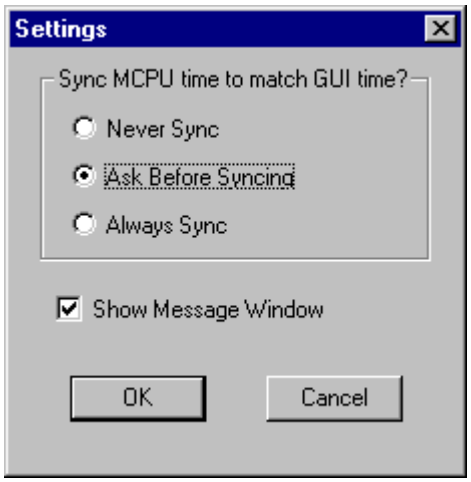
Menu	Selection	Action
	New	Begins creating a fresh configuration on your GUI computer ONLY.
	Open	Accesses an existing configuration stored on the GUI computer ONLY.
	Save	Saves before closing to store a finished configuration on the GUI computer ONLY. If you want to save a configuration to the SMS 7000 MCPU, you can use the **SAVE CONFIG ON MCPU** option under the **ON-LINE** heading.
	Save As	Stores a configuration under a new name on the GUI computer ONLY.
	Delete	Selects and erases a previously saved configuration on the GUI computer ONLY.
	Exit	Leaves the 7000 GUI.

Setup

Settings

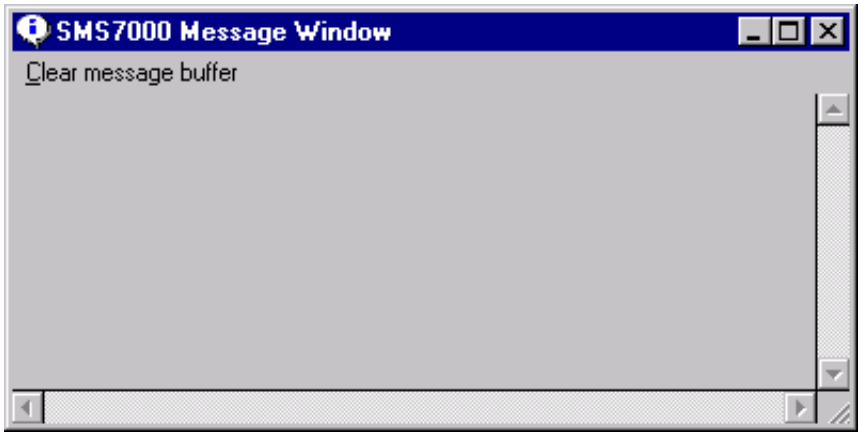
This is used for setting presence/absence of the Message Window and preferences on synchronizing MCPU and GUI times.

Figure 1-7. Settings Window



When **Show Message Window** is checked the message window will open.

Figure 1-8. Message Window



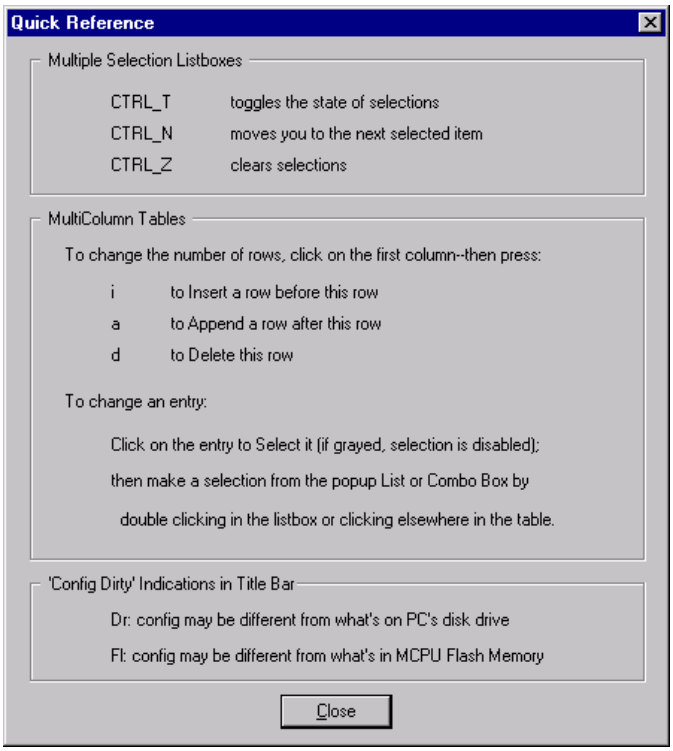
Help

The Main Menu Bar has a **HELP** menu. Select **HELP** and one of the following:

QUICK REFERENCE

Provides GUI key stroke tips and reference material.

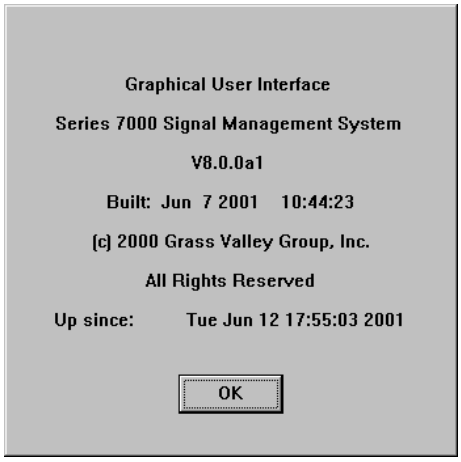
Figure 1-9. Quick Reference



ABOUT

Provides the GUI software name and version.

Figure 1-10. About Window



Series 7000 Item Names

When you send a configuration to the Series 7000, operating software performs several tasks related to Names:

- Checks the names of the active node controllers and mezzanine boards.
- Checks the names of the configured node controllers and mezzanine boards in the configuration that you are downloading.
- When an active Node Controller and a configured Node Controller name match, the information associated with the configured Node Controller is associated with the active Node Controller.

Make a written list of the names of all node controllers, mezzanine boards, and control panels in your system before building your configuration. Also, note frame and module slot locations for node controllers, and frame, module slot, and MCPU or CIF position for mezzanine boards.

If you use the default names in your configuration, the list you make will help you determine which node controller or mezzanine board it is that you want to pick from a list and configure, or which control panel you wish to configure from a template.

If you intend to rename the node controllers and control panels, the list will help you determine which node controller or panel it is you want to pick from a list and rename. You will need to rename the node controllers to match the names you have configured before you perform a download.

Mezzanine board names contain both their frame slot and CIF or MCPU module location. To avoid confusion you should not change mezzanine board names, but instead use the default names.

Naming Conventions

Note Some of these naming requirements are new to the latest versions of SMS7000 software and to Enhanced Node Controllers in particular. If you have configurations which worked on older systems or software and used non-compliant names ensure that you correct those names before attempting to use the configurations with newer software or Enhanced Node Controllers.

- Names may include upper or lower case letters (A-Z or a-z), the numerals 0-9, or a mixture.
- Names are case sensitive.

  If you use upper case letters in a name, NODE-CON for example, the system will interpret Node-Con as invalid or as a different object because the case (upper or lower) of the letters does not match.
- Avoid punctuation characters except - (hyphen), _ (underscore), and . (period).
- Avoid using spaces in names.

  Use a period, underscore, or hyphen instead of a space in a name to avoid confusion and keep all characters visible. For example, VTR-17 rather than VTR 17.
- Names must be 8 or fewer characters in length, however Node Controller names must be 7 characters or less.

Note If your system incorporates hosts running both TCP/IP and DECnet Phase IV names are limited to six-characters, letters and digits only, and must begin with a letter.

Node Controller Names

During configuration you create a template called a configured Node Controller for each Node Controller (or Node Controller pair, if you have redundancy) in a system. When the configuration file is loaded into a system it will look for Node Controllers based on the name given the Node Controller template. Most Node Controllers are given a name at the factory such as SDVID1 and SDVID2. These names would represent a Serial Digital Video frame containing Primary (SDVID1) and Backup (SDVID2) Node Controllers. You may need to rename your active Node Controllers to match their configuration template configured Node Controller names during the configuration process.

When creating Node Controller templates use names of seven characters or less. To find the name of an active Node Controller refer to *To Identify and Rename Node Controllers* in Section 3.

Control Panel Names

To Access a Control Panel's Name

1. Run the panel's ID routine. Panels which have ID buttons that are shared with another function such as the **DEST/ID** or **SRC/ID** will require four consecutive presses to activate the identification function. Simple Control Panels, Under Monitor Displays and Machine Status Displays have **ID** buttons which you can simply press once. The panel's name will appear in the displays, along with other panel information.
2. Stick a temporary adhesive label on the panel. Enter its name and location in your list.

Mezzanine Board Names

To use the Diagnostic Interface Terminal see the Series 7000 *Service Manual*, Section 2, Sub-Section *System Diagnostic Interface*.

At the Diagnostic Interface Terminal SMS7000> prompt, enter:
SMS7000> slot *slot#*

Where: ***slot#*** — just the number, not preceded by the word "slot" — is the number of the CIF or MCPU frame slot to examine
(1 through 10)

The terminal will list mezzanine board positions and names associated with the CIF or MCPU module in the addressed slot.

You can also use the **ls** (list) command to determine what type of mezzanine board is in each position.

Example: **SMS7000> ls mez**

Section 2

Building a New Configuration

Introduction

This section helps you build a new configuration file. The configuration editor graphical user interface (GUI) uses standard Windows conventions and users are expected to be familiar with Windows features. If you are unfamiliar with Windows, refer to the Microsoft documentation accompanying the Windows operating system.

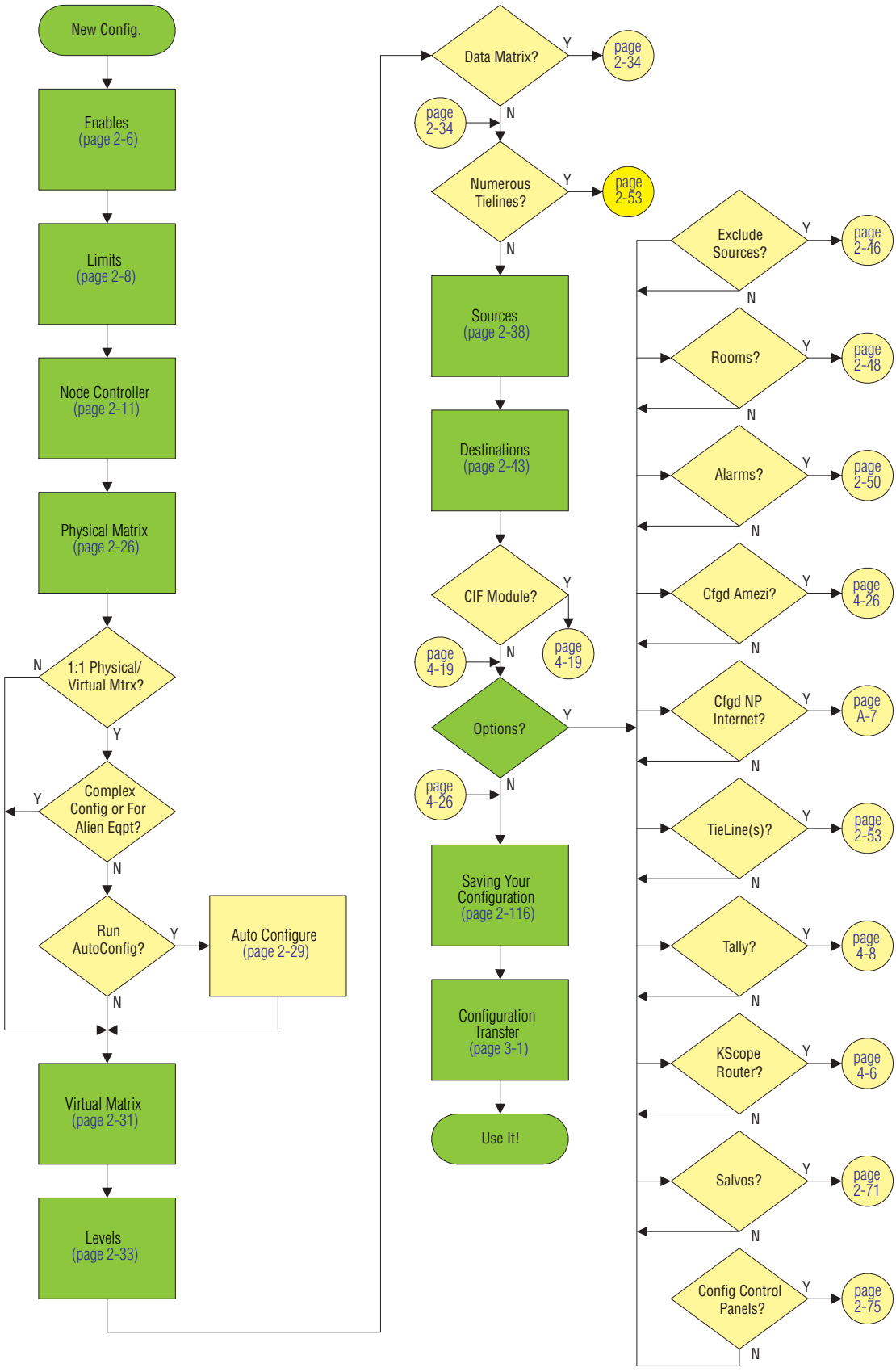
Starting a New Configuration

The following information assumes you are working on a new configuration which is done offline. Online configuration adjustments are covered in Section 3 - *Connecting to the SMS 7000 Router*. Configuration information about options is in Section 4 - *Configuring Options*.

Before you create a configuration, it's important that you plan as thoroughly as possible. Be sure to check your equipment documentation for specific configuration setting requirements to accommodate product features or limitations. Careful planning will help you set up your system and configure it faster and more efficiently. You can however, modify existing configurations as needed.

The configuration process usually progresses as depicted in Figure 2-1.

Figure 2-1. Typical Configuration Flow



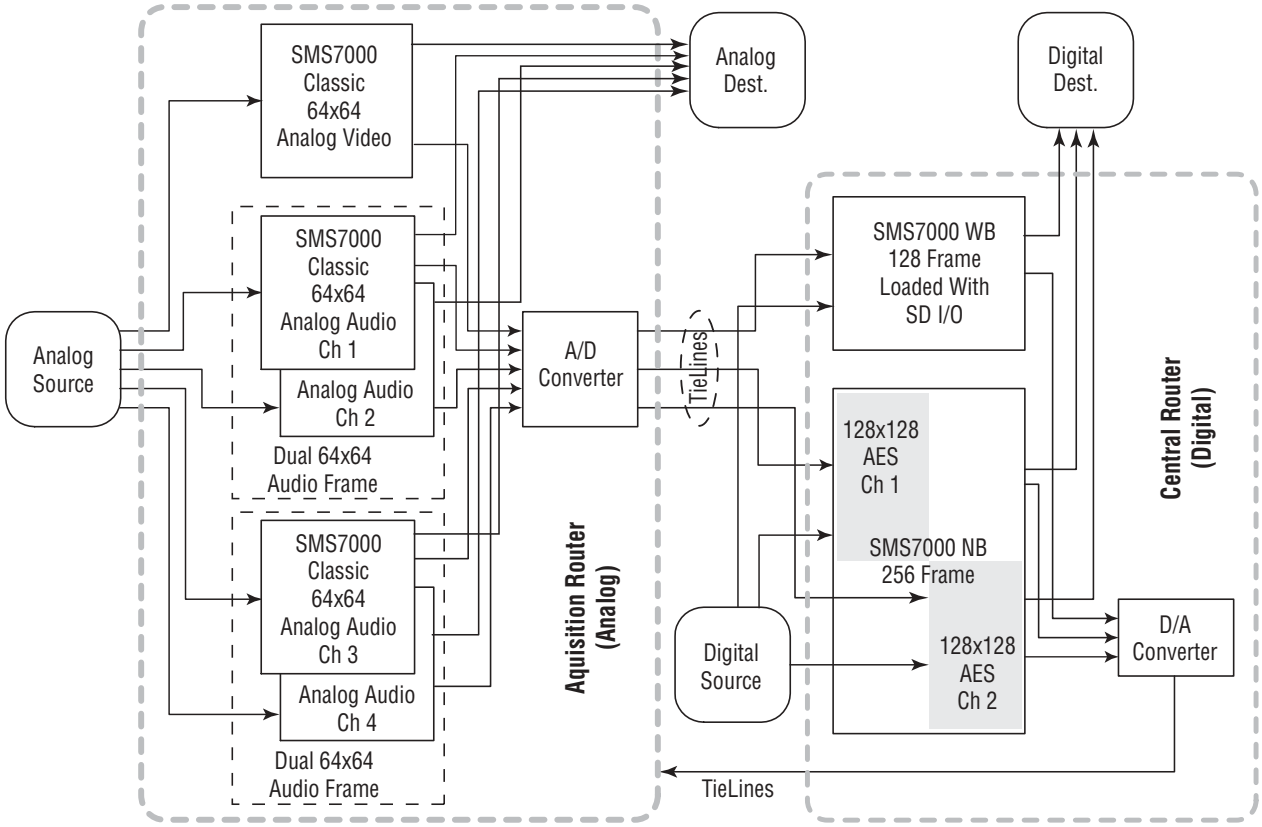
For tutorial purposes, we'll configure these components in this section:

- 128 squared 7500 wide band loaded with SD cards
- 256 squared 7500 narrow band loaded with dual 128x128 synchronous AES
- Classic with 64x64 video
- Classic dual 64x64 analog audio (Channels 1 & 2)
- Classic dual 64x64 analog audio (Channels 3 & 4)
- Third Party ("alien") 128 port switch (data router)

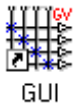
  (Requires the purchase of the SMS-key option)

When we're done, our system should be set up like the one in Figure 2-2.

Figure 2-2. Sample Configuration Block Diagram

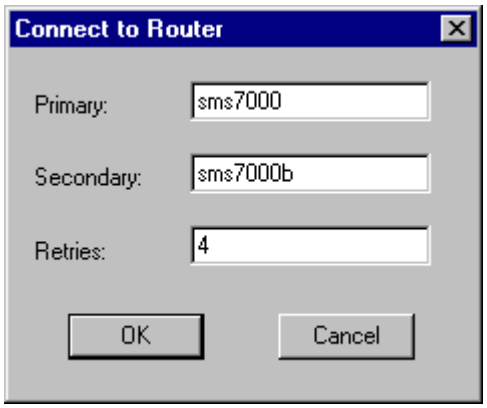


To Launch the GUI and Create a New Configuration File



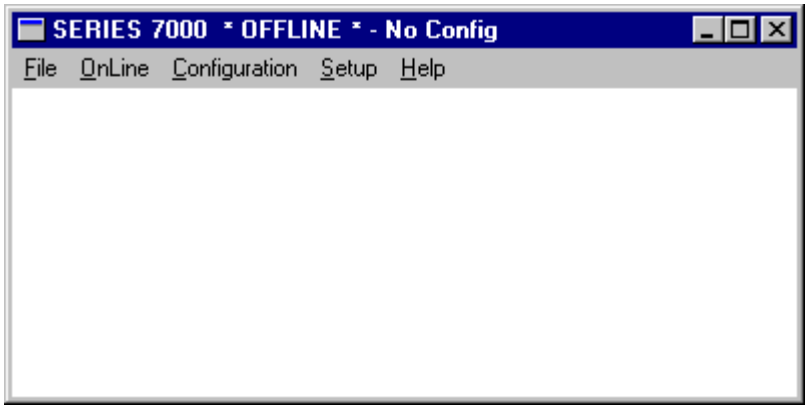
1. Double-click the SMS7000 icon.
2. Click **Cancel** when the Connect to Router window is displayed.

Figure 2-3. Connect to Router Window



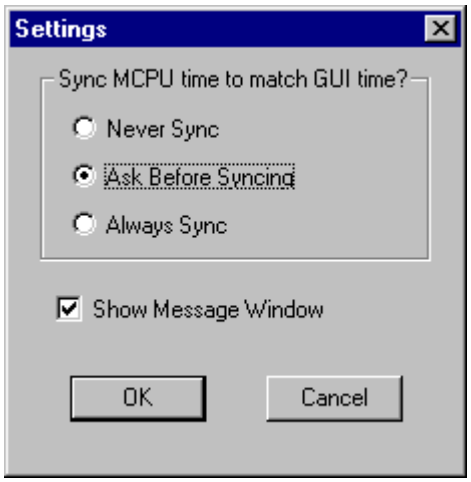
The Series 7000 main window will appear.

Figure 2-4. Series 7000 Main Window



3. Choose **Settings** from the **Setup** menu to display the settings window.

Figure 2-5. Settings Window.



The Sync options dictate whether the clock time for the SMS7000 MCPU will be synchronized to the clock time on the PC running the GUI. This could be especially important for features such as *Timed Salvos*, but it's generally recommended that all systems be synchronized to the house clock.

4. Ensure that **Show Message Window** is checked, then click **OK**. The Message Window helps you know what's happening behind the scenes, especially when you're online.

5. Select **New** from the **File** menu in the main window. When you first launch the configuration editor, no configuration is loaded. Since we're not editing an existing configuration, this will create a blank configuration file and display **`Untitled`** in the application's title bar.

The configuration editor is set up to encourage a logical progression from one configuration step to the next. Therefore if you were to click around the menus at this point, you'd see that very few commands are enabled. This will change as your configuration develops.

Enables

Both Enables and Limits must be set for every configuration. These settings allocate RAM to accommodate the configuration.

Enables lets you enable system features. This section covers all features, even though you may not need, and therefore have not enabled them. Note that this also means that you may not see some features or options on your menus.

Table 2-1. Enable Flags

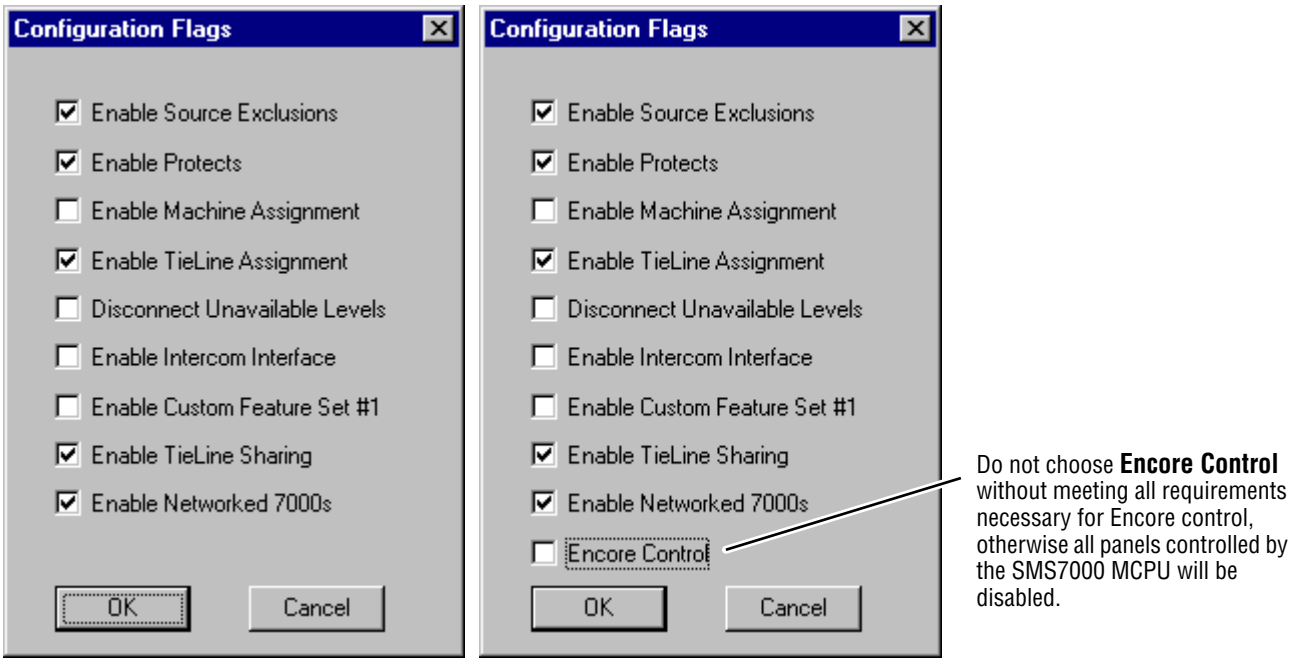
Default Setting	Flag	Action if Enabled
On	Enable Source Exclusions	Sources may be excluded from selection by specified Destinations during system configuration. Leave this on.
On	Enable Protects	Control devices can protect their Source/Destination choices from change by other control devices. Leave this on.
Off	Enable Machine Assignment	Source machines may be assigned to control by specific destinations or rooms through the GUI Assignments menu or an automated facility control system.
Off	Enable TieLine Assignment	TieLines may be assigned to control by specific Destinations through the GUI Assignments menu or an automated facility control system.
Off	Disconnect Unavailable Levels	Connections on the data matrix level(s) will be dropped when a destination selects a new source that has no data level or the data level is unavailable (protected or not assigned). This prevents data matrix connections from remaining busy when the user switches to other sources/destinations not applicable to the data matrix level.
Off	Enable Intercom Interface	The 7000 will send control messages to intercom routers and will automatically assign an Intercom Index number to some items during configuration.
Off	Enable Custom Feature Set 1	Custom feature set including Studio, Cubicle, and Room control functions will be active. This allows an external automation system to assign control of a machine, a TieLine, etc. to the Studio, Cubicle, or Room as a single destination.
Off	Enable TieLine Sharing	TieLines may be shared by more than one destination allowing more efficient TieLine use.
Off	Enable Networked 7000s	One SMS7000 router can control another. Enables the creation of remote Sources and/or Destinations.
Off, Hidden	Encore Control	Visible and available only if you've installed Encore enabling software on the same PC as the SMS7000 configuration editor. Increases the maximum number of names (the total of all Source and Destination names) from 2,048 to 4,096, Salvo Elements from 4,096 to 8,192, and Salvo Pages from 256 to 512. The increased maximums are available *only* if control panels are connected to an Encore Panel Server.

CAUTION "Encore Control" allows you to control the SMS7000 panels only from the Encore Panel Server. Enabling this feature, even if you do not exceed current limits, will remove all panel-related settings from this configuration. If you send this configuration to the SMS7000 MCPU all of the control panels controlled by the SMS7000 MCPU will be taken offline and you will not be able to retrieve template information from the panels. This feature also provides Increased Source & Destination names and Increased Salvo Elements & Salvos. Before you proceed, ensure that you've backed up your configuration. See the Encore documentation for requirements and approved procedures for the changeover to Encore Control.

To Enable Configuration Flags

1. Under the **Setup** menu select **Enables/Limits** and then **Enables** to access the Configuration Flags window.

Figure 2-6. Configuration Flags Windows Before and After Installing Encore Software



Configuration options before installing Encore enabling software

Configuration options after Encore enabling software has been installed

2. Select features supported by your system that you want enabled. See Table 2-1 for explanations of the selections.

CAUTION "Encore Control" allows you to control the SMS7000 panels only from the Encore Panel Server. Enabling this feature, even if you do not exceed current limits, will remove all panel-related settings from this configuration. If you send this configuration to the SMS7000 MCPU all of the control panels controlled by the SMS7000 MCPU will be taken offline and you will not be able to retrieve template information from the panels. This feature also provides Increased Source & Destination names and Increased Salvo Elements & Salvos. Before you proceed, ensure that you've backed up your configuration. See the Encore documentation for requirements and approved procedures for the changeover to Encore Control.

For tutorial purposes we've selected two non-default settings:

a. **Enable TieLine Assignment** because we want to use TieLines.

b. **Enable TieLine Sharing** to more efficiently use our TieLines.

3. Click **OK** to enable the features with check marks in the Configuration Flags window.

Recovery From Encore Control

In the event that you save a configuration which changed to Encore Control and then send it to the 7000 MCPU (See Table 2-1 on page 2-6 for requirements), you will disable all panels controlled by the Series 7000 Control Frame. These instructions will help you recover the use of your control panels in case you did not intend to transfer control to Encore.

Reload your last working configuration which did not allow Encore Control. To send the SMS7000-compliant configuration to the MCPU, use the procedure documented under *Configuration Transfer* in Section 3.

Limits

Limits let you set the maximum number of physical or configurable components you will employ in your system. This allows the MCPU to allocate sufficient memory to each area. Memory constraints will cause the system to slow down if all the limits are set to their maximum number. Set numbers to the largest limit you will employ.

Table 2-2. Configuration Limits

Limit	Default	Min.	Max
Coprocessors	20	2	20
Node Ctrlrs	32	1	64
Physical Mtxs	32	1	64
Virtual Mtxs	32	1	32
Levels	32	1	32
Data Mtxs	0	0	128
Sources	128	2	2,048[c]
Destinations	128	2	
Rooms	0	0	128
TieLine Types	0	0	32

Limit	Default	Min.	Max
TieLines	0	0	1024
Amezis	8	0	64
Salvo Elements	32	0	4,096[a]
Salvos	16	0	255[b]
Timed Salvos	0	0	1,024
Panel Suffix Sets	2	2	8
Panel Keypad Sets	8	2	64
Panel Dst Excl Sets	8	0	255
Panel Svo Perm Sets	8	0	255
CIn-Svr Pnl Grps	0	0	64

Limit	Default	Min.	Max
Pxy Pnl Grps	0	0	64
Src Pages	0	0	200
Dst Pages	0	0	200
Salvo Pages	0	0	32
Src Page sets	0	0	8
Dst Page sets	0	0	32
Salvo Page sets	0	0	32
Panel Templates	10	0	400
Tally Modules	0	0	40

[a] Choosing Encore Control raises this limit to 8,192. In either case, memory must be available.

[b] Choosing Encore Control raises this limit to 512.

[c] The maximum sum of all Sources and all Destinations without choosing Encore Control. Choosing Encore Control raises this limit to 4,096, but requires that control panels are connected to an Encore Panel Server.

CAUTION "Encore Control" allows you to control the SMS7000 panels only from the Encore Panel Server. Enabling this feature, even if you do not exceed current limits, will remove all panel-related settings from this configuration. If you send this configuration to the SMS7000 MCPU all of the control panels controlled by the SMS7000 MCPU will be taken offline and you will not be able to retrieve template information from the panels. This feature also provides Increased Source & Destination names and Increased Salvo Elements & Salvos. Before you proceed, ensure that you've backed up your configuration. See the Encore documentation for requirements and approved procedures for the changeover to Encore Control.

To Set Configuration Limits

1. Under the **Setup** menu select **Enables/Limits** and then **Limits** to access the Configuration Limits window.

Figure 2-7. Configuration Limits Window

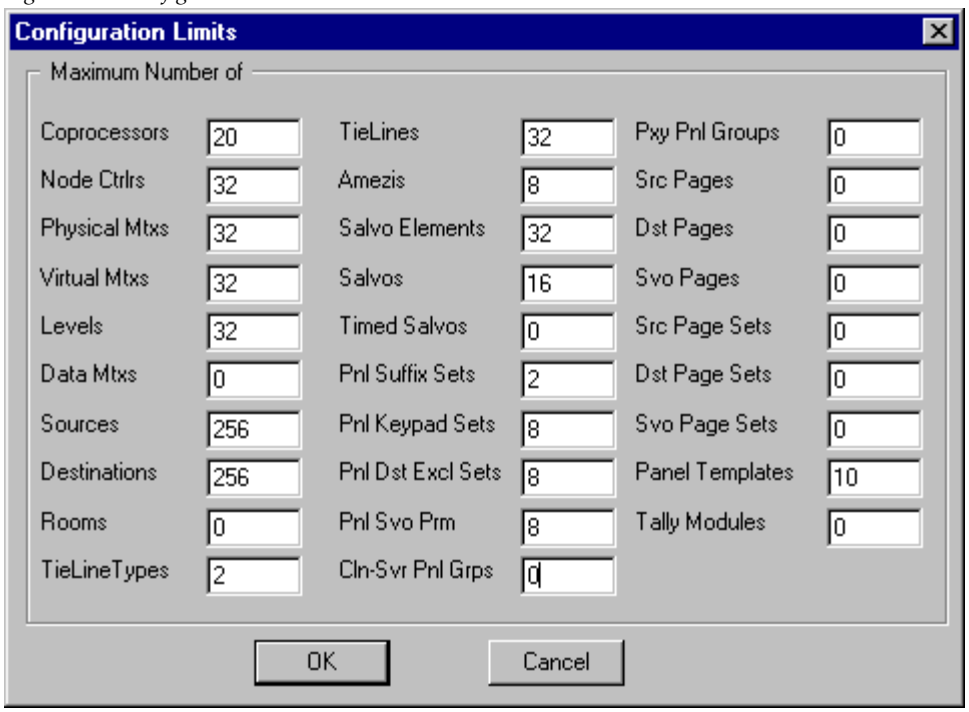
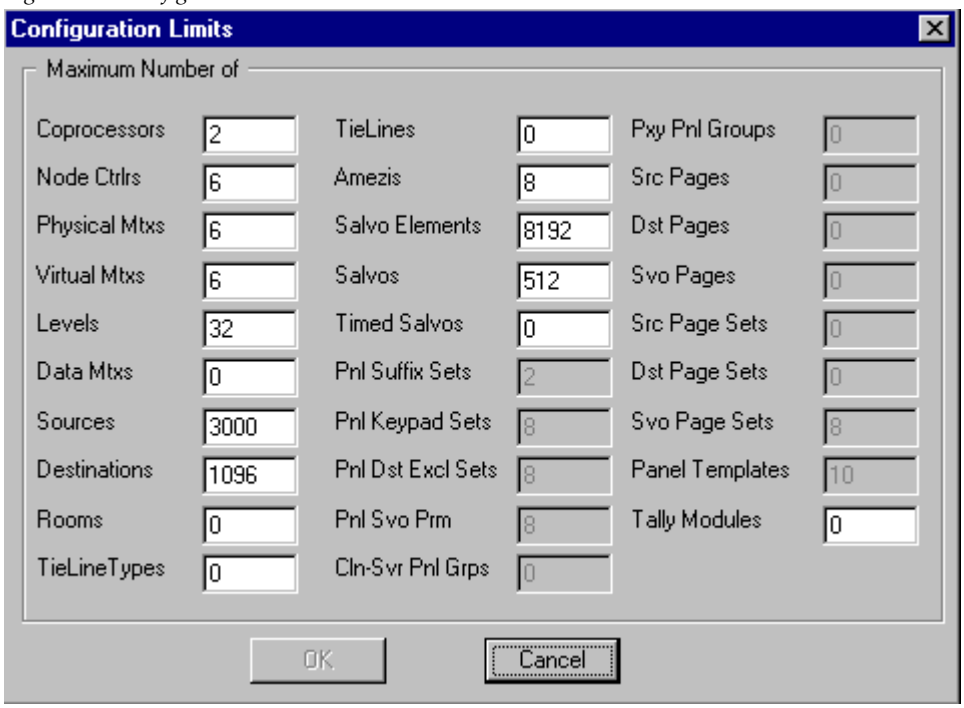


Figure 2-8. Configuration Limits Window With Encore Control



2. Enter numbers for the limits to be used with this configuration. Table 2-2 shows the minimum and maximum number limits that can be used to create a Series 7000 configuration file. When entering the numbers allow for backup MCPU modules, Communication Interface modules, Alien Matrix Node Controllers, backup Node Controllers, and future additions. Some of the fields are self-explanatory, comments on others follow. The features they address are discussed elsewhere in the documentation.

Table 2-3. Tutorial Variations from Default Configuration Limits

Limit	Setting	Default
Sources	256	128
Destinations	256	128
TieLine Types	2	0
TieLines	32	0

Data Mtxs - Only enter the number of Grass Valley Group data matrices you have in your system. The entry must be greater than 0 to activate the **Data Matrix** option under **Matrix** on the **Setup** menu.

Sources and Destinations - Enter numbers large enough to accommodate some system changes.

TieLine Types - Enter one for each path between functional routing system areas. For our example we're going to enter 2 — one for the analog-to-digital matrix and a second one for the digital-to-analog matrix.

TieLines - For our system we're going to have 16 lines going to Central and 16 returning so we'll enter 32.

Amezis - The maximum number of serial interfaces you want to accommodate in your system.

Timed Salvos - Very powerful; use with caution.

Panel Dst Excl Sets - Recommend one per panel or one for each production area of your installation. We'll leave the default setting.

3. Click **OK** to accept currently displayed entries.

Coprocessor

Coprocessors reside on the MCPU module and on Communications Interface (CIF) Mezzanine cards.

Coprocessors are used to control three types of interfaces:

- Global Serial (GS) used for control panels and node buses
- Asynchronous Mezzanine (AS) used for RS-422/RS-232 connections
- Tally Bus (GS) used for Source Tally Managers

Automatic configuration of Coprocessors takes place upon initial connection with the MCPU. Manual entry may not be required except to fine tune mezzanines on CIF modules. In fact, we recommend that you allow automatic Coprocessor configuration whenever possible.

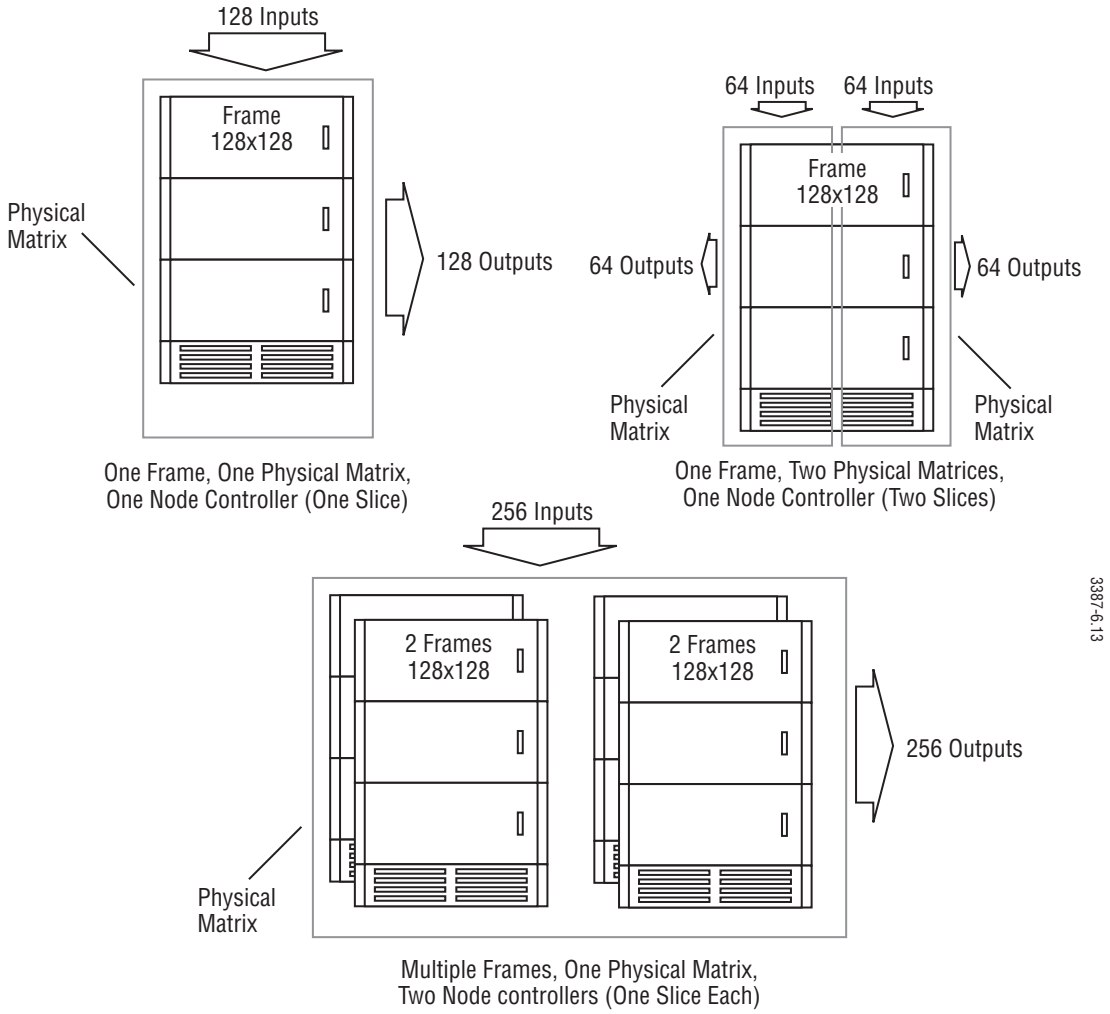
Note For in depth description of Coprocessor Configuration, see *Configuration for Control of Alien Matrices*, under *Configuring Options* in the *Configuration Manual*.

Node Controller

The Node Controller is a frame module which controls communications on the Node Bus between the MCPU and the Matrix Element Controllers (MECs) located on each signal processing circuit board. The MCPU provides overall control of the 7000 System. The Node Controller translates MCPU commands and directly controls up to 128 outputs.

A single Node Controller, (without Expander module) can control a maximum of 1024 inputs and 128 outputs. Multiple Node Controllers can work together to control a larger matrix. Conversely, a single Node Controller can be fragmented into as many as four segments (called Slices) to control different signal types in smaller matrices. Refer to Figure 2-9.

Figure 2-9. Node Controller Physical Matrices



Note The 7500 NB Series Audio systems can handle up to 256 outputs per Matrix Controller. The Matrix Controller takes the place of a Node Controller in these systems.

The Physical Matrix is the size of the signal matrix for the Node Controller.

Node Controllers need to know the size of the signal matrix they reside in. In most systems, this is the same as the number of inputs and outputs to the frame. But, this isn't true in systems larger than 128 x 128 or in instances where a frame contains more than one switching matrix. (For example, the Quad Audio frame contains 4 independent matrices of 32 x 32 each).

When we ask a single SMS7000 Node Controller to handle more than one Physical Matrix, we need to segment the Node Controller's capacity so that it can handle each Physical Matrix independently.

The segments we divide a Node Controller into are called Slices. A Node Controller can be divided into a maximum of four (4) Slices. (The default is one slice). Each slice can control 32 or more inputs and outputs. Slices enable one Node Controller to control differing signal types within a single matrix (i.e., analog composite video and analog component video) or in up to four separate frames (video, audio, data, etc.). As many as eight Node Controllers can be associated with one Physical Matrix of up to 1024 outputs. The sum of the outputs entered for one Node Controller should not exceed 128 unless your system has a Node Controller Expansion Frame. The sum of the inputs should not exceed 1,024. Slices will control input/output blocks in the order they are configured. For example, in a 64x64 matrix, if two slices were each assigned at 32 inputs and outputs, the first would control inputs 1-32 and outputs 1-32; the second would control inputs 33-64 and outputs 33-64.

Figure 2-9 shows a 128x128 frame divided into two Physical Matrices and one Node Controller divided into two Slices. Each Slice is configured to control a 64 x 64 Physical Matrix.

When we ask a Node Controller to work with additional Node Controllers to control more than 128 outputs, we assign only one Slice to each Node Controller, but we specify which block of 128 outputs each Node Controller will handle.

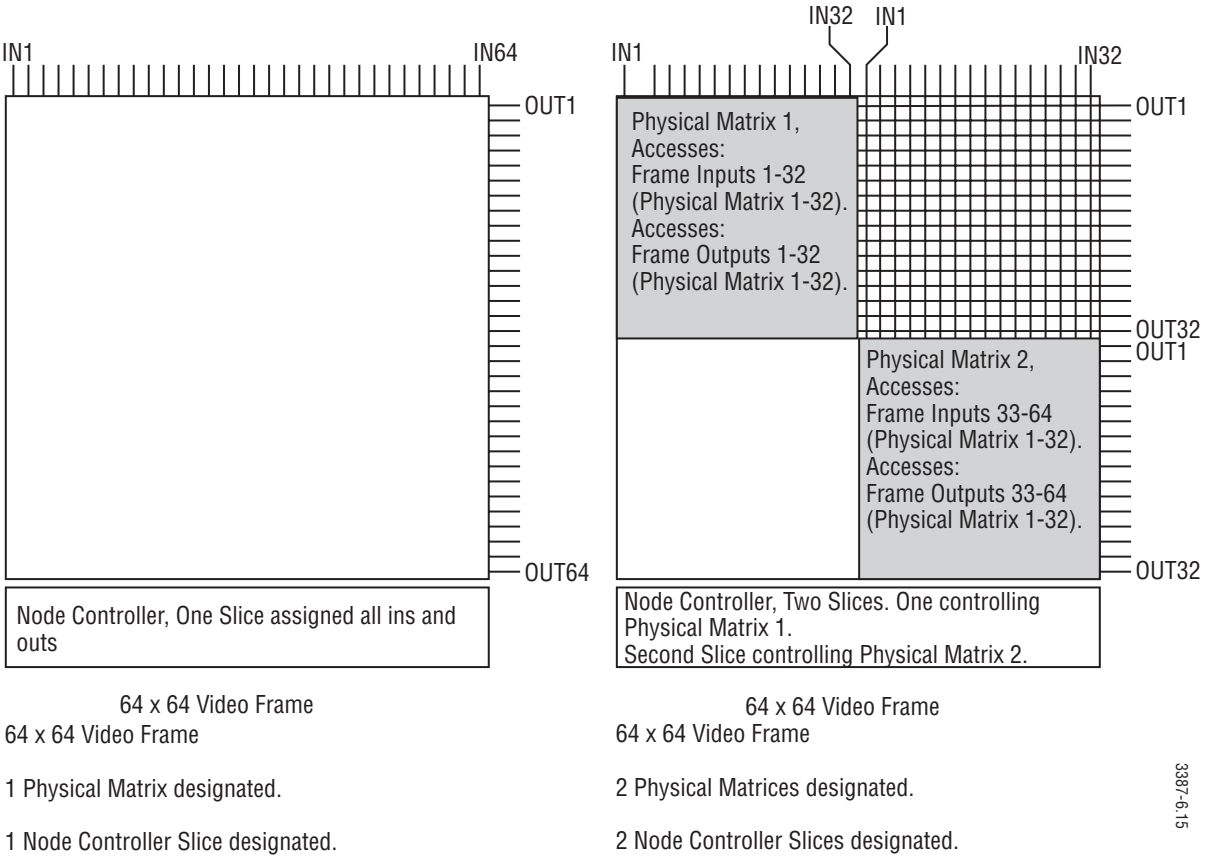
Figure 2-9 shows two 128x128 frames with 256 inputs and 256 outputs configured as a single Physical Matrix, using two Node Controllers. The first Node Controller Slice will be assigned the first block of 128 outputs; the second Node Controller Slice will be assigned the second block of 128 outputs.

Each Node Controller is capable of handling up to 1,024 inputs. Therefore, that range does not have to be divided and can be assigned to either one of the Node Controllers or all of the inputs can be assigned to both of the Node Controllers.

Figure 2-10 illustrates a 64 x 64 Video Frame treated in two different ways. The left frame uses one Node Controller Slice to control all inputs and outputs. The right frame uses two Node Controller Slices, each of which (after assignment to two Physical Matrices in the next configuration topic) will control a block of 32 inputs to 32 outputs.

The right frame configuration would be used to combine analog and digital video in the same frame. Inputs and outputs 1-32 could be analog hardware and Input and outputs 33-64 could be digital hardware or vice versa.

Figure 2-10. Frame, Physical Matrix, Slice Correlation



Some Alien Matrix level, input, and output designations are zero-based (for example, Levels 0,1,2,3). Series 7000 designations are 1-based. Remember that 7000 input connector #1 is Horizon (HX) input connector #0, and this applies to all sources, destinations, and levels.

Slice information is Level Information for Alien Matrices. Enter the size of each level of the matrix to be controlled. Configure the emulated Alien Node Controller for the Amezi for Signal Type 32, 64, or 153 and Frame Type 80. To control or configure third-party alien matrices, the Third-Party Alien Matrix Enable Software option is required. See Section 6, of the *Installation Manual* for information on this option.

If you are controlling a Horizon Routing Switcher through the Series 7000 using the Horizon General Purpose Interface (GPI), Terminal Computer Interface (TCI), refer to Section 4 of this manual for special configuration instructions.

When a Node Controller is configured to control routers other than the Series 7000 through an Amezi, the maximum number of slices increases to eight. Each slice is used to control a different level of the target router. Configure only as many slices as you have levels. Input and Output maximums increase to 2,048 with a maximum of 1,024 in any given slice.

Node Controller Configuration

When you configure a Node Controller, you are actually building a Node Controller template on the PC (this is called a Configured Node Controller). The Node Controller you configure does not exist as an active Node Controller until you download your configuration file to the 7000. Functioning Node Controller modules in the 7000 are called Active Node Controllers.

In this document, Node Controller refers to all types of Controller modules including the Node Controller, the Enhanced Node Controller, and the Matrix Controller. The type of controller module is identified during configuration by frame and signal type.

To Configure Node Controllers

We'll enter the settings listed in Table 2-4 for the tutorial. All will use 525 (NTSC), Channel 1 and accept the default signal types and control flags for the slice(s) we create for each.

Table 2-4. Node Controller Settings for Tutorial

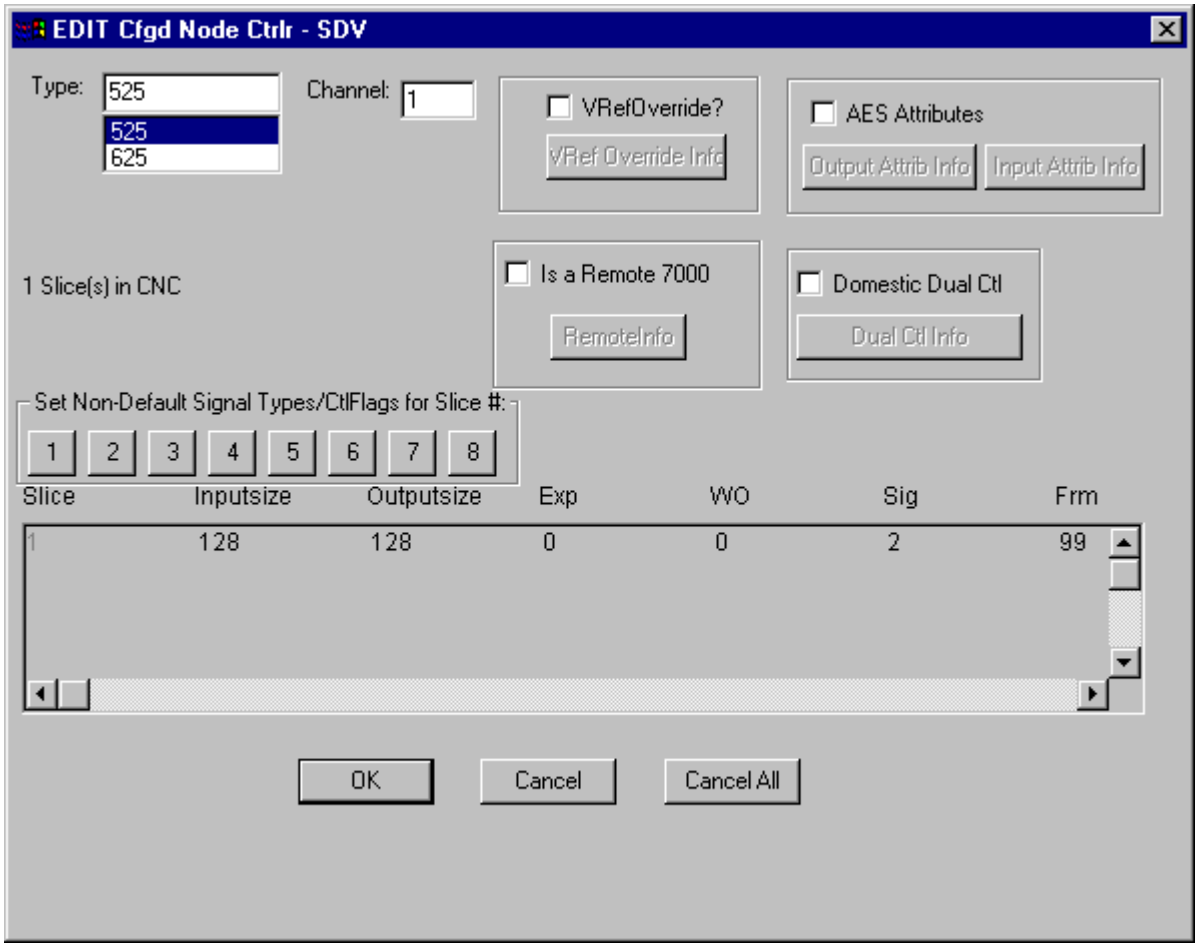
Node Ctrlr	Slice #	Input size	Output size	Exp	WO	Sig	Frm
SDV	1	128	128	0	0	2	99
AES	1	256	256	0	0	8	34
VID	1	64	64	0	0	5	48
A1/2	1	64	64	0	0	9	1
A1/2	2	64	64	0	0	9	1
A3/4	1	64	64	0	0	9	1
A3/4	2	64	64	0	0	9	1
DATA	1	128	128	0	0	64	80

1. Under the **Setup** menu, select **Node Controllers** to access the Cfgd Node Ctrlr Actions window.

2. Accept the default name which appears in the Name(s) field in this window or type a name. We recommend that you use names that make sense to you and describe the function, location, or device you're dealing with. When choosing names, remember that they're limited to eight characters and are case-specific for the diagnostic terminal. For example, since the first Node Controller we're configuring is for a 7500 Wideband with serial digital video, we'll name it SDV. See *Naming Conventions* in Section 1 for more specifics on names.

3. Once you've accepted a default name or typed your own for the Node Controller, click **New**. The Cfgd Node Ctrlr window will appear, but may display or hide various options, depending on the components you have and previous settings you've made.

Figure 2-11. Cfgd Node Ctrlr Window With Serial Digital Video Settings



4. **Type:** Select **525** (NTSC), or **625** (PAL). For our tutorial configuration we'll choose **525**.

5. **Channel:** Type **1** or **2**. There are two reference inputs to the MCPU (it is capable of using 525 for some Node Controllers and 625 for others). The inputs are labeled Video Ref 1 and Video Ref 2. The signal connected at Video Ref 1 and Video Ref 2, tells the MCPU which input to use for this Node Controller. For 1, use input Video Ref 1. For 2, use input Video Ref 2. For our tutorial configuration, type **1**.

Note 7500 Series matrices need to have separate configured Node Controller (CNC) templates for each set of 256 Outputs. Do not configure a single CNC with multiple slices. See the 7500 Series documentation.

6. In the multi-column window, click the gray area immediately beneath a column heading and enter settings as indicated by the information in Table 2-5 or, for the tutorial, in Table 2-4. If a 7500 Series is part your configuration, see that product documentation for matrix setting details.

   Inputsize Enter a value in increments of 32. Legitimate values: 32, 64, 96, 128, and so on, to a maximum of 1024.

   This entry indicates the number of inputs in the Physical Matrix this slice will control (or help to control in Physical Matrices of greater than 128 Destinations) in increments of 32. If you are assigning one Slice of this Node Controller to the entire Physical Matrix, enter the number of inputs to the Physical Matrix (up to 1,024). If you intend to divide a frame into more than one Physical Matrix (each controlled by a separate Slice), enter the number of inputs of the Physical Matrix which the Slice will access.

   Outputsize Enter a value in increments of **32**. Legitimate values: 32 64 96 128, and so on, to a maximum of 1024.

   This entry indicates the number of outputs in the Physical Matrix this slice will control (or help to control in Physical Matrices of greater than 128 Destinations) in increments of 32.

   Exp (Expansion) Enter **0** for No Node Control Expansion Frame or **1** for Node Control Expansion Frame.

   Systems larger than 128 inputs by 128 outputs may require a Node Control Expansion Frame.

WO (Which Block of Outputs) Enter a number from **0** to **7** to represent which block of outputs is controlled by this Node Controller Slice.

Table 2-5. Block of Output Settings

All Matrices Except 7500 Series			
WO #	**Block of Outputs**	**WO #**	**Block of Outputs**
0	1–128	4	513–640
1	129–256	5	641–768
2	257–384	6	769–896
3	385–512	7	897–1024

The numbers 0 through 7 correspond to blocks of outputs as indicated in Table 2-5. Unless you have a Physical Matrix with greater than 128 outputs, you will always use 0 here. Each Node Controller can control up to 128 outputs. If you have more than 128 outputs, you need to create a second Node Controller for them. In this case, enter a WO number of 0 for the Node Controller Slice you want to associate with the first 128 outputs, then enter a WO of 1 when you configure the second Node Controller to control the second bock of 128 outputs. When you complete Node Controller configuration and configure the Physical Matrix, you will indicate the particular Slice and particular Node Controller(s) controlling that Physical Matrix.

Sig (Signal Type) drop-down list. Select the signal type this slice of the Node Controller will manage

Table 2-6. Signal Types

Signal	Type
0 143 Mbs	NTSC Composite Digital
1 177 Mbs	D2 PAL Composite Digital
2 270 Mbs	D1 Component Digital
3 360 Mbs	Compressed HD
4 Anlg Vid (DC Rest OFF)	Analog Video (DC Restore OFF)
5 Anlg Vid (DC Rest ON)	Analog Video (DC Restore ON)
7 Bypass Reclocking	Passes Digital Video w/o Reclocking
8 Digital Audio	Digital Audio
9 Analog Audio	Analog Audio
10 540 Mbps	Digital Video
11 1.485 Gbps	High Definition
12 Auto Reclocking	Reclocks Digital Video
32 Alien Matrix -- Unctrld	Alien Matrix - Uncontrolled
64 Alien Matrix -- Exclusive	Alien Matrix - Exclusive
153 Alien Matrix -- Shared	Alien Matrix - Shared

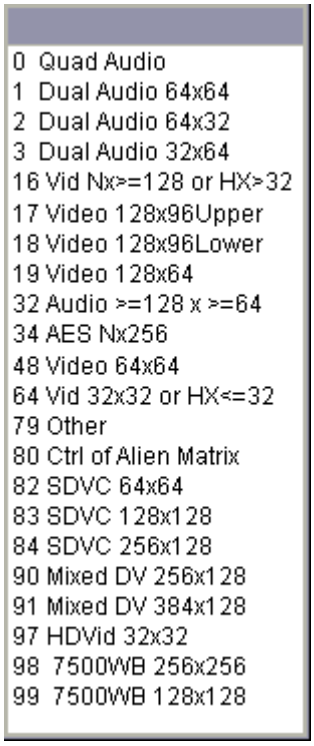
DC Restorer On/Off selections in signal types 4 and 5 apply only to Series 7000 inputs – Not inputs to other routers.

If this is an emulated Node Controller that will not be controlling a non-Series 7000 matrix through a Mezzanine board, select signal type 32. This is used to create simulated matrices.

If this is an emulated Node Controller that will be controlling a non-Series 7000 matrix through a Mezzanine board, select signal type 64.

If this is an emulated Node Controller that will be controlling a remote Series 7000 router for networking purposes select signal type 153.

Signal types 4 and 5 (analog video) include both analog NTSC and analog PAL. The reference type for the Node Controller determines which is used



Frm (Frame type) drop-down list. Select the frame type this Node Controller will control.

Table 2-7. Frame Types and Descriptions

Frame	Type	Model Numbers
0 Quad Audio	Classic Audio	SMS - Q32A; Quad 32x32 analog audio in 6RU frame
1 Dual Audio 64x64	Classic Audio	SMS - AA64x64; SMS - DA64x64
2 Dual Audio 64x32	Classic Audio	SMS - 128x64A (discontinued); 1/2 analog and 1/2 digital audio
3 Dual Audio 32x64	Classic Audio	(discontinued)
16 Vid Nx>= 128 or HX>32	Classic Video & Horizon	(discontinued)
17 Video 128x96 Upper	Classic Video	SMS - VER2; requires prior installation of SMS-VER1 and is installed above Classic, expanding it to 128x128
18 Video 128x96 Lower	Classic Video	SMS - VER1; expands Classic to 128x96 and is installed beneath the Classic
19 Video 128x64	Classic Video	SMS - V128x64; Core frame of Classic
32 Audio>=128 x >=64	Classic Audio	SMS - AA128x128; SMS - DA128x128
34 AES Nx256	7500 Series	SMS - NB256x256; SMS - NB512x512
48 Video 64x64	Classic Video	SMS - V64x64
64 Vid 32x32 or HX <=32	Classic Video & Horizon	--
79 Other	--	--
80 Ctrl of Alien Matrix	--	--
82 SDVC 64x64	DV Series	SMS - DV64x64
83 SDVC 128x128	DV Series	SMS - DV128x128
84 SDVC 256x128	DV Series	SMS - DV256x128
90 Mixed DV 256x128	DV Series	2x SMS - DV128x128
91 Mixed DV 384x128	DV Series	SMS - DV256x128 & SMS - DV128x128
97 HDVid 32x32	HD Series	SMS - HD32x32
98 7500WB 256x256	7500 Wide Band Series	SMS - WB256x256
99 7500WB 128x128	7500 Wide Band Series	SMS - WB128x128

If this is an emulated Node Controller that will be controlling a non-Series 7000 matrix through a Mezzanine board or an emulated remote Series 7000 router for networking purposes, select frame type 80.

Frame type must be one of the High Density SDV systems to use VRef Override.

7500 NB Audio Frames use **34 AES Nx256**.

Remember, to add entry rows for additional slices:

Click the leftmost column of an existing row to highlight it, then

A to add a row after the existing row, or
Insert to add a row before the existing row, or
Delete to remove a row before the existing row.

7. Click **OK** to accept currently displayed entries.

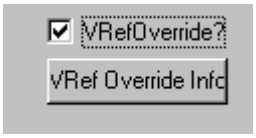
If you need to configure more Node Controllers, name them in the Actions window and click **New** to repeat the process just described for another Node Controller. Otherwise, proceed to the *Node Controller Options*, *Backup Node Controllers*, or the *Physical Matrix* section, depending on your specific needs.

Node Controller Options

At this point we've completed basic Node Controller configuration. There are, however numerous options, depending on your equipment and needs. This section covers those options.

VRef Override? (Vertical Reference Override)

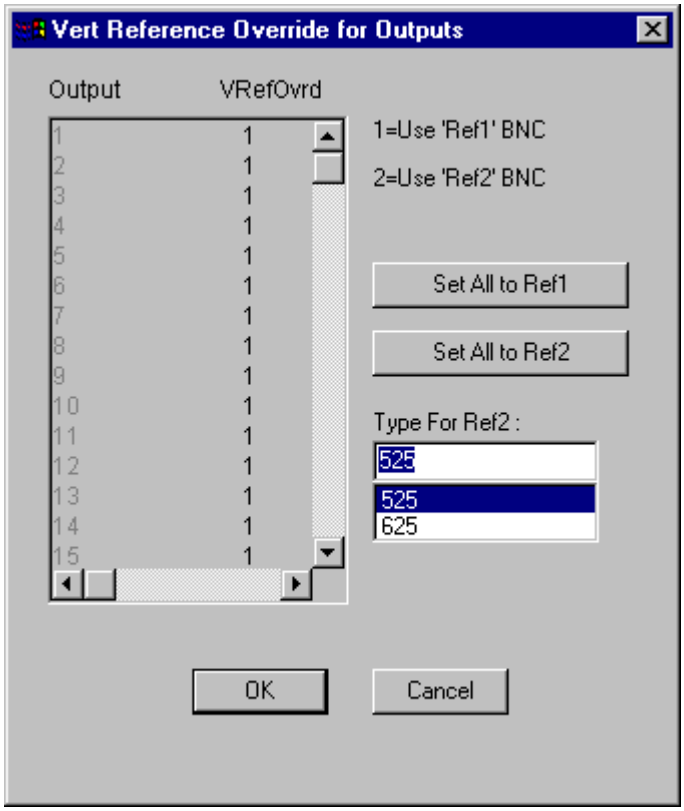
Frame type must be High Density SDV to use this feature.



If this box is selected the **Vref Override Info** button is activated.

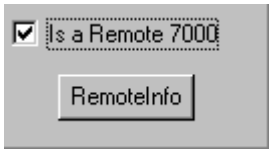
Clicking this button will bring up the Vert Reference Override for Outputs window. Assign **1** or **2** to each output.
Outputs may have different VRef signal types within a Slice.

Figure 2-12. Vert Reference Override for Outputs Window



Is a Remote 7000

Used to identify remote Series 7000 Primary and Secondary MCPUs.

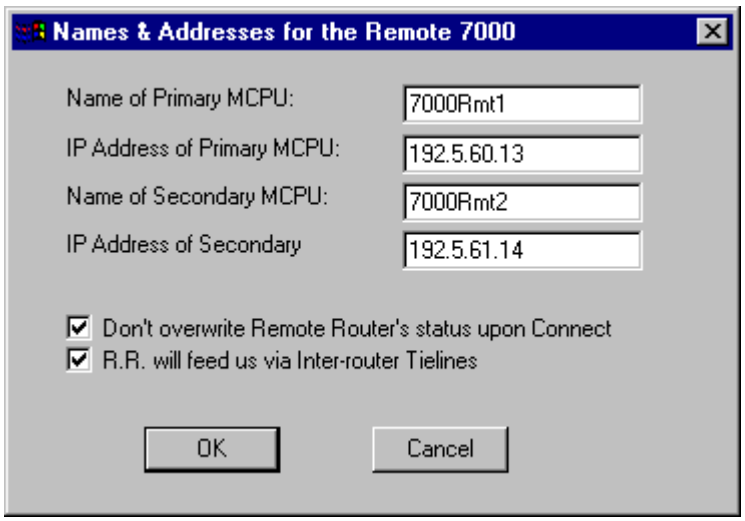


If this box is selected the **Remote Info** button is activated.

Enable Networked 7000s must be checked in the Enables window or this feature will not appear.

Clicking this button will bring up the Names & Addresses for the Remote 7000 window. Enter requested information in fields.

Figure 2-13. Names & Addresses for the Remote 7000 Window

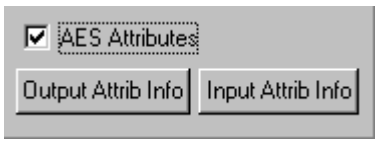


Check boxes are for remote router control. Both boxes need to be checked to establish remote router control. Default is local control.

Select **Don't overwrite Remote Router's status upon Connect** to protect remote router's status and select **R.R. will feed us via Inter-router TieLines** to ensure changes to Inter-router TieLine configuration are reflected in the remote router's records.

AES Attribute

Used to identify Synchronous AES Audio matrices.



If the frame you're configuring supports AES and this box is checked the **Output Attrib Info** and **Input Attrib Info** buttons are activated. See the documentation for that frame for configuration information.

Domestic Dual Ctl

Used to set communications settings for the dual control of a matrix.

If this box is selected the **Dual Ctl Info** button is activated.

Clicking this button will bring up the Domestic CNC Port for Dual Control window.

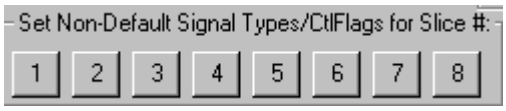
Select entries from the drop-down lists.

Figure 2-14. Domestic CNC Window

Set Non-Default Signal Types:/CtlFlag: for Slice #

Highlight a single slice in the multiple column window. Click one of the numbered (1-8) buttons (Only the first four are usable for Series 7000 or Horizon control.)

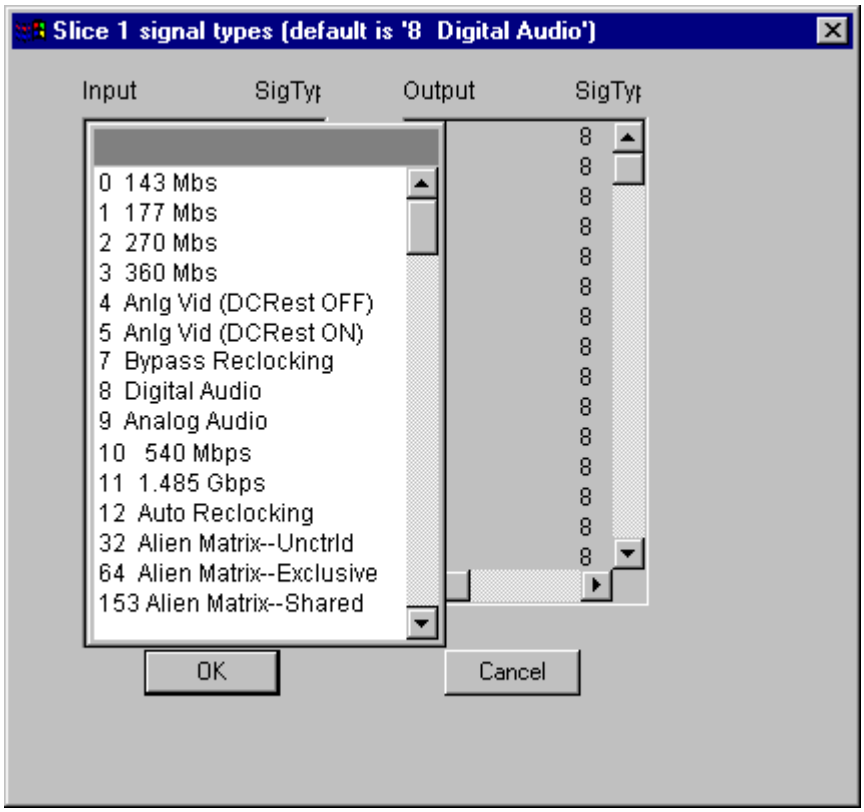
Figure 2-15. Set Non-default Signal Types:CtlFlag: For Slice # Buttons



Clicking one of these buttons brings up a window (see Figure 2-16), which allows you, by clicking the input signal type, to either define signal treatment on an input-by-input and output-by-output basis for the associated slice, or a window (see Figure 2-17), which allows you to assign control responsibilities for (alien) matrices controlled through a Mezzanine board. The treatment you select must be compatible with your signal-processing modules and the input or output signal involved. (For example, you wouldn't select D2 treatment for an analog input.)

Note Do not use this feature to change signal type on a 7500 NB Audio frame. All inputs and outputs are signal type 8. AES Attributes windows allow individual settings for inputs and outputs.

Figure 2-16. Signal Types Window

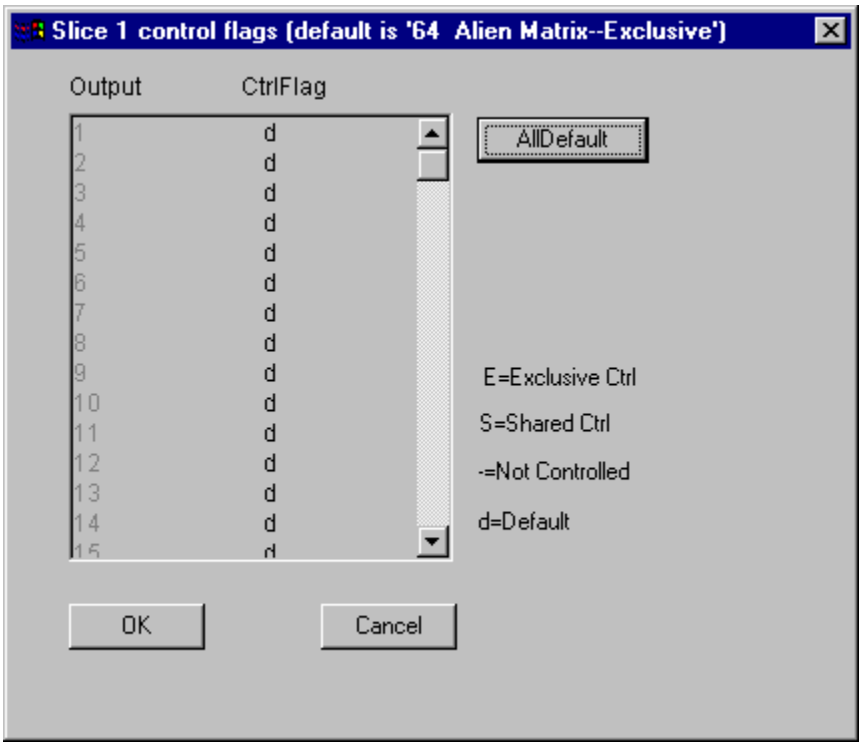


Matrices controlled through Mezzanine Boards are typically controlled through an RS-232 or RS-422 serial link. One such might be a Grass Valley Horizon Series router, controlled by Series 7000 through the Horizon GPI/TCI Interface, using a Series 7000 Asynchronous Mezzanine. Protects may or may not be supported by the interfaced equipment (refer to Section 4 - *Configuring Options*).

Alien Matrix Destination Protection

The Series 7000 can protect Destinations for an Alien Matrix — the DATA node controller in the tutorial — (see Appendix B, *Installation Manual*). Enter **E** in the **CtrlFlag** column for each destination that you want to be Exclusively controlled by the Series 7000. Upon download of the Configuration, the Series 7000 will set protected outputs on all levels of the matrix.

Figure 2-17. Control Flags Window for Alien Matrices



Enter **S** to share control of the destinations. The Series 7000 will clear its protection of the Alien Matrix.

Set up Protects for each Slice (Level) identically if the Alien Matrix system Sets and Clears protects on an ALL-LEVEL basis (as does Horizon).

For a 440 Interface, set any Destinations protected by 440 control to Not Controlled (**–**) in the 7000 Control Flags menu.

Destinations within a Level that are not controlled by the 7000 should be designated Not Controlled to minimize monitoring activity for the Series 7000 MCPU.

Note To change a CtrlFlag configuration from Exclusive (E) to Shared (S), you must first set it to Not Controlled (–) and click **OK**. This will eliminate possibility of problems with old protects. Then re-set the flag(s) to **S**.

Backup Node Controllers

Provision is made to place both a Primary and a Backup Node Controller in a frame, so if one Node Controller should fail, the second Node Controller can take up the task of controlling the matrix modules. Backup Node controllers use the same template (configured Node Controller) as the Primary Node Controller.

Make sure that the Configured Node Controller has a name of seven (7) characters maximum. For example, NCvid.

When the configuration is complete and you have sent the new configuration to the MCPU use the procedure*To Identify and Rename Node Controllers on page 3-6* to rename the Primary and Backup Node Controllers. It is recommended that you append a one (1) to the Primary and a two (2) to the Backup Node Controller names.

For example:
The Primary Node controller could be named NCvid1 and the Backup Node Controller could be named NCvid2.

Physical Matrix

A Physical Matrix is a sequentially numbered matrix of inputs and outputs. It can be partitioned by software. A single Physical Matrix can occupy an entire frame (i.e., 64 x 64 video in a 64 x 64 frame), can stretch across several frames (systems larger than 128 Destinations), or can be used to divide a frame into more than one matrix (i.e., Dual 64x64 Audio). If a frame is divided into more than one Physical Matrix, input/output blocks are accessed according to the order of Physical Matrix assignment. For example, if a 64 x 64 frame is divided into two 32x32 Physical Matrices, the first will access frame inputs 1 through 32 and frame outputs 1 through 32; the second will access frame inputs 33 through 64 and frame outputs 33 through 64. As indicated in Figure 2-10, even the second Physical Matrix will see its inputs and outputs as ranging from 1 to 32. (If your frame was designed for partitioning, Quad or Dual Audio, the connector numbers match the Physical Matrix numbers.)

Note The 7500 NB Series must have one Physical Matrix that includes all of the 7500 NB matrices in the system. For example, a system that contains a 7500 NB 256x256 (1 matrix frame) would be configured with 1 CNC and 1 Physical Matrix. While a system that contains a 7500 NB 1024x1024 (8 matrix frames) would be configured with 8 CNCs and 1 Physical Matrix. See Figure 2-19 (page 2-28) for an example of a single Physical Matrix with 4 CNCs that can be used with a 7500 NB 1024x512 (4 matrix frames).

To Configure a Physical Matrix

Repeat Step 1 through Step 7 for each physical matrix you need to create. For tutorial purposes use the entries in Table 2-8.

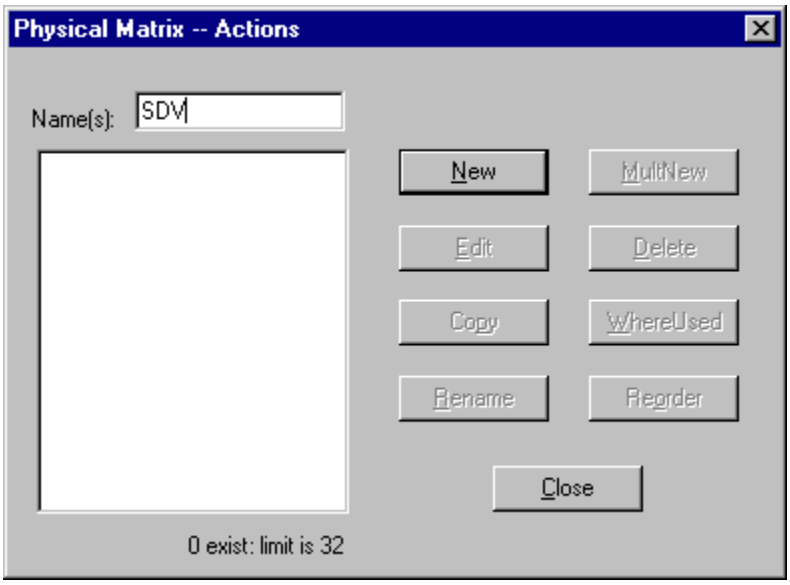
Table 2-8. Physical Matrix Settings for Tutorial

Name	Inputs	Outputs	NodeCtrl	Slice#
SDV	128	128	SDV	1
AES	256	256	AES	1
VID	64	64	VID	1
A1	64	64	A1/2	1
A2	64	64	A1/2	2
A3	64	64	A3/4	1
A4	64	64	A3/4	2
DATA	128	128	DATA	1

For our analog audio, two matrices are in one frame and therefore controlled by a single Node Controller (for the example, A1/2 or A3/4 as the case may be). Because there are four physical matrices, each will get it's own name here — A1 through A4 — be assigned to the appropriate Node Controller — A1/2 or A3/4 — and get its own Slice — 1 or 2 — within that Node Controller.

1. Under the **Setup** menu select **Matrix** and then **Physical Matrix** to access the Physical Matrix Actions window.

Figure 2-18. Physical Matrix Actions Window

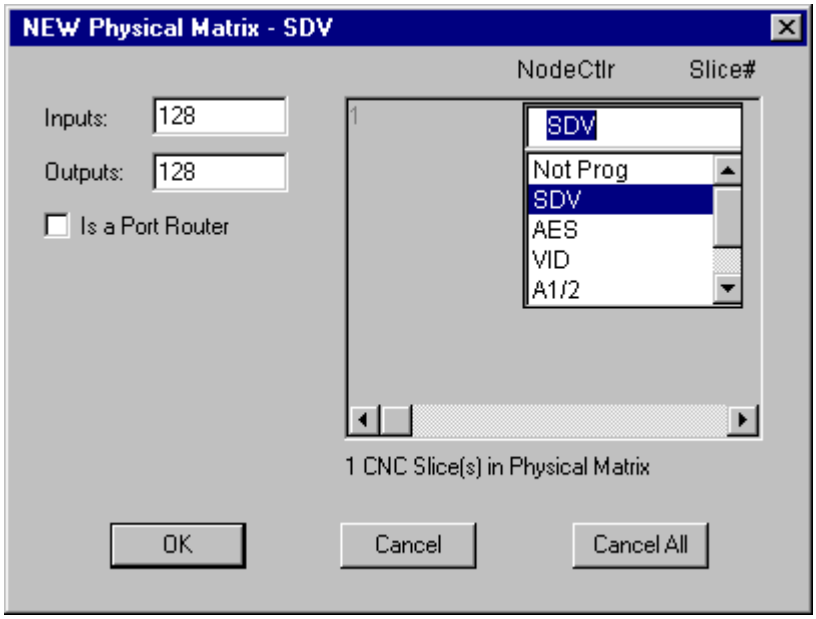


2. **Name(s):** Give the Physical Matrix a name (up to eight characters). It should be named logically, to make sense with your routing system. We recommend that you name it the same as the Node Controller to which it applies. You may also use the default names.

Note Use the **Copy** button to save some work when you can. In our case we're going to make four similar physical matrices. After creating and configuring A1, select it in the Actions window and click **Copy** to add another physical matrix just like it and you can skip most of the steps which follow. All you have to do is name the clone A2 when prompted. Use a similar procedure after creating A3.

3. Click **New.**

Figure 2-19. New Physical Matrix Window



4. **Inputs:** Enter the number of inputs to this Physical Matrix in increments of 32. (Classic frame minimum increments, by the way, are 16.) Maximum entry is 1,024.

5. **Outputs:** Enter the number of outputs from this Physical Matrix in increments of 32. (Classic frame minimum increments, by the way, are 16.) Maximum entry is 1,024.

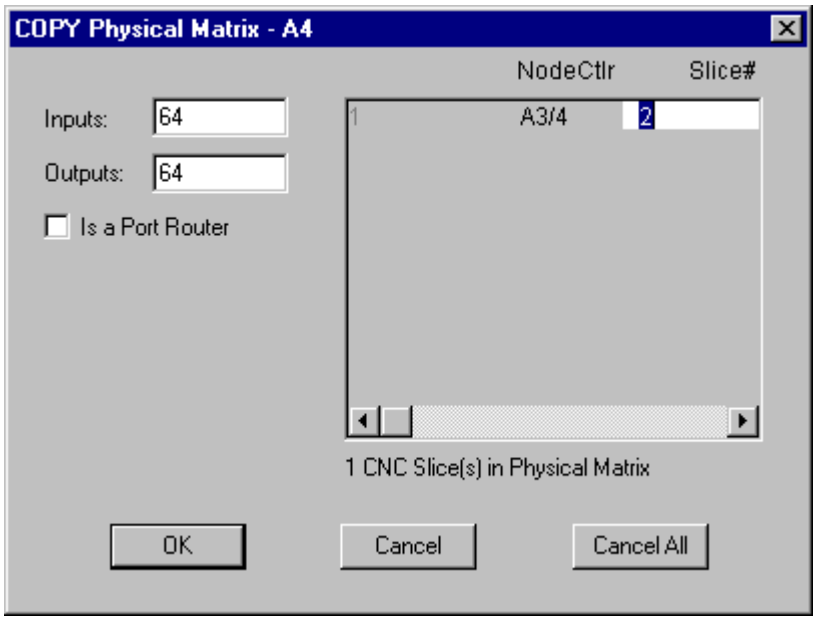
Note 7500 Series CNCs need to be in the same physical matrix.

6. In the multi-column window, enter data in the appropriate column as indicated by the following information.

Note Each Physical Matrix must be assigned at least one Node Controller and Node Controller Slice.

- **NodeCtlr** Drop-down list, Select a configured Node Controller Choose the Node Controller configured to control this Physical Matrix. (If using multiple Node Controllers to control a matrix of greater than 128 outputs, repeat this process for each controlling Node Controller.)
- **Slice#** Click here and enter the number of the Node Controller Slice configured to control this Physical Matrix. If using multiple Node Controllers to control a matrix of greater than 128 outputs, repeat this process for each controlling Node Controller.

Figure 2-20. Entering the Correct Slice Number for a Physical Matrix' Node Controller.



7. Click **OK** to accept currently displayed entries.

Auto Configure

You can proceed with your configuration manually, however there is now enough specified system information to use the automatic configuration option. This option automatically specifies Virtual Matrices and Levels, and configures Source and Destination names for your system. The assigned names are not descriptive of the Sources and Destinations but are instead Source 1 through Source N and Destination 1 through Destination N. All names can be changed using the Rename button.

Auto Configuration is not recommended for configurations where alien (non Grass Valley Group) equipment is being used, the configuration is complex, or where there is not a one-to-one relationship between physical and virtual matrices.

Auto Configuration produces a simple configuration with:

- 1:1:1 correspondence between Physical Matrix, Virtual Matrix, and Level.
- 1:1 correspondence between input# and Source# (in 1 = Source 1). Sources are set to all-level without shared inputs.
- 1:1 correspondence between output# and Destination# (out 1 = Destination 1). Destinations are all-level.

In an autoconfigured system, a **Take** will switch only one input to one output on each configured level.

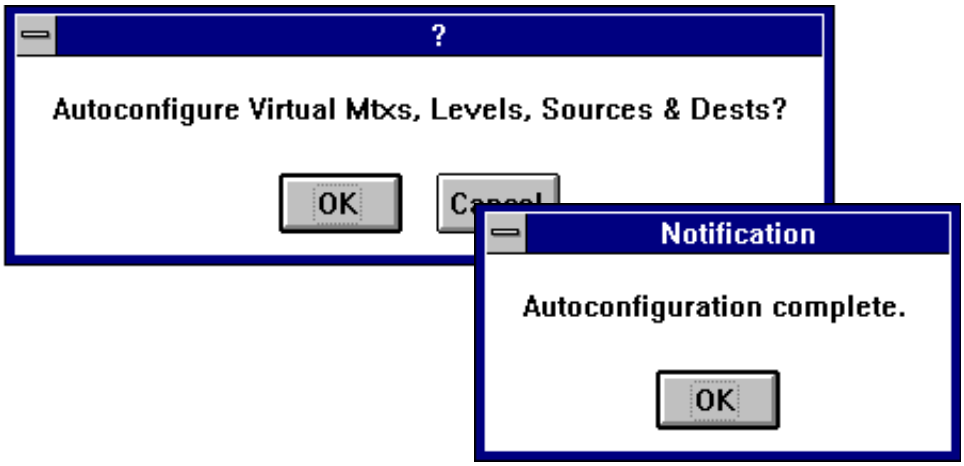
If you use the AutoConfigure option, it will configure your system, then become grayed-out and inaccessible. Other items such as Control Panel Templates, TieLines, etc. will still need to be configured.

All items configured using the Auto Configure option can be modified individually by using the **EDIT** feature in the related actions window.

To Configure Using Auto Configure

1. Under the **Setup** menu select **Auto Configure**.

Figure 2-21. Auto Configure Windows



2. **Auto configure Virtual Mtxs, Levels, Sources & Dests?** dialog box will appear.
3. Click **OK** to accept currently displayed entries.
4. If **OK** was selected, when auto configuration is complete the Notification box will appear. Click **OK**.

Virtual Matrix

A Virtual Matrix is a software-defined set of Crosspoints within a Physical Matrix. The crosspoints need not be contiguous. Signals of the same type can be scattered through the Physical Matrix (because Inputs and Outputs are assigned to a Virtual Matrix on a one–by–one basis). Each Physical Matrix must contain one and can contain more than one Virtual Matrix. Generally, you establish separate virtual matrices to handle a specific signal group, such as the Red elements of an RGB input. Outputs assigned to a Virtual Matrix can ONLY directly access Inputs assigned to that same Virtual Matrix, but they can access inputs assigned to another Virtual Matrix using TieLines. Even if you are not fragmenting the Physical Matrix, you need to create at least one Virtual Matrix for it. (This would by default control all of the inputs and outputs in that Physical Matrix).

To Configure a Virtual Matrix

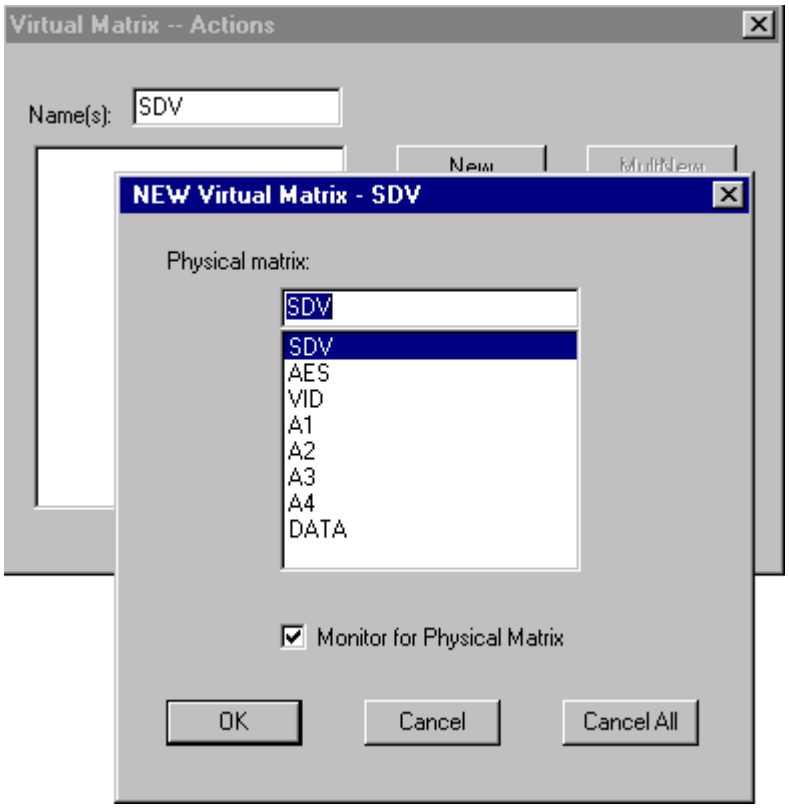
For tutorial purposes we suggest creating and naming a virtual matrix for each corresponding physical matrix.

1. Under the **Setup** menu select **Matrix** and then **Virtual Matrix** to access the Virtual Matrix Actions window.

2. **Name(s):** Give the Virtual Matrix a name (up to eight characters). It should be named logically, to make sense with your routing system. For example, an alphanumeric combination like VMRed (Virtual Matrix, Red signal element). Names should both identify what the item is (i.e., VM) and how it is employed (i.e., Red). We recommend that you name it the same as the Physical Matrix to which it applies.

3. Click **New.**

Figure 2-22. New Virtual Matrix Window



4. **Physical matrix:** A list of the Physical Matrices you've created. Pick a Physical Matrix in which the Virtual Matrix will reside.

5. **Monitor for Physical Matrix** If selected, this Virtual Matrix will contain the frame monitor output (Series 7000 matrices). Only one Virtual Matrix can have control of the output monitor within the Physical Matrix.

6. Click **OK** to accept currently selected entry.

7. Repeat this procedure for every Virtual Matrix you need to create.

Levels

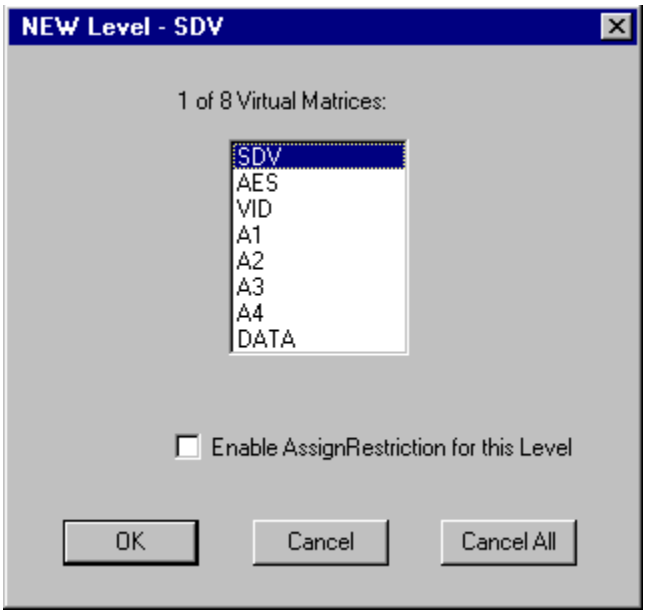
A Level is an independently controllable stratum of signals (or Cross-points) within a Physical Matrix or a routing system. A Level may include more than one Virtual Matrix as a slaved set. For example, a component video Level might slave the R, G, and B Virtual Matrices to disallow break-away switching. However a Virtual Matrix can belong to only one level. All Virtual Matrices in a Level respond to commands addressed to that Level.

To Configure Levels

For tutorial purposes we suggest creating a level for, and assigning it only to each corresponding Virtual Matrix.

1. Under the **Setup** menu select **Levels** to access the Level Actions window.
2. **Name(s):** Give the Level a name (up to eight characters). It should be named logically, to make sense with your routing system. For example, an alphanumeric combination like Vlvl1 (Video Level 1). The name should both indicate what the item is (Lvl) and where or how it is used.
3. Click **New**.

Figure 2-23. New Level Window



4. **Enable Assign Restriction for this Level** If selected, this level of a source can be controlled only by a destination or room to which the source has been Assigned.
5. **n of n Virtual Matrices:** Pick Virtual Matrices to belong to this Level.
6. Click **OK** to accept currently displayed entries.

Data Matrix Configuration

The Series 7000 Data Matrix is designed for Exclusive source-to-destination connection (one to one), rather than Distributive connection (one to many) typical of routing switchers. A Data connection, from a remote control device to a machine, is not shared with other devices as is an audio or video source connection. The data follows a forward path from the controlling device through the Data Matrix to the controlled device. The reverse path is from the controlled device to the Data Matrix to the controlling device. The controlling and controlled devices are identified during configuration. A single device cannot be configured as both a controlling and controlled device in the same configuration.

Data Matrices are typically used to route RS-422 data. It is usually desirable to simultaneously establish forward and reverse directions for data connection so that source is linked to destination, and destination is linked to source.

Forward and Reverse Levels are used to establish a path from a Source to a Destination and from that Destination back to the Source simultaneously. In effect, the Source is both a Source and a Destination (as is the Destination both a Destination and a Source). Automation or other systems which allow lists of Sources and/or Destinations to be viewed might list what you think of as a Source in the Destination column or what you think of as a Destination in the Source column.

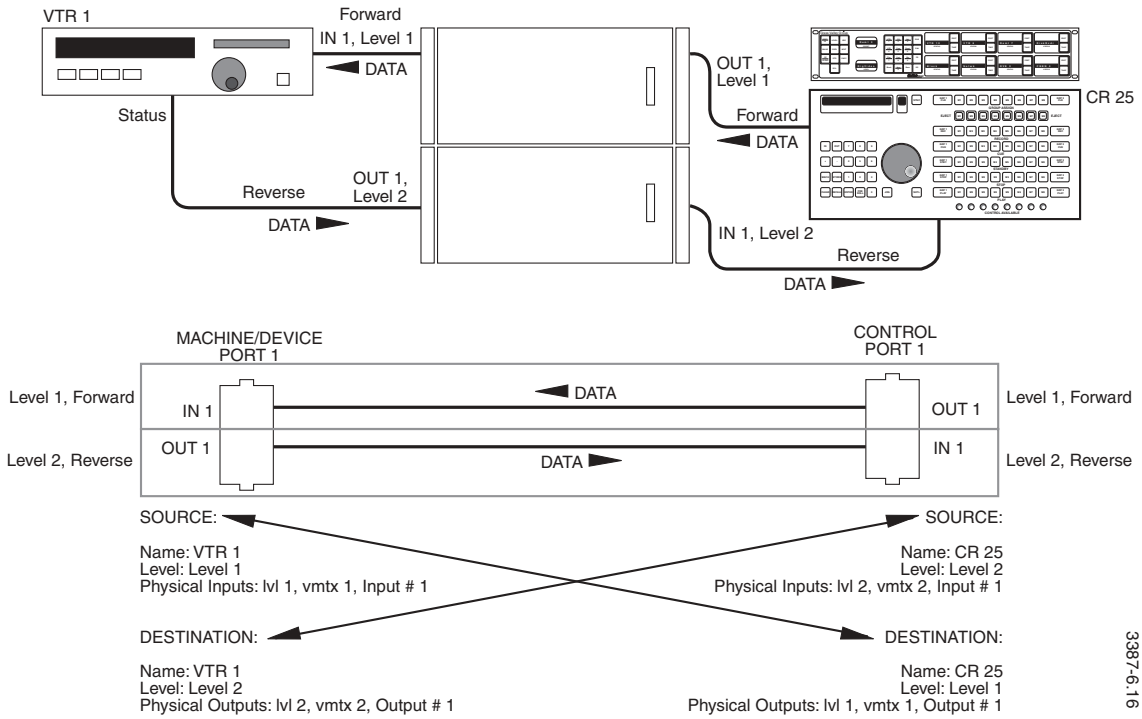
Data Matrices Sources and Destinations

Setting Sources and Destinations for Data Matrices requires some extra consideration because you are setting up two distinct paths through the router; one from the device initiating communication (usually a control panel) to the initial receiver (usually a source machine), and one path from the initial receiver back to the initiating device. This means that a machine control panel is a Destination on one level and a Source on another. The same is true of the source machine (VTR, etc.).

Select forward and reverse Control Levels during Data Matrix setup. In the Source and Destination sections select the panels and source equipment which will be the beginning and ending points of the router path on each of those levels. Figure 2-24 illustrates the forward and reverse paths and their beginning and ending points.

It is essential to note that the Input and Output data connections for a specific machine are through the same physical connector, therefore the Input and Output numbers you assign must be the same.

Figure 2-24. Data Matrix Source and Destination Assignment



After a Data Matrix is configured and has its related Sources and Destinations assigned an error check can be run.

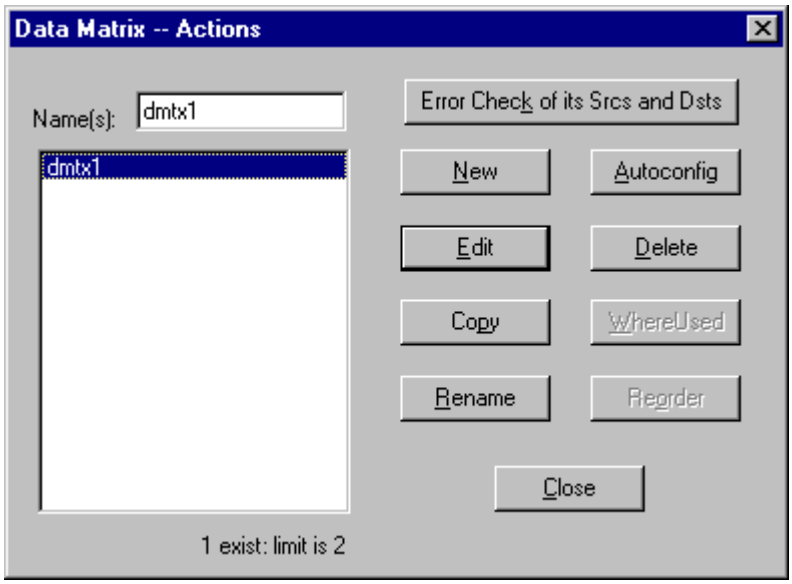
Data Matrix Configuration

To Configure a Data Matrix

Ensure that you've specified at least one in the Data Mtxs field of the limits dialog. For more information on setting limits, see *Limits* on page 2-8.

1. Under the **Setup** menu select **Matrix** and then **Data Matrix** to access the Data Matrix Actions window.

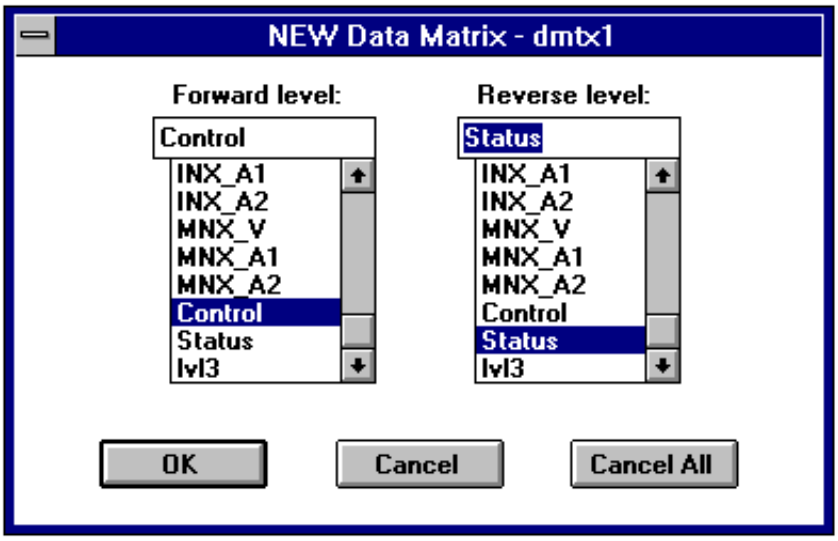
Figure 2-25. Data Matrix Actions Window



2. **Name(s):** Give the Data Matrix a name (up to eight characters). It should be named logically, to make sense with your routing system. For example, an alpha-numeric combination like Data1 (Data Matrix 1). You may also use the default names.

3. Select **New.**

Figure 2-26. New Data Matrix Window



4. **Forward level:** Select a Forward Level.
   The Forward Level is normally used to send the control messages from a control panel to a Source machine. During operation, a control panel operator picks the source to connect to the destination on the Forward Level; the reverse level connection is made by the router automatically. Forward and Reverse should not be assigned to the same Level.

5. **Reverse level:** Select a Reverse Level for return data direction.
   (data travelling from the Source machine to the Machine Control Panel). Forward and Reverse should not be assigned to the same Level.

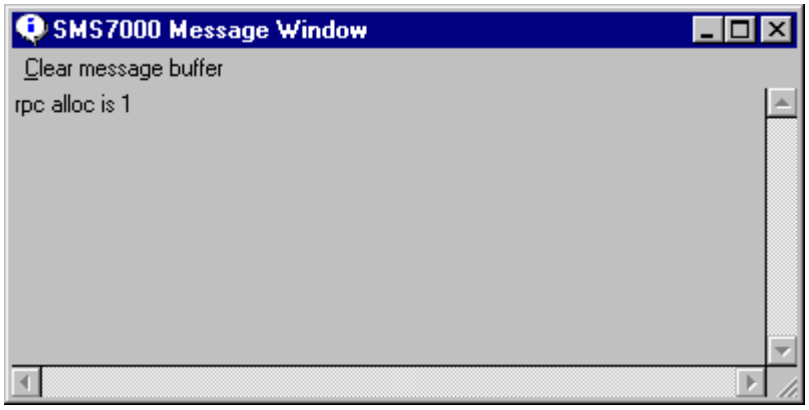
Levels paired in this way enforce an exclusivity rule. (Because a given Source can be connected to only one Destination on a given Data Matrix Level at any one time.)

6. Click **OK** to accept currently displayed entries.

To Run an Error Check

1. Select **Settings** on the **Setup menu** and ensure there's a check opposite **Show Message Window** to display the Message window. Leave this window open.

Figure 2-27. Message Window



2. Under the **Setup** menu select **Matrix** and then **Data Matrix** to access the Data Matrix Actions window.

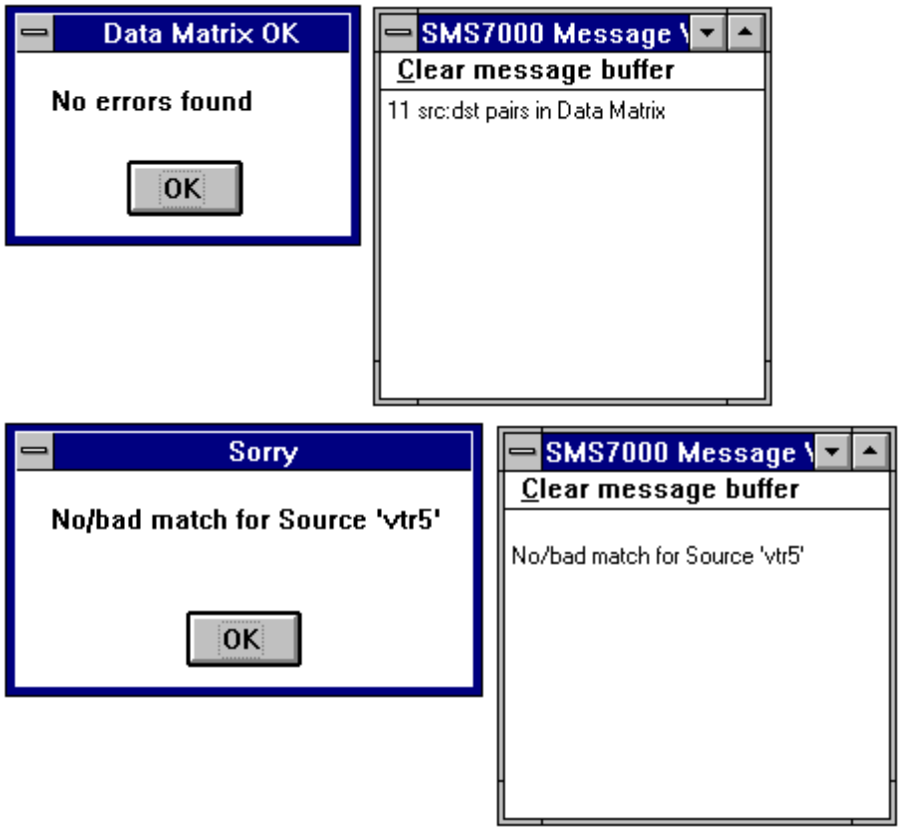
3. Highlight the name of a Data Matrix.

4. Click **Error Check of its Srcs and Dsts**.

   If no errors are found a Data Matrix OK box will appear and a message showing how many pairs of Sources and Destinations are assigned to this Data Matrix.

If there are errors the first error found will appear in a dialog box and the Message window will display information on all errors. See Figure 2-28 for an example of an error caused by a name mismatch.

Figure 2-28. Data Matrix Error Check Windows



5. Click **OK** to return to the Actions window.

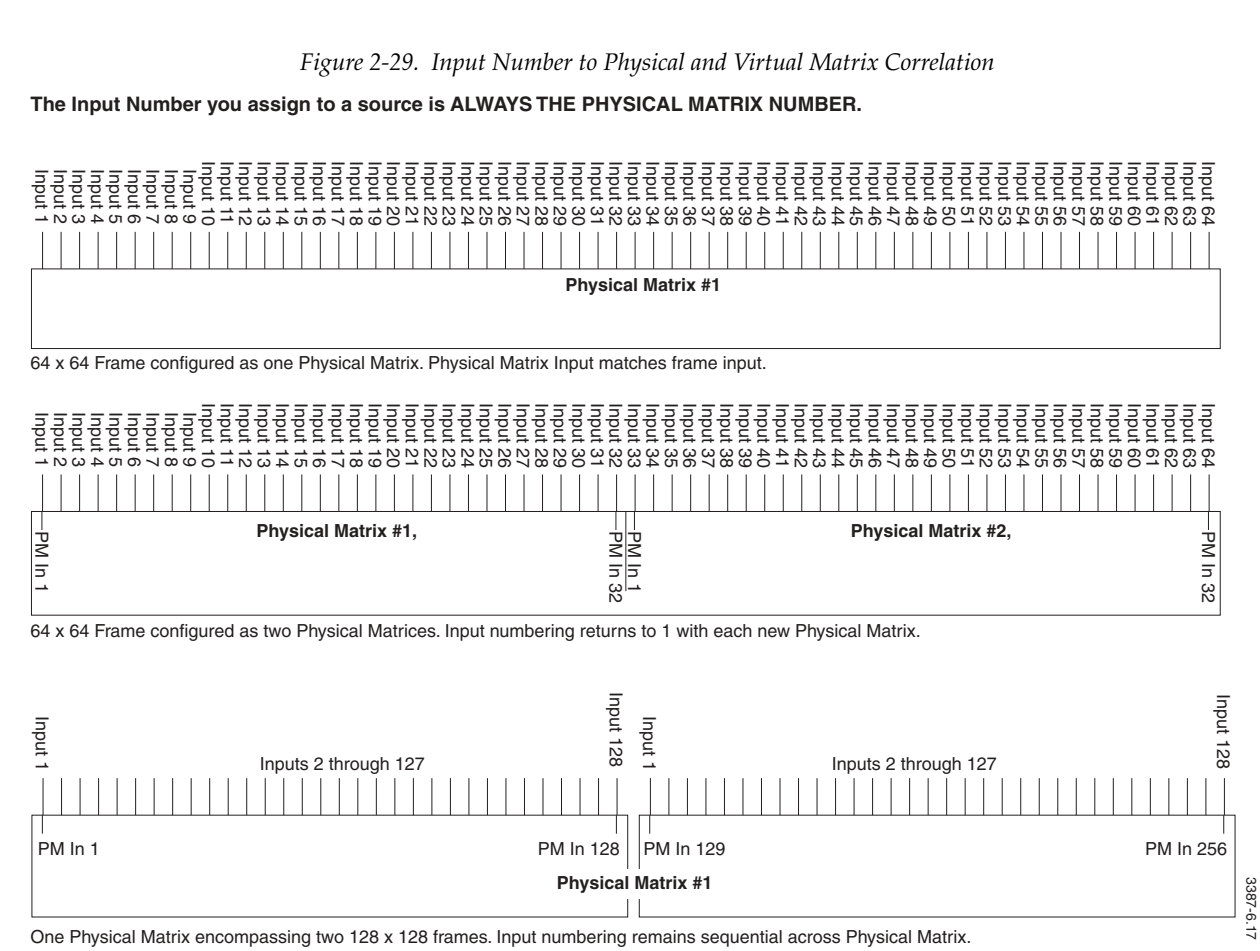
6. Select another Data Matrix to error check or click **OK** to close the window.

Sources

A Source is configured to contain one or more inputs, with each input residing in a different Virtual Matrix. When configuring a Source, you assign specific inputs, or physical connections, to the Source name. Thereafter, when you specify that Source name, you are selecting the assigned inputs residing on Virtual Matrices in Levels enabled in that Take or other operation. If you are configuring a Data Matrix Source be sure to configure a corresponding Destination.

The Source Name (and affected Level or Levels) is used by control panels to specify and select Sources for Take and other panel operations. Spaces within a Source Name are a valid and allowable part of the name. Series 7000 allows you to configure a single Source, or multiple Sources at the same time.

Figure 2-29. Input Number to Physical and Virtual Matrix Correlation



If you are setting up sources which are physical inputs to a non-Series 7000 matrix, e.g., the Grass Valley Horizon Series, check the input numbers to determine whether their numbering starts from 0 or from 1. If numbering starts at zero (as the Horizon does), the Series 7000 will see 0 as 1, 1 as 2, 2 as 3, etc. (An offset of 1 digit).

Source Configuration

Sources are frequently created using the **New** or **MultNew** options. Use **New** to create individual Sources. Use **MultNew** to create Sources sequentially or at regular intervals. You can configure a range of names with the same prefix, but different, sequential suffix numbers.

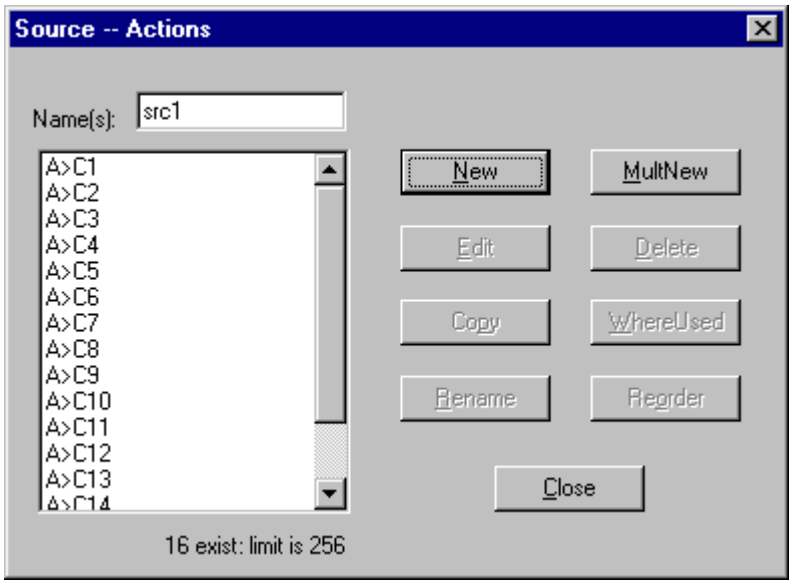
If you're going to create numerous TieLines (and therefore need multiple Sources and Destinations), you can take a shortcut and use the TieLine **MultNew** option to create both the required Sources and Destinations in one process. See *To Configure Multiple New TieLines*.

To Begin Source Configuration

- Under the **Configuration** menu select **Source** to access the Source Actions window.

If the configuration can include remote Sources the **All**, **Local**, and **Remote** choices will appear on the dialog box. You can create or edit remote Sources after checking the **Enable Networked 7000s** option on the Configuration Flags dialog box — see *Enables* on page 2-6. The default **All** option displays both local and remote Sources in the **Name(s)** area of the dialog box. Clicking either the **Local** or **Remote** option toggles the others off and displays the corresponding list of Sources.

Figure 2-30. Source Actions Window

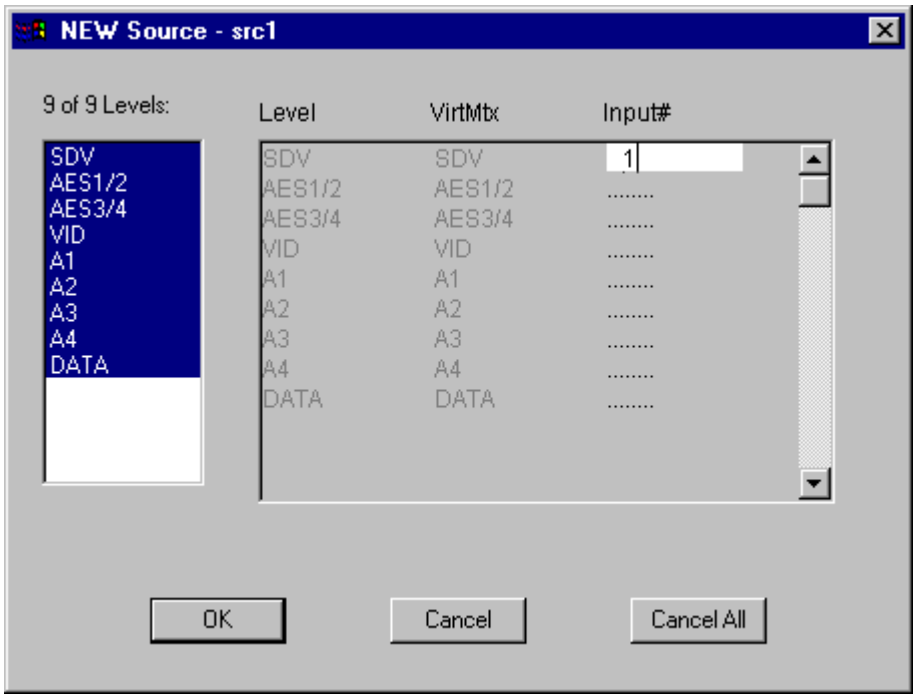


To Configure an Individual Source

1. **Name(s):** Give the Source a name (up to eight characters).
   It should be named logically, to make sense with your routing system. (Breakaway condition is indicated by an asterisk (*) in the panel display. To avoid confusion, do not use an * in the last position of a Source or Destination name.)

2. Click **New**.

Figure 2-31. New Source Window



3. **n of n Levels:** Select control Levels on which an Input(s) to this Source will reside.

4. In the multi-column window, enter data in the Input# column as explained below. Only Levels selected in the **n of n Levels** box will allow entries.

   - **Input#** Enter the number of the Input which is part of this Source for each Level and Virtual Matrix assignment (Physical Matrix input number must be used here).
     If you have fragmented your frame into more than one Physical Matrix, or if your Physical Matrix extends across more than one frame, see Figure 2-29 to help determine what (Physical Matrix) input number to use here.

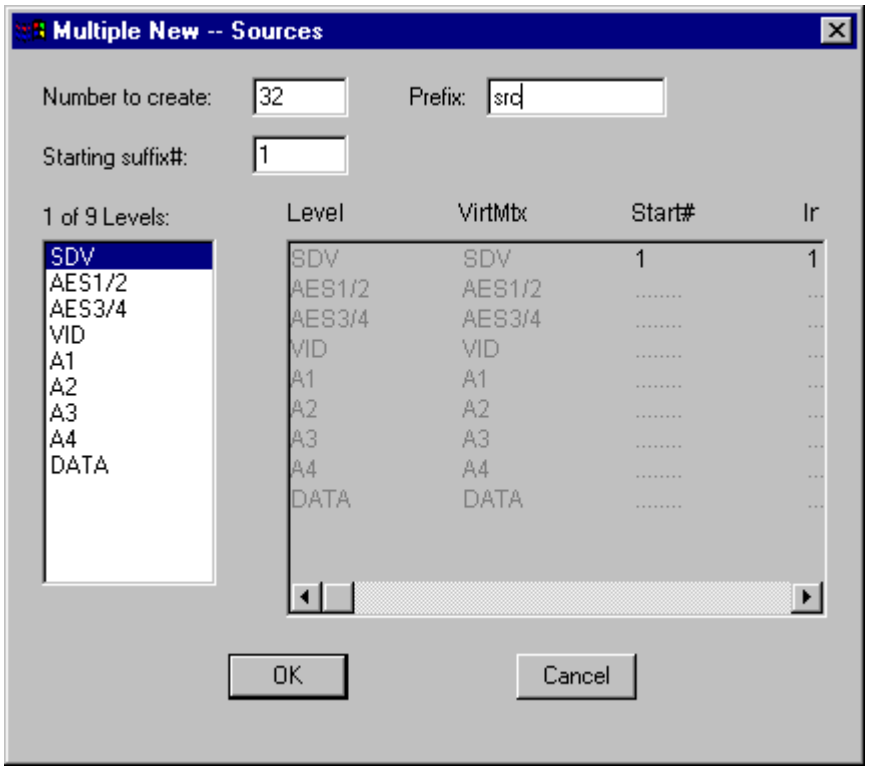
5. **Index for Intercom Cfg:** No entry possible. This is an automatically assigned value which is assigned if an Intercom Router is controlled by the 7000. This field may not be visible.

6. Click **OK** to accept currently displayed entries.

To Configure Multiple New Sources

1. Select **MultipleNew** in the Source Actions window.

Figure 2-32. Multiple New Sources Window



2. **Number to create:** Enter the number of like–prefixed Sources to be configured.

3. **Prefix:** Enter the prefix name for the Sources; we suggest you use one of the prefixes configured using the Keypad Set feature. (See page 2-79).

4. **Starting suffix#:** Enter the starting suffix number.

5. **n of n levels:** Scrolling list, select Levels to be included in these Sources.

6. In the multi-column window, enter data as directed by following field information. Only Levels selected in the **n of n Levels** box will allow entries.

   - **Start#** Enter starting number (Physical Matrix input).
   - **Incremnt** Enter the increment by quantity for the Levels and virtual matrices shown. Usually this value is 1, but if you had interlaced virtual matrices (Red, Green, and Blue) you would set this value to 3.

7. Click **OK** to accept currently displayed entries.

Destinations

A Destination is configured to contain one or more outputs, with each one residing in a different Virtual Matrix. A single output can't be assigned to more than one Destination. Configuring the Destination associates specific outputs (Physical Matrix connections) to the Destination name. Selecting a Destination name also selects the associated outputs. If configuring Destinations for a Data Matrix, see *Data Matrix Configuration* on page 2-35.

Destinations are frequently created using the **New** or **MultNew** options. Use **New** to create individual Destinations. Use **MultNew** to create Destinations sequentially or at regular intervals. You can configure a range of names with the same prefix, but different, sequential suffix numbers.

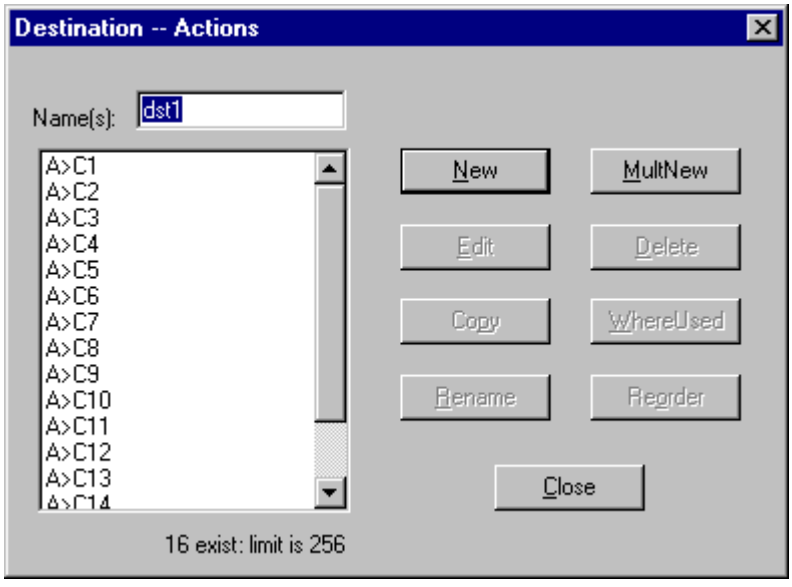
If you're going to create numerous TieLines (and therefore need multiple Sources and Destinations), you can take a shortcut and use the TieLine **MultNew** option to create both the required Sources and Destinations in one process. See *To Configure Multiple New TieLines*.

To Begin Destination Configuration

- Select **Configuration > Destination** to get the Destination Actions window.

If the configuration can include remote Destinations the **All**, **Local**, and **Remote** choices will appear in the dialog box. You can create or edit remote Destinations after checking the **Enable Networked 7000s** option on the Configuration Flags dialog — see *Enables* on page 2-6. The default **All** option displays both local and remote Destinations in the **Name(s)** area of the dialog box. Clicking either the **Local** or **Remote** option toggles the others off and displays the corresponding list of Destinations.

Figure 2-33. Destination Actions Window

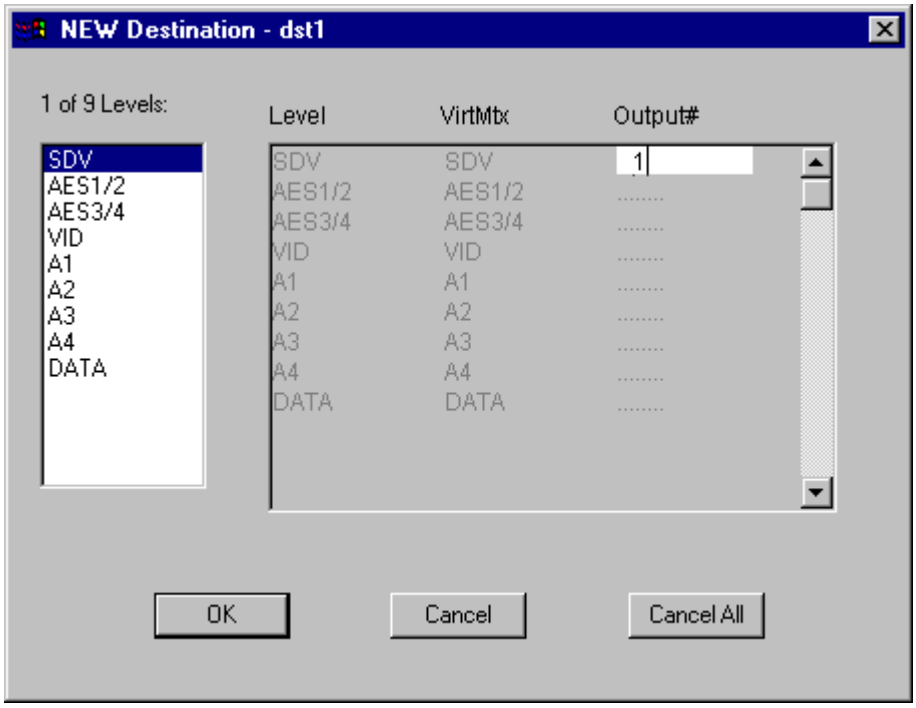


To Configure an Individual Destination

1. **Name(s):** Give the Destination a name (up to eight characters). It should be named logically, to make sense with your routing system. (Breakaway condition is indicated by an asterisk (*) in the panel display. To avoid confusion, do not use an * in the last position of a Source or Destination name.)

2. Select **New.**

Figure 2-34. New Destination Window



3. **n of n Levels:** Select Levels on which an Input(s) to this Destination reside.

4. In the multi-column window, enter data in the **Output#** field as explained below. Only Levels selected in the **n of n Levels** box will allow entries.

   - **Output#** Enter the number of the Input which is part of this Destination for each Level and Virtual Matrix assignment (Physical Matrix output number must be used here).
     If you have fragmented your frame into more than one Physical Matrix, or if your Physical Matrix extends across more than one frame, see Figure 2-29to help determine what (Physical Matrix) output number to use here.

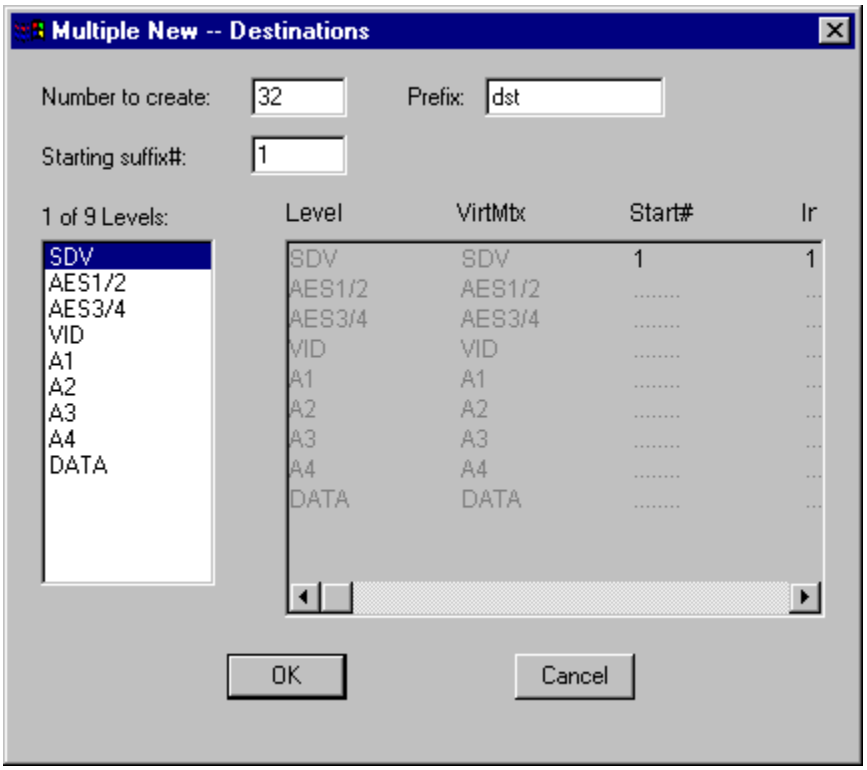
5. **Index for Intercom Cfg:** No entry possible. This is an automatically assigned value which is assigned if an Intercom Router is controlled by the 7000. this field may not be visible.

6. Click **OK** to accept currently displayed entries.

To Configure Multiple New Destinations

1. Select **MultipleNew** in the Destination Actions window.

Figure 2-35. Multiple New Destinations Window



2. **Number to create:** Enter the number of like–prefixed Destinations to be configured.

3. **Prefix:** Enter the prefix name for the Destinations; we suggest you use one of the prefixes configured using the Keypad Set feature.

4. **Starting suffix#:** Enter the starting suffix number.

5. **n of n Levels:** Drop-down list, select Levels to be included in these Destinations.

6. In the multi-column window, enter data as directed by following field information. Only Levels selected in the **n of n Levels** box will allow entries.

   - **Start#** Enter starting number (Physical Matrix output).
   - **Incremnt** Enter the increment by quantity for the Levels and virtual matrices shown.Usually this value is 1, but if you had virtual matrices interlaced (Red, Green, and Blue) you would set this value to 3.

7. Click **OK** to accept currently displayed entries.

Exclusions

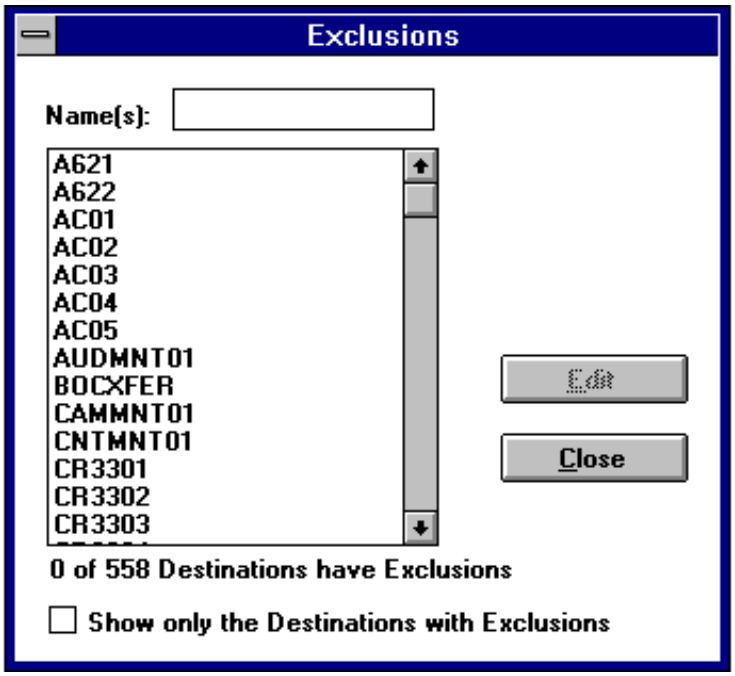
A Source exclusion is a way of restricting system access to specified Sources. When you exclude a Source, the system will not allow that Source to go to a specified Destination. This prevents the inadvertent transmission of material that might be inappropriate for the specified Destination.

Exclusions allows you to work with one Destination at a time, or with multiple Destinations.

To Exclude a Source(s) from a Destination(s)

1. Under the **CONFIGURATION** menu select **EXCLUSION** to access the Exclusions window.

Figure 2-36. Exclusions Window



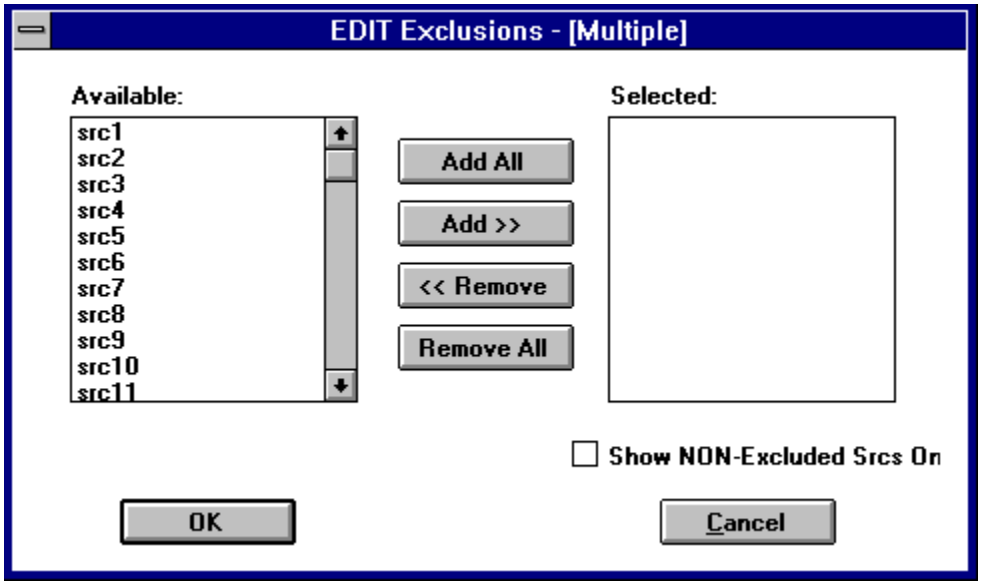
2. **NAME(S):** Enter a name of a Destination, if desired.

3. **SHOW ONLY THE DESTINATIONS WITH EXCLUSIONS** Select to display Destinations which have Sources excluded.

4. **N OF N DESTINATIONS HAVE EXCLUSIONS** Select a single Destination to exclude by double-clicking on it or highlighting it and selecting **EDIT**.
   or
   Select multiple Destinations to exclude by highlighting them using the **SHIFT** key for consecutive alarms or the **CONTROL** key to select out of sequence Destinations and selecting **EDIT**.

   The text will reflect the number of Destinations selected and the total number of Destinations.

Figure 2-37. Edit Exclusions Window



5. **AVAILABLE:** Select a single Source to exclude by double-clicking on it or highlighting it.
   or
   Select multiple Sources to exclude by highlighting them using the **SHIFT** key for consecutive alarms or the **CONTROL** key to select out of sequence Sources.

6. **SELECTED:** Select a single Source to unexclude by double-clicking on it or highlighting it.
   or
   Select multiple Sources to unexclude by highlighting them using the **SHIFT** key for consecutive alarms or the **CONTROL** key to select out of sequence Sources.

7. **ADD ALL** Adds all the Sources from the Available list to the Selected list.

8. **ADD>>** Adds highlighted Sources from the Available list to the Selected list.

9. **<<REMOVE** Removes highlighted Sources from the Selected list to the Available list.

10. **REMOVE ALL** Moves all Sources from the Selected list to the Available list.
11. **SHOW NON-EXCLUDED SRCS ONLY** Select to only display Sources without exclusions.
12. Click **OK** to accept currently displayed entries.

Rooms

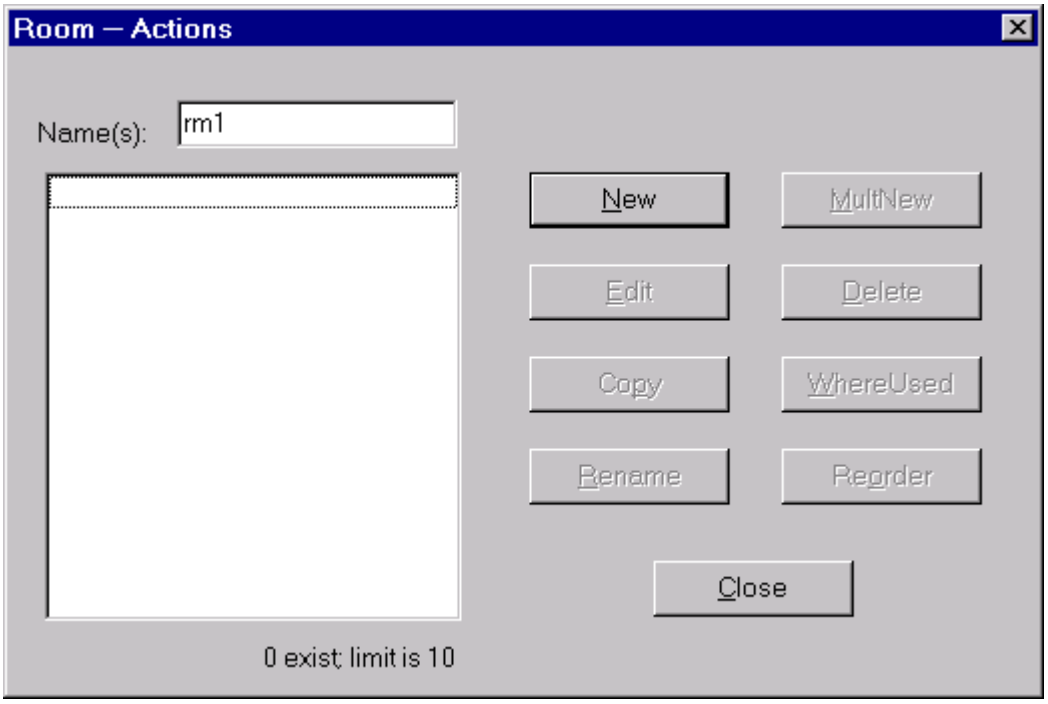
Rooms is a special feature set which most facilities don't use. A Room is a group of Destinations which can share assignments of machines or tie lines. Rooms can be designated as Studios, Cubicles, or Stand-alone. Studios and Cubicles can share machines; Stand-alone Rooms can not.

Destinations within a room can each control a TieLine assigned to that room, it is very important that operators within the room coordinate their TieLine switching so that one does not switch a source on a TieLine already in use by another operator in the room.

To Configure a Room

1. Select **SETUP**> **ROOMS** to access the Rooms Actions window.

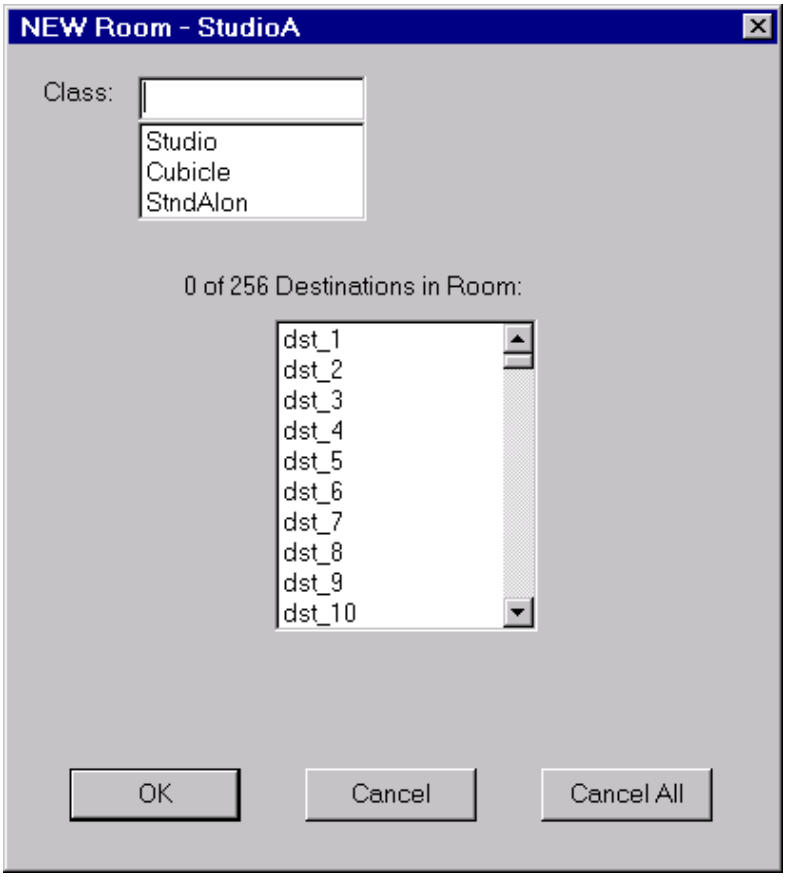
Figure 2-38. Room Actions Window



2. **NAME(S):** Give the room a name (up to eight characters). It should be named logically, to make sense with your routing system.

3. Select **NEW.**

Figure 2-39. New Room Window



4. **CLASS:** Select from drop-down list.
   Studio – can be linked to a Cubicle for services, or may run stand-alone.
   Cubicle – can be linked to a Studio to provide services, or may run stand-alone.
   Stand-alone – no linkages, runs stand-alone.

5. **MCO PANEL:** Enter the name of the MCO panel in this room to which you will assign ONLY machine control transfer capability.

6. **N OF N DESTINATIONS IN ROOM: CLICK** Destinations in the drop–down list to include them in the room. Max 8 per Room.

7. **INDEX FOR INTERCOM CFG:** No entry possible. This is an automatically assigned value which is assigned if an Intercom Router is controlled by the 7000. This field may not be visible.

8. Click **OK** to accept currently displayed entries.

Alarms

Series 7000 equipment frames which contain power supplies are provided with an alarm connector which allows user-access to four dry-contact relay closures. In all frames except the frame containing the system Master Control Processing Unit (MCPU), these alarms should be selectively jumpered by the user so that a power supply failure within that frame is associated with closure of one of the relays. See Section 5 of the *Installation Manual* for detailed alarm relay connection information before configuring alarms.

The alarm connector on the frame containing the system MCPU can be software-driven to report the user's selection of a wide range of system conditions through four relay closures. All conditions described in Table 2-9 are reported by the MCPU to the System Diagnostic Terminal which maintains a log for customer reference.

The MCPU frame alarm connector should not be jumpered. A frame power supply failure alarm reported through the jumpered relay can not be overridden by software command.

The GUI allows you to select the alarm events which will cause a specific alarm relay closure on the MCPU frame. The four alarm relays are designated: Critical, Major, Minor, and microprocessor (µProc).

Table 2-9. Alarms Usage

Alarm	Usage	Recommended Threshold Minimum
ACPwrFL	AC power loss will be reported before DC power is completely lost. Primary and redundant power supplies must experience this condition at the same time for this condition to be valid. This report is primarily useful in the Diagnostic Terminal log to track brown-out conditions in which AC power did not completely fail.	n/a
PSAFail	Indicates that the left-hand supply had been present and functioning but has now either failed or been removed. Also triggers if the MCPU is cold- or warm-started from a reset condition.	n/a
PSBFail	Indicates that the right-hand supply had been present and functioning but has now either failed or been removed. Also triggers if the MCPU is cold- or warm-started from a reset condition.	n/a
LtMCPUFl	Indicates that the left-hand (Master) MCPU had been present and functioning but has now either failed or been removed. Also triggers if the MCPU is cold- or warm-started from a reset condition.	n/a
RtMCPUFl	Indicates that the right-hand (Slave) MCPU had been present and functioning but has now either failed or been removed. Also triggers if the MCPU is cold- or warm-started from a reset condition.	n/a
MCPUSwOv	Indicates that system control has been transferred from one MCPU to the other.	n/a
MCPURst	Indicates that the master MCPU has been reset due to a software or hardware problem or to a manual reset. Especially useful in systems with no redundant MCPU since a switchover indication can not occur.	n/a
ParityFl	Indicates that the active MCPU has identified Static RAM parity errors.	5 per minute
BPBusFl	Indicates that there are communications problems on the backplane bus on which Control Interface Modules (CIFs) and associated Asynchronous Communications boards (Amezis) reside.	1,000 per second
NetDevFl	Indicates that a network device (of any kind) with an established valid device address with the MCPU has now failed or been removed. This alarm can precede or overlap other alarms triggered by network devices (Node Controllers, Control Panels Control Interface/Amezi pairs, etc.) This event is sensitive to network device power, connection, or configuration problems.	50 per second

Table 2-9. Alarms Usage - (continued)

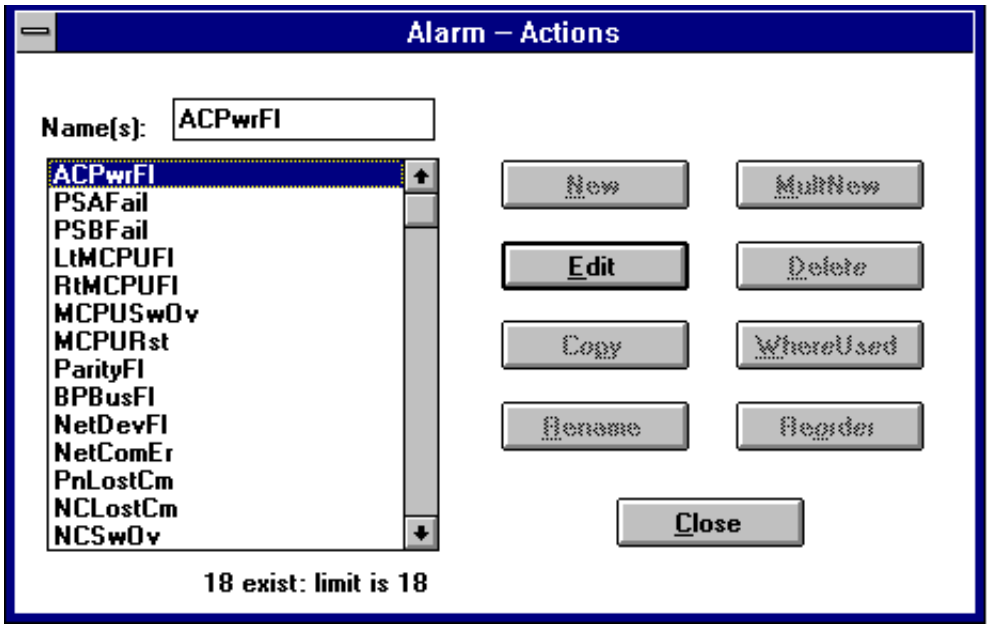
Alarm	Usage	Recommended Threshold Minimum
NetComEr	Indicates that data errors have been detected on system network. Can be caused by software or hardware problems.	50 per second
PnLostCm	Indicates that a control panel had been present and functioning but has now either failed or been removed.	n/a
NCLostCm	Indicates that a Node Controller had been present and functioning but has now either failed or been removed.	n/a
NCSwOv	Indicates that a Node Controller switchover (from Primary to Redundant) has been forced by the MCPU. The involved Node Controller name is logged by the Diagnostic Terminal.	n/a
CIFSwOv	Indicates that a Mezzanine board switchover (from Primary to Redundant) has been forced by the MCPU. If there is no redundant Asynchronous Mezzanine board, other alarms conditions can be selected to report a failure.	n/a
CIFNetSd	Indicates that a Control Interface bus had been present and functioning but has now failed or had a device removed.	n/a
MtxErr	Indicates that a hardware or crosspoint failure has occurred or that a serially communicating device (i.e., the Horizon GPI) has a problem.	n/a
MtxOvTmp	Indicates that Matrix Element Controller has reported an over temperature condition. Problem location is logged at the Diagnostic Terminal.	n/a

If an alarm has been triggered and you want to disable it, use the **`acc`** command at the Diagnostic Terminal to clear all alarms and statistics. Or use the **`arc`** command to clear alarms while leaving statistics as they are.

To Configure an Alarm

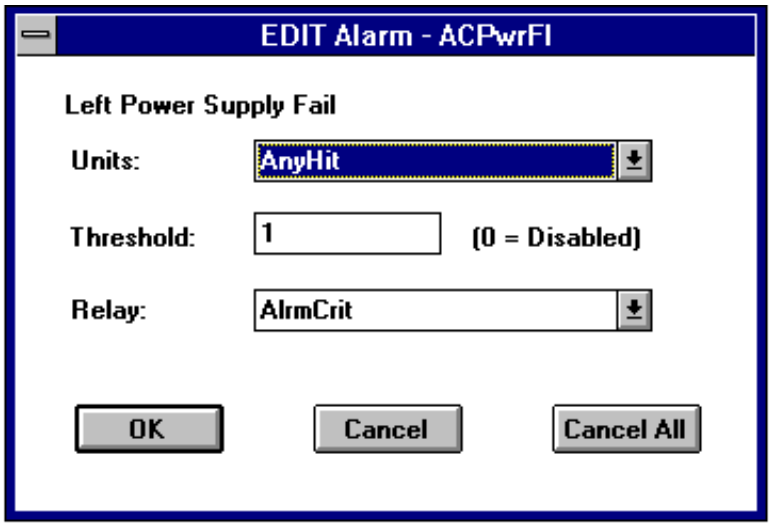
1. Under the **SETUP** menu select **ALARMS** to access the Alarms Actions window.

Figure 2-40. Alarms Actions Window



2. Select an single alarm condition to assign to a relay by double-clicking on it or highlighting it and selecting **EDIT**.
   or
   Select multiple alarm conditions to assign to a single relay by highlighting them using the **SHIFT** key for consecutive alarms or the **CONTROL** key to select out of sequence alarms and selecting **EDIT**.

Figure 2-41. EDIT Alarm Window



3. **UNITS:** Select either **ANY HIT** or a period of time (**PERSECOND**, **PERMINUTE**, or **PERHOUR**) from the drop-down list. This is how often this alarm will need to pass the Threshold to trigger the alarm. If **ANY HIT** is selected, the threshold must be set to **1** (one).

4. **THRESHOLD:** Enter the number of event occurrences to be exceeded during the time specified to trigger the alarm.
A zero entry disables the event. Threshold must be set to one if Units is set to Any Hit. Threshold must be greater than one if Units is set to anything other than Any Hit.

5. **RELAY:** Select the relay which activates when this alarm is triggered. Many events may be assigned to the same relay.

6. Click **OK** to accept currently displayed entries.

TieLines

TieLines allow source equipment connected to one or more Levels of a Series 7000 to be accessed by a Destination connected to one or more other Levels. For example, a common Series 7000 system configuration might contain both digital and analog video matrices, each on a separate level, each with their own input source equipment. In this instance TieLines with format conversion equipment like Grass Valley's SMS8000 Series, allow a Destination on the analog matrix to select a Source on the digital matrix.

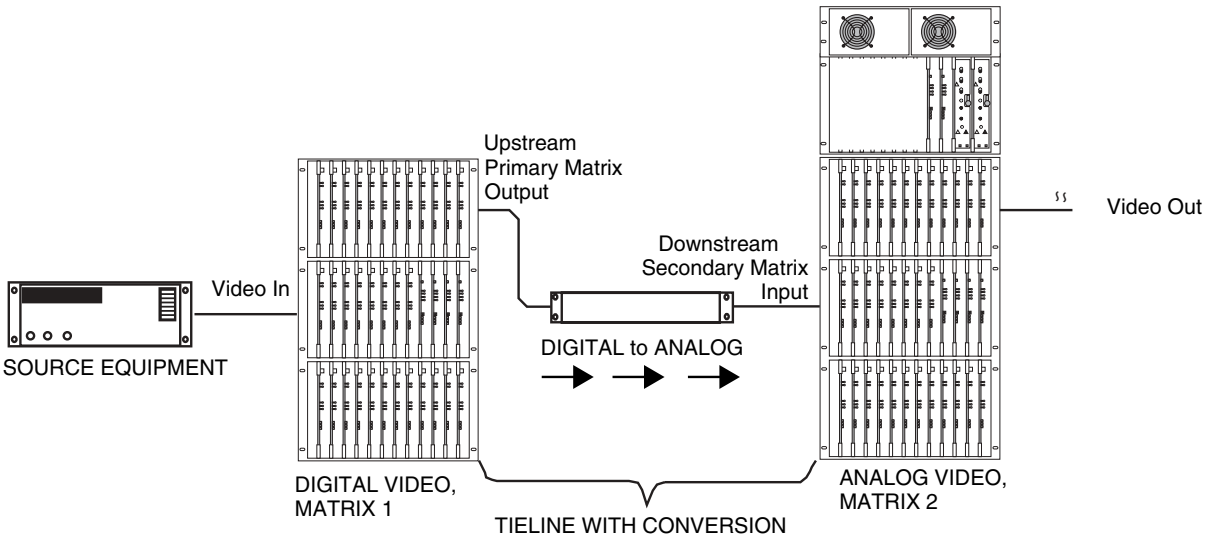
TieLines allow you to:

- Reduce overall routing system size and cost
- Eliminate Distribution Amplifiers in many instances
- Avoid dedicated convertors on each Source by placing conversion equipment on TieLines

Networked Routers can use TieLines to make Sources from one router available to Destinations on another router, see Section -Appendix A — Networking Series 7000 Systems for instructions.

Figure 2-42 illustrates a TieLine connection containing a format converter.

Figure 2-42. TieLine With Format Conversion



TieLine Terminology

Upstream/Primary/Remote Level

When discussing TieLines these terms are used to identify the Level with the Source that you want to take. This definition is different when discussing Networks.

Downstream/Secondary/Local Level

When discussing TieLines these terms are used to identify the Level with the Destination that you want to take the Source to. This definition is different when discussing Networks.

Level Tie

Connection between a Remote (Begin) Level and an Local (End) Level.

TieLine Type

A pattern of connections (Level Ties) between remote and local Levels. This Level or Levels will form the Begin and the End of a TieLine. For example: Levels A (Red), B (Blue), and C (Green) could be the Begin and Level D (Studio5) could be the End. The same Level cannot be both a Begin Level and an End Level in a single TieLine Type.

TieLine

The actual connections between remote outputs and local inputs which match the TieLine Types Pattern. You can have many TieLines of the same TieLine Type.

Married

Multiple Levels grouped to form the Begin or End of a TieLine.

Branching

A TieLine Type is Branching if more than one Begin Level is tied to one End Level, or vice versa.

Multiple Level (Married) TieLine Examples

TieLines can be constructed with signal converters to convert signals such as:

- Component RGB Video into Composite Video,
- Component Video and Stereo Audio into Digital Video with Embedded Audio

A simple multiple Level TieLine is illustrated in Figure 2-43.

Figure 2-43. A Simple Multi-Level (Married) TieLine Type and TieLine

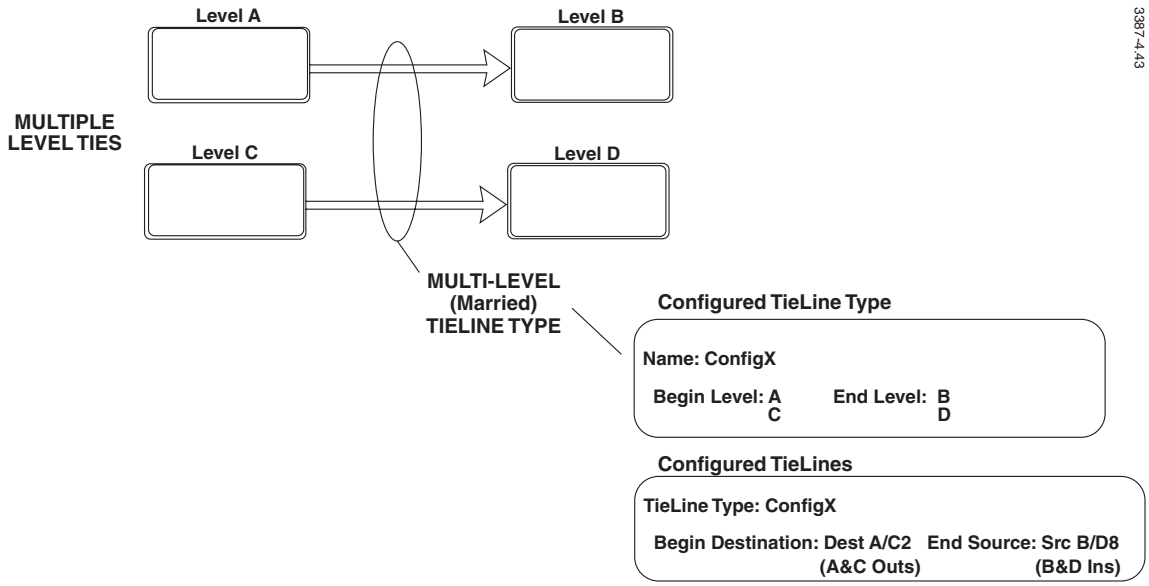
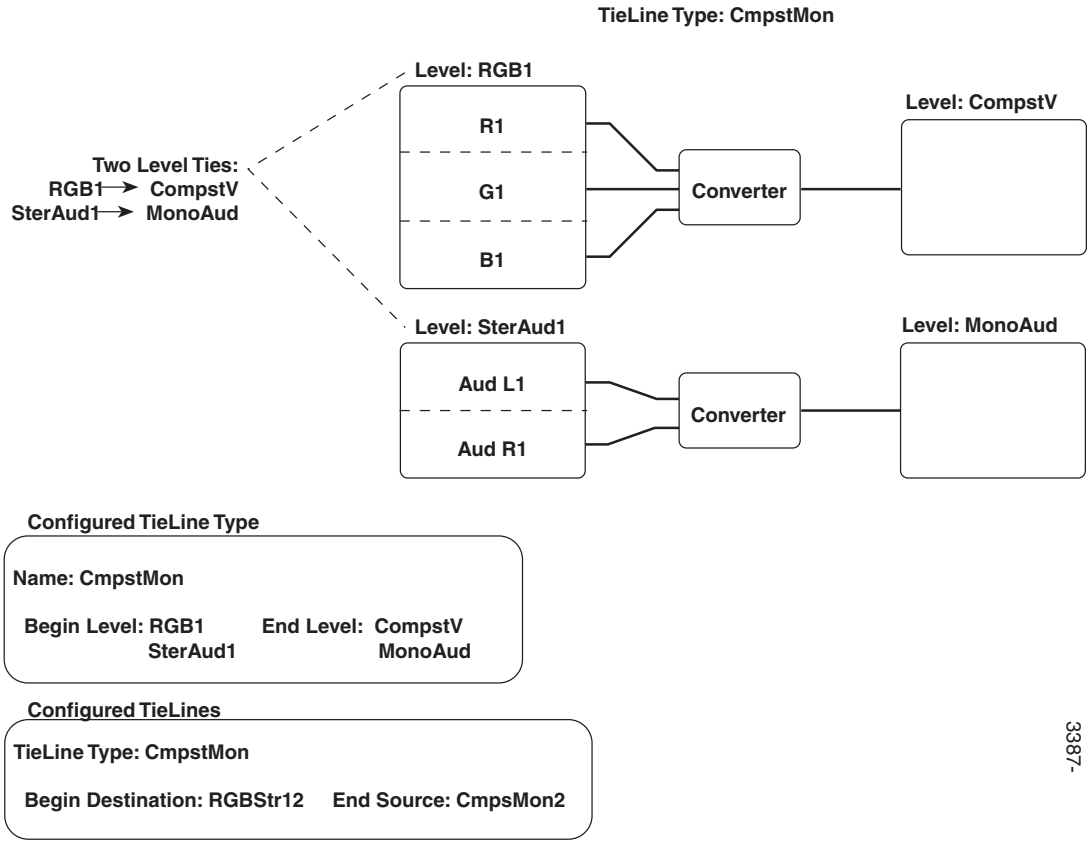


Figure 2-44 shows a more complex example of a multiple Level TieLine. The TieLine Type has been named CmpstMon (Composite Video & Monaural Audio). The function of this TieLine Type is to convert RGB video and Stereo audio signals to Composite Video and Monaural Audio.

In this example, the TieLine Type CmpstMon is made up of Two Level Ties:

- RGB1 to CompstV
- SterAud1 to MonoAud

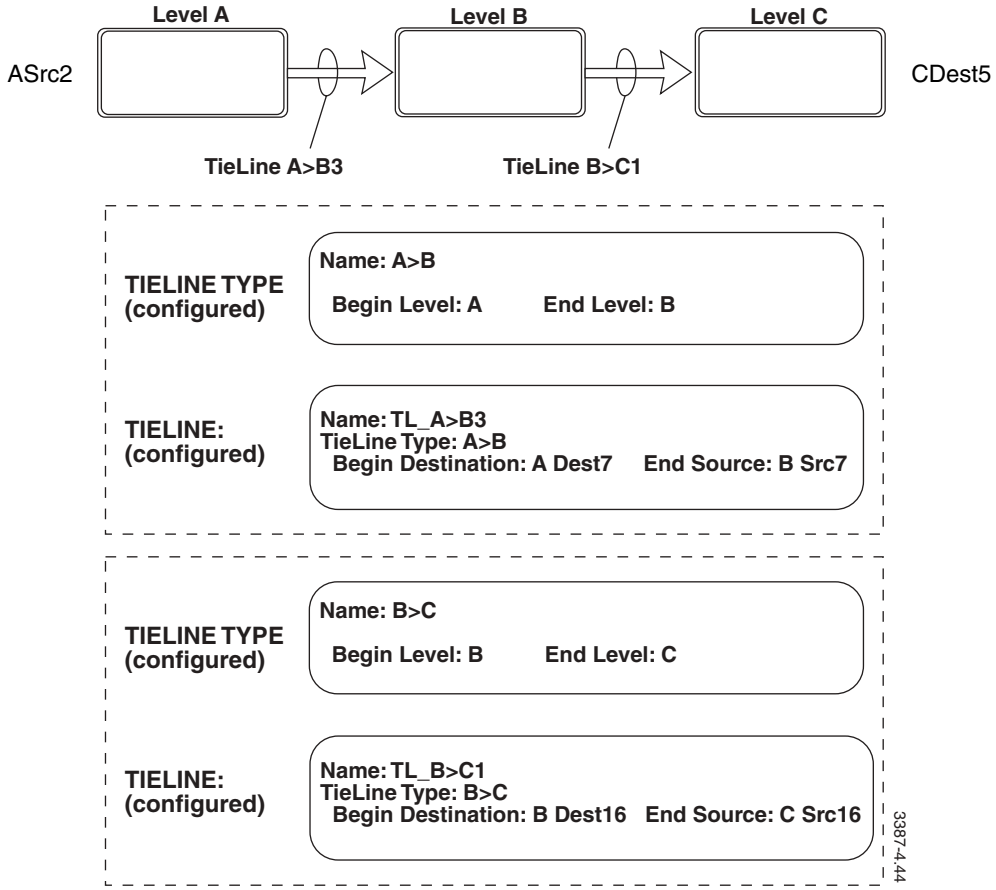
Figure 2-44. A Complex Multi-Level (Married) TieLine Type and TieLine



TieLines Used in Series

The Series 7000 can use TieLines arranged in series to access Sources in more distant, upstream matrices. For example, in Figure 2-45 the Series 7000 control system will seek out any available TieLine path to route the Source in Level A to the Destination in Level C.

Figure 2-45. TieLines Used in Series



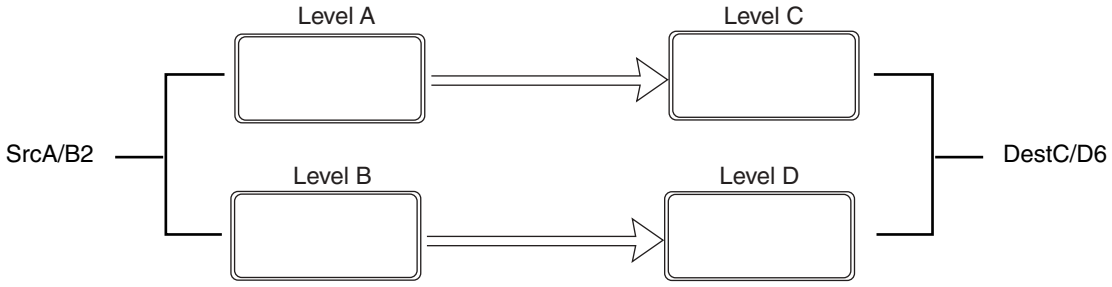
TieLines Used in Parallel

The Series 7000 can also use TieLines in Parallel.

For Example:

A System has 4 Levels (A, B, C, and D), 2 TieLine Types (A-->C and B-->D), and one or more TieLines of each type. To take SrcA/B2 (has Levels A and B) to DestC/D6 (has Levels C and D) the system will use an A-->C TieLine and a B-->D TieLine in parallel to connect the Source to the Destination, see Figure 2-46. (Another way to take SrcA/B2 to DestC/D6 would be to configure the system to have one Married TieLine Type that connects A-->C and B-->C.)

Figure 2-46. TieLines Used in Parallel



TieLine Limitations

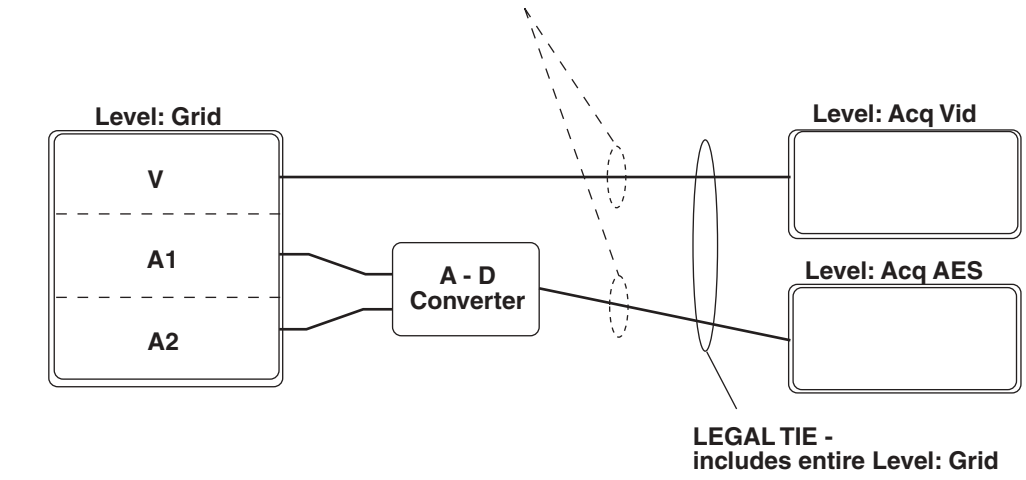
TieLine Type Configuration

A TieLine Type can't be configured using only part of a Level.

For Example:

The Level Grid has 3 Matrices (V, A1, and A2). V stands for Video, A1 is Audio1, and A2 is Audio2. TieLine Types will not allow the Matrices within the Level Grid to be separated. Therefore, it is possible to take all of Level Grid to Level Acq Vid and all of Level Grid to Level Acq AES but the Audio cannot be routed without the Video.

Figure 2-47. Partial Level TieLine Configurations



TieLine Usage

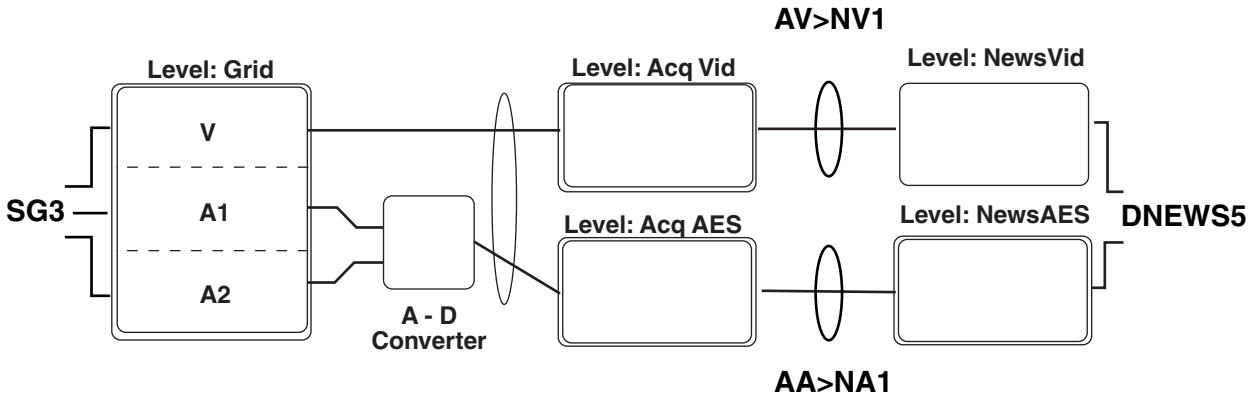
The Series 7000 supports simultaneously using TieLines in Parallel and/or in Series, with Branching TieLine Types, but does not support TieLine Fan-Out Usage. A TieLine Fan-Out is where two TieLines are fed by a single upstream TieLine.

For Example:

There are 5 Levels (Grid, AcqVid, AcqAES, NewsVid, and NewsAES) and 3 TieLine Types (Grid>Acq, AcqVid>NewsVid, and AcqAES>NewsAES). If you take a Grid Source to DNEWS5, you'd probably want one Grid>Acq TieLine to feed the Acq>News TieLines to get your signal Vid and AES through. But, Instead the router would use two Grid>Acq TieLines, one to feed the AcqVid>NewsVid TieLine and one to feed the AcqAES>News AES TieLine.

What you should do here is configure some TieLines of a Married TieLine Type (that connects AcqVid>NewsVid and AcqAES>NewsAES). Then you would not be asking the system TieLines to Fan-Out, since the Grid>Acq TieLine will be feeding just one (Married) Acq>News TieLine.

Figure 2-48. TieLine Usage



TieLine Conditions

TieLines can be either Reserved or First-Come-First-Served. The TieLine condition will govern the ways in which the TieLines behave.

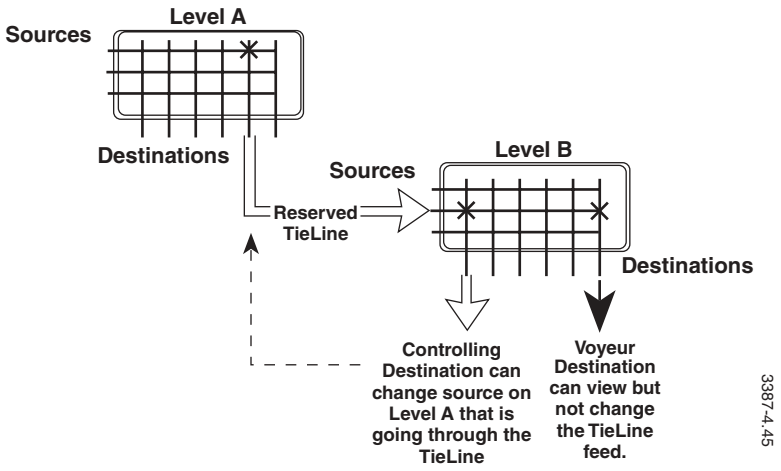
Reserved TieLines

Note In the configuration and documentation Reserved actually means: in the pool of TieLines that can't be used unless reserved. When a TieLine is configured to be reserved it is put into this group. To actually reserve a TieLine for use by a Destination, assign the TieLine's End Source to that Destination.

TieLine Reservation Rules

- A Reserved TieLine can only be used by the Destination(s) to which it has been assigned (See *Assignments* in Section Three).
- Other Destinations in the same Level as the controlling Destination may view the Source that is being fed through the TieLine, but have no ability to change it. To view this Source, a Destination in the End matrix (Level B in the figure below) Takes the TieLine's End-Source name. Refer to Figure 2-49.

Figure 2-49. Reserved TieLines and Assigned vs. Unassigned Destinations

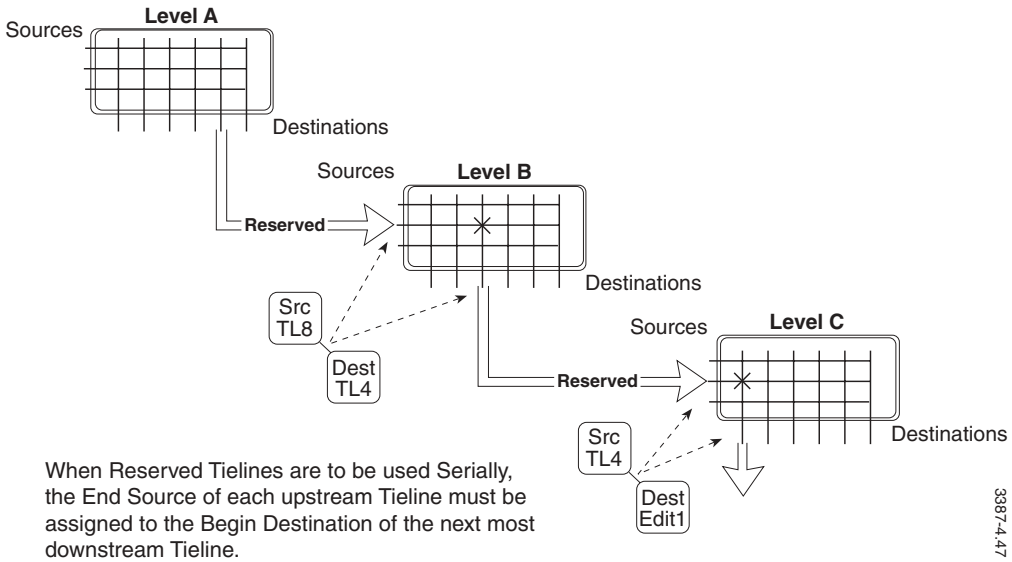


- TieLines remain reserved by (assigned to) a Destination until:
  - **a.** The MCPU is cold-started,
  - **b.** Anew configuration file is read-in, or
  - **c.** Their assignments are removed or changed in the GUI.

You use the GUI Assignment feature (See *Assignments* in Section Three) to make the reservation. To assign control of a reserved TieLine the GUI must be on-line to the Series 7000 MCPU.

To set up a Serial TieLine configuration to be used in Reserved mode, you must set two (or more) local assignments as illustrated in Figure 2-50.

Figure 2-50. Serial TieLine Assignments



Reserved TieLines and Class I, II, or III Rooms

Typically, when control of a Source or Sources is assigned to a specific control entity of the Series 7000, that entity is a Destination. However, control may also be assigned to a room. A room is simply a grouping of Destinations. When Destinations are included in a room, it affects the way TieLines behave, as follows:

- If a Destination which has control of a reserved TieLine belongs to a room, other Destinations in the room can also control that TieLine.
- If a Destination has an assigned TieLine in-use and requests a different remote Source, it will retain the same TieLine when the new Source is taken. Other Destinations in the room viewing the TieLine Source will now see the new Source.
- If a Destination is not actively using a TieLine, but requests a remote Source already being viewed through a TieLine by another Destination in the same room, the TieLine will be shared. If the requested remote Source is not in-use in the room, another TieLine assigned to the room will be used. If none are available, the requesting Destination will receive a TL BUSY signal.
- Any secondary matrix Destination outside the room may view an assigned TieLine by selecting as their Source the TieLine (Source) input to the secondary matrix.

Note When a Destination has finished using a TieLine, the operator should release the TieLine by performing a Take to a local Source such as black or color bars. This frees the TieLine for use by other Destinations. For convenience, all TieLines can be cleared through a salvo to local sources.

First-Come-First-Served

TieLines that are not Reserved (Reserved box not checked during configuration) are utilized on a First-Come-First-Served (FCFS) basis. Non-reserved TieLines may be shared or not shared as set under the Setup/ Enables menu of the GUI.

- **TIELINE SHARING NOT ENABLED:** Whichever Destination first accesses the TieLine has exclusive use of it until it deliberately releases the TieLine. This provides reliable operation, at the expense of TieLine efficiency.
- **TIELINE SHARING ENABLED:** The system will operate under rules for efficient FCFS use, allowing TieLine sharing. This is risky when users are sharing a TieLine and one or more users desire to change the remote Source and there are no other TieLines available, yet this option provides more efficient use of the TieLine resource.

TieLine Sharing Enabled

With **TIELINE SHARING ENABLED**, you can request a remote Source by name and the SMS 7000 will look for TieLine sharing possibilities before trying to grab a new TieLine.

TieLine Sharing Rules

- When a Destination already has a FCFS TieLine in-use, and requests a different remote Source, the SMS 7000 will check to see if other Destinations are also using the TieLine. If so, a new TieLine will be issued to the requesting Destination. If no TieLine is available that can provide a valid signal path (this can occur if boards are dropped out, etc.), the system will signal **TL BUSY**. The other users sharing the TieLine will remain using the same TieLine and remote Source.
- When a Destination that is not using a TieLine requests a remote Source, the SMS 7000 will check for a FCFS TieLine in-use that is already switched to that remote Source. If it finds one, it will attach this additional Destination to the list of users for that TieLine. That TieLine will not become available for passing different signals, until all users have released it.

  If the system does not find a TieLine switched to that Source, it will issue a new TieLine to the Destination, and mark the TieLine in-use. If no TieLine is available that can provide a valid signal path, the system will signal **TL BUSY**.

- In a system with a mixture of Reserved and FCFS TieLines, a Destination can't share a Reserved TieLine unless the TieLine has been assigned to (reserved by) it. However, any operator is allowed to monitor a TieLine by taking the TieLine End Source to the voyeur Destination. No control rights are given to change the remote Source, and the Destination does not go on the list of in-use Destinations.

  The reason for not allowing sharing of a Reserved TieLine by an unassigned user is because the user has no visibility whether he is getting a Reserved TieLine (which he cannot control) versus an FCFS TieLine (which he can control). A new FCFS TieLine will be issued to a user if no other TieLine in the system is accessing that remote Source.

  An FCFS TieLine is released by taking a local Source to the formerly controlling Destination.

Controlling TieLine Sources

Once TieLines are configured and cabled, remote sources can be selected at Series 7000 Control Panels or at the GUI just as are local Sources. Simply call up the name of the desired remote Source and perform a Take.

Both the control panels and the GUI will tally the name of the remote Source. If no appropriate TieLine path is available (for example, if crosspoint modules in the path have been pulled), the panels or the GUI will receive a TL BUSY message.

If the system suffers a cold start, the control panels and the GUI will lose the remote Source names as Status on the controlling Destination (although the signal path remains unchanged). The panels and the GUI will display the names of the local rather than the remote TieLine Sources. To correct the displays, simply perform another Take of the remote Source. A reserved TieLine will need to be re-reserved first.

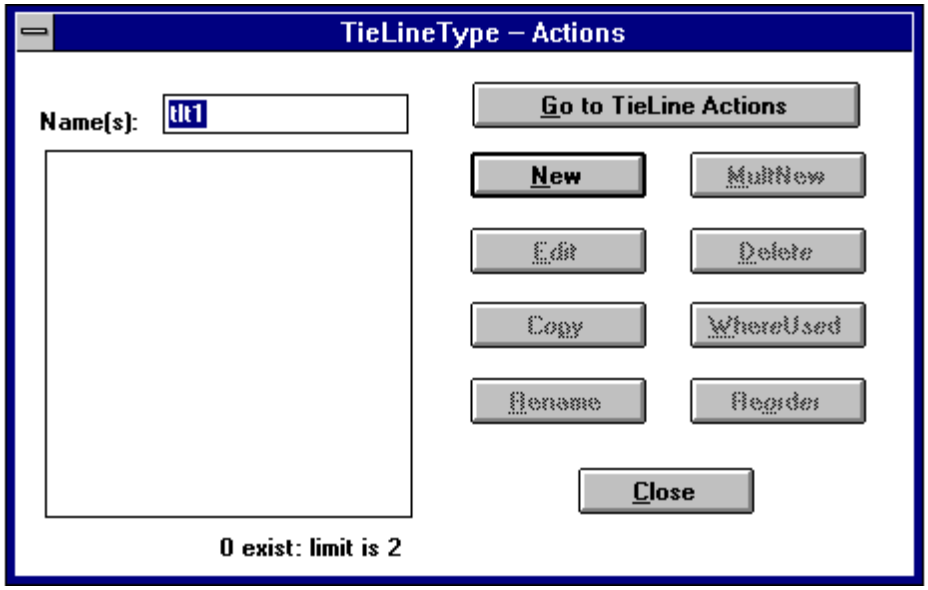
TieLine Types

TieLines need to have their Begin Levels and End Levels defined. This is done using the TieLine Types configuration windows.

To Configure TieLine Types

1. Under the **Setup** menu select **TieLine Info then TieLine Types** to access the TieLine Types Actions window.

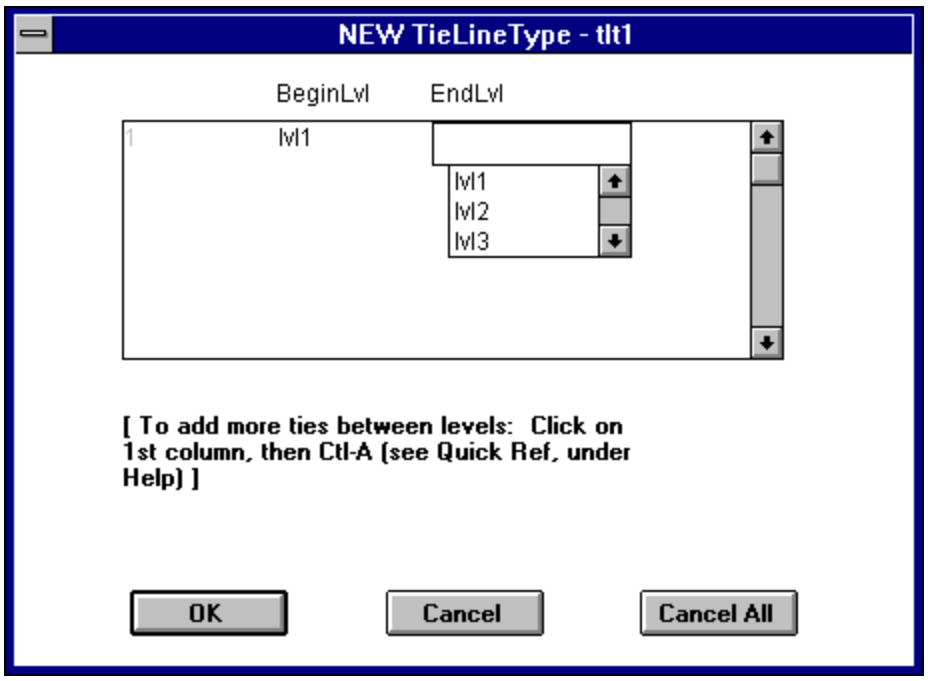
Figure 2-51. TieLine Type Actions Window



2. **Name(s):** Give the TieLine Type a name (up to eight characters). It should be named logically, to make sense with your routing system.

3. Click **New.**

Figure 2-52. New TieLine Type Window



4. In the multi-column window, enter data as directed by the following field information.

   - **BeginLvl** Select the beginning Level from the drop-down list.
   - **EndLvl** Select the ending Level from the drop-down list.

   Remember, to add entry rows for additional Level Ties:
   Click the leftmost column of an existing row to highlight the row, then **A** to add a row after the existing row.
   If this TieLine Type involves branching, you will enter a Level more than once in the same column.

TieLines

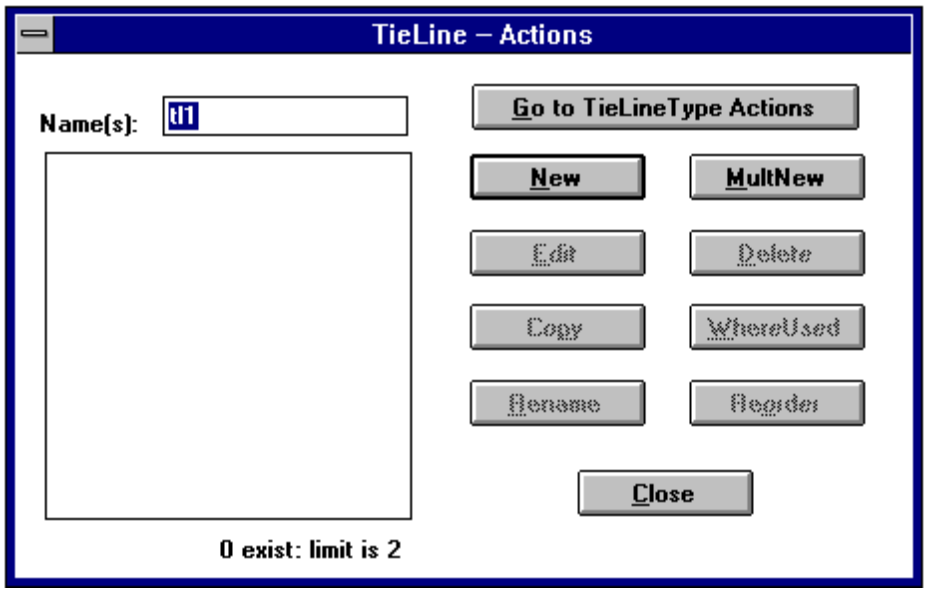
When the TieLine Beginning Destination is located in a remote SMS7000 router, the Destination names created must be created in both the local and remote routers.

To Begin New TieLine Configuration

TieLines can be created using either the **New** or the **Multiple New** option. To create a single TieLine using the **New** option, you must have previously created its Begin Destination and End Source. In contrast, the **Multiple New** option automatically creates the TieLine Destinations and Sources for you.

- Under the **Setup** menu select **TieLine Info then TieLines** to access the TieLines Actions window.

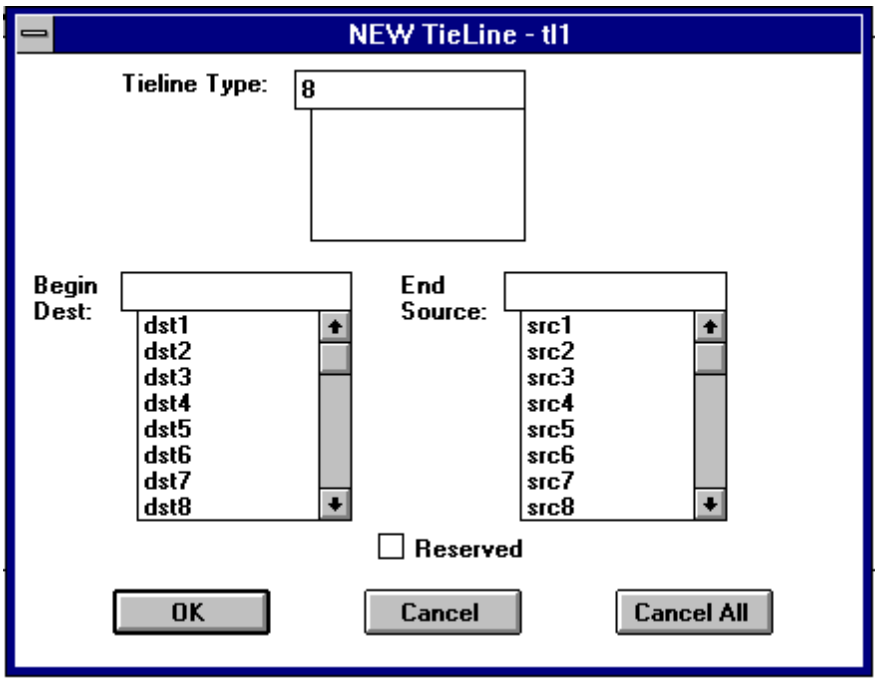
Figure 2-53. TieLine Actions Window



To Configure a Single TieLine

1. **Name(s):** Give the TieLine a name (up to eight characters). It should be named logically, to make sense with your routing system.
2. Click **New.**

Figure 2-54. New TieLine Window



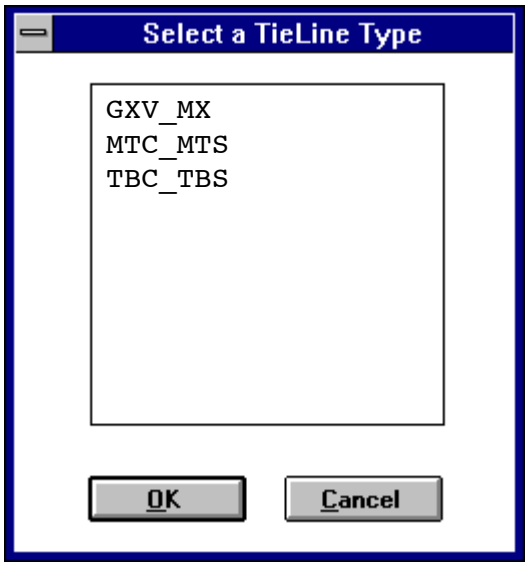
3. **TieLine Type:** Assign a TieLine Type.
4. **Begin Dest:** Select a beginning Destination name.
5. **End Source:** Select an ending Source name for the TieLine.
6. **Reserved** Click the **Reserved** box if you want this TieLine to follow the rules for Reserved TieLines.
7. Click **OK** to accept currently displayed entries.

If you receive a Level Mismatch error after setting up a TieLine, check to see that the Destination and Source you have selected are completely and correctly configured as to Levels, Virtual Matrices, and Input/Output numbers. The Destination and Source must contain the respective Begin and End Levels (and physical connectors on those Levels) for by the specified TieLine Type.

To Configure Multiple New TieLines

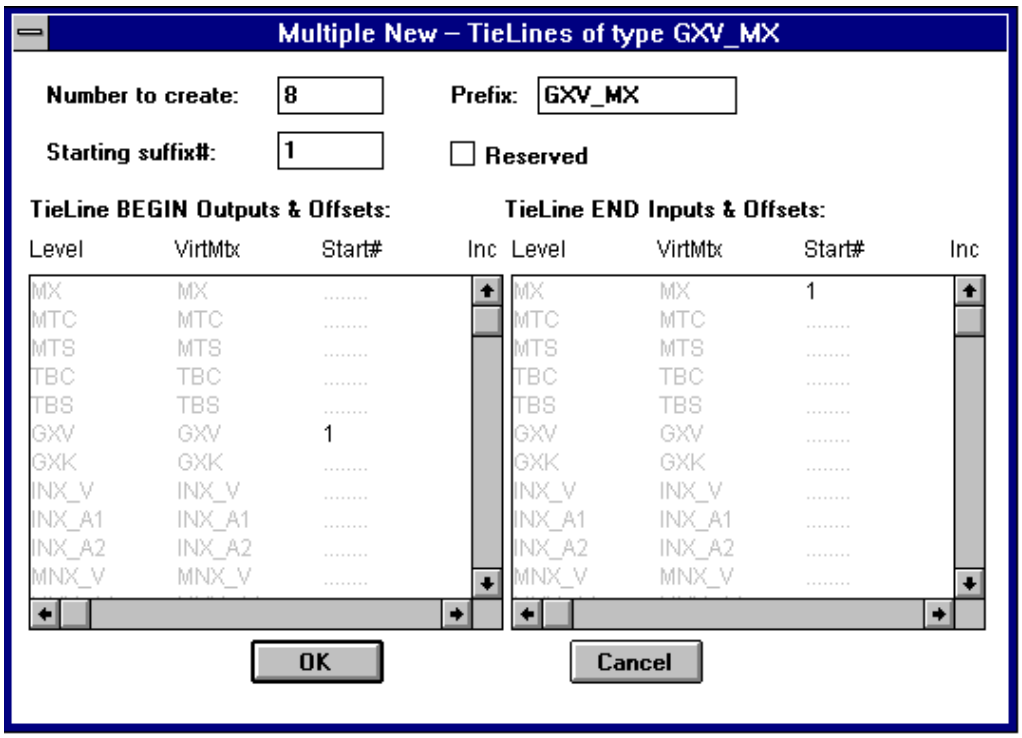
1. Select **MultipleNew** in the TieLine Actions window.

Figure 2-55. Select a TieLine Type Window



2. **Select a TieLine Type** Highlight a TieLine Type to be used.
3. Click **OK**.

Figure 2-56. Multiple New TieLines of Type Window



4. **Number to create:** Enter the number of TieLines to be created.
5. **Prefix:** Enter a name to be shared by all TieLines in the group. Default is the name of the TieLine Type.
6. **Starting suffix#:** Enter the starting suffix number.
7. **Reserved** Click the **Reserved** box if you want this TieLine to follow the rules for Reserved TieLines.
8. **TieLine BEGIN Outputs & Offsets:** In the multi-column window, enter data as directed by following field information.
   - **Start#** Enter the Output number for the Begin Destination for the first TieLine in the group.
   - **Increment** Enter the number which will be added to the previous Destination's Output number to get the next Destination's Output number. Usually this value is 1, but if you had virtual matrices interlaced (Red, Green, and Blue) you would set this value to 3. This field may not be visible in the window. (Scroll horizontally to see this field.)
9. **TieLine END Inputs & Offsets:** In the multi-column window, enter data as directed by following field information.
   - **Start#** Enter the Input number for the End Source for the first TieLine in the group.
   - **Increment** Enter the number which will be added to the previous Source's Output number to get the next Source's Output number. Usually this value is 1, but if you had virtual matrices interlaced (Red, Green, and Blue) you would set this value to 3. This field may not be visible in the window. (Scroll horizontally to see this field.)
   - If you make a mistake when doing a Multiple New TieLine configuration, and you decide to delete your work, be sure to delete the Destinations and Sources as well. The Begin Destination and End Source of a TieLine created using Multiple New will have the same name as the TieLine.
10. Click **OK** to accept currently displayed entries.

Salvos

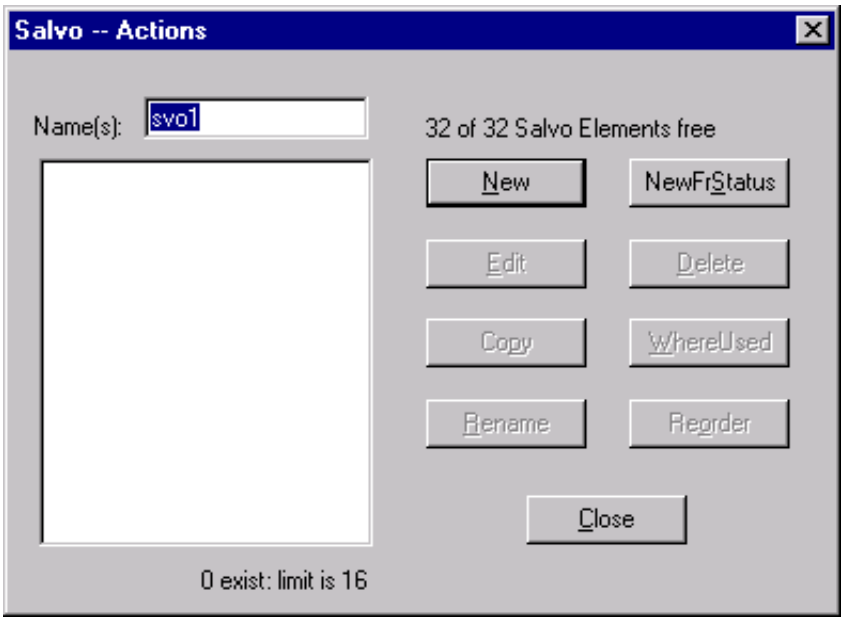
A Salvo is a function that allows you to change crosspoints on a number of Destinations in a single Take operation. By setting up Sources, Destinations, and Levels in advance as a Salvo, you can execute simultaneous Takes simply by executing the Salvo.

CAUTION Salvos are powerful, system-level constructions that simultaneously take multiple sources to multiple destinations. Salvos will override Destination Exclusion Sets, which are set at a lower level. Because of this, Salvos should be used carefully.

To Configure a Salvo

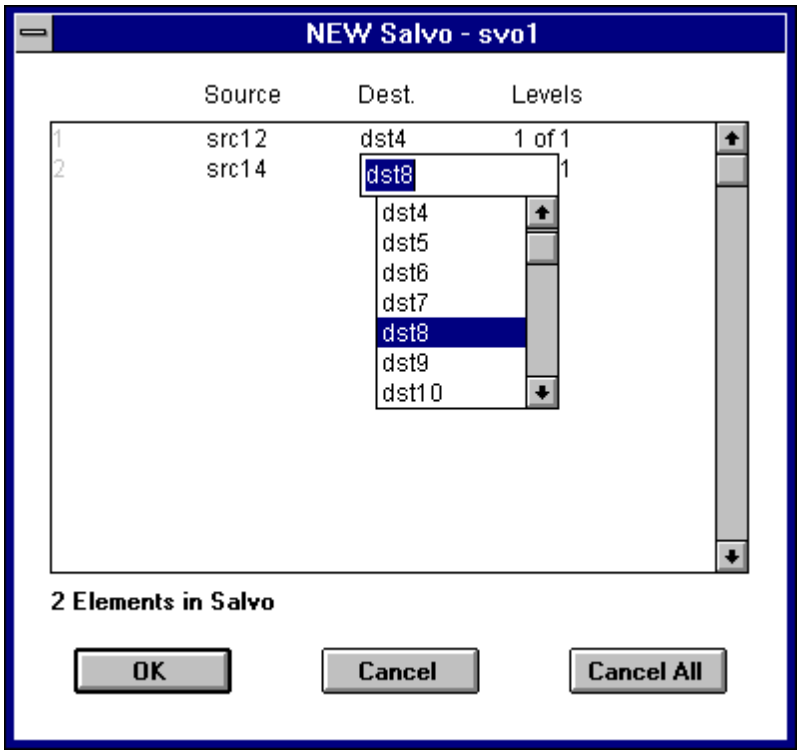
1. Under the **Configuration** menu select **Salvo** to access the Salvo Actions window.

Figure 2-57. Salvo Actions Window



2. **Name(s):** Give the Salvo a name (up to eight characters). It should be named logically, to make sense with your routing system.
3. Click **New.**

Figure 2-58. New Salvo Window



4. In the multi-column window, enter data as directed by following field information.

   - **Source** Select Source(s) from the drop-down list.
   - **Dest.** Select Destination(s) from the drop-down list.
   - **Levels** Select Level(s) from the drop-down list.

   Remember, to add entry rows for additional Salvo Elements:
   Click the leftmost column of an existing row to highlight the row, then
   A to add a row after the existing row, or
   Insert to add a row before the existing row, or
   Delete to remove a row before the existing row

5. Click **OK** to accept currently displayed entries.

Timed Salvos

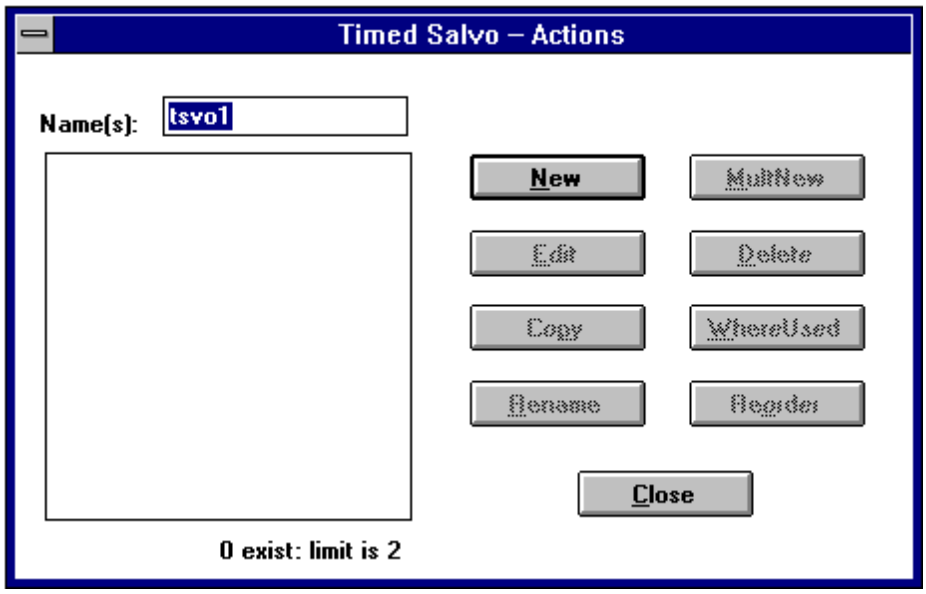
If you configure a Salvo so that it automatically executes at a particular time or at a regular interval, it is a Timed Salvo.

CAUTION Salvos are powerful, system-level constructions that simultaneously take multiple sources to multiple destinations. Salvos will override Destination Exclusion Sets, which are set at a lower level. Timed salvos are particularly dangerous, because they may trigger at a date and time long after they were written. Again, salvos should be used only with great caution.

To Configure a Timed Salvo

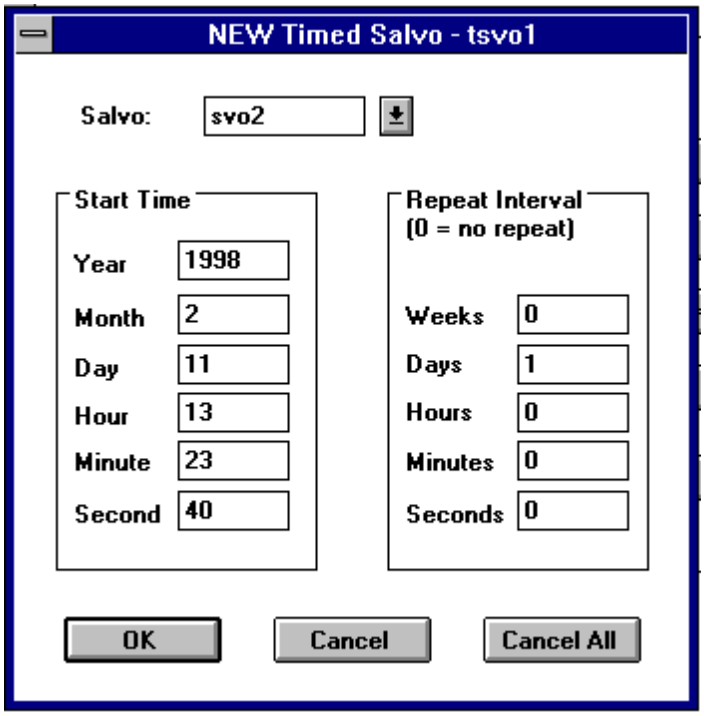
1. Under the **Configuration** menu select **Timed Salvo** to access the Timed Salvo Actions window.

Figure 2-59. Timed Salvo Actions Window



2. **Name(s):** Give the timed salvo a name (up to eight characters). It should be named logically, to make sense with your routing system.
3. Click **New.**
4. Click **OK**.

Figure 2-60. New Timed Salvo Window



5. **Salvo:** Select Salvo from drop-down list.

6. **Start Time** In the multi-column window, enter data as directed by following field information.

   - **Year, Month, Day, Hour, Minute,** and **Second**
     Enter the precise time this Timed Salvo should first execute and from which the Repeat Interval will be measured. This is a 24-hour clock. Time is referenced to the Series 7000 Internal System Clock.

7. **Repeat Interval** In the multi-column window, enter data as directed by following field information.

   - **Weeks, Days, Hours, Minutes,** and **Seconds**
     Enter the exact time which should elapse between automatic executions of this Timed Salvo. Zero entries in all windows will cause this Timed Salvo to execute one time only – at the specified Start Time.

8. Click **OK** to accept currently displayed entries.
   A Warning Box will appear as shown in Figure 2-61.

Figure 2-61. Timed Salvo Warning Window

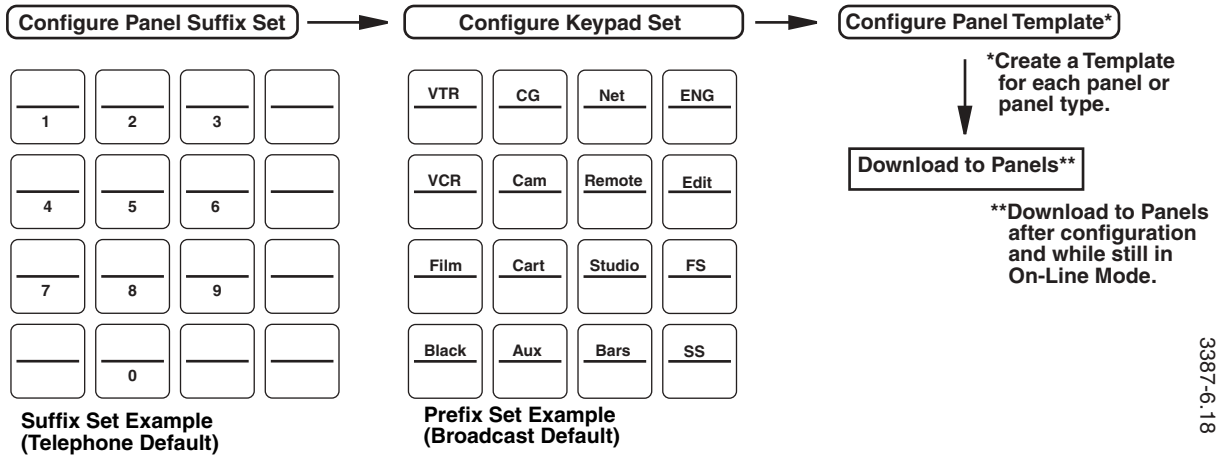
Control Panel Configuration

As you configure control panels and related items, remember that you can resize many of the windows to reduce the amount of scrolling required to move around in them.

Suffix Set (Keypad Panels Only)

Panels with keypads can be configured with prefixes and suffixes. You assign prefixes and suffixes, associate these with panel templates, then download the templates to specific control panels. (All panels require Templates; only the panels with keypads may use Suffix and Keypad Sets) See Figure 2-62. Suffix Set is under Panels beneath the Configuration header.

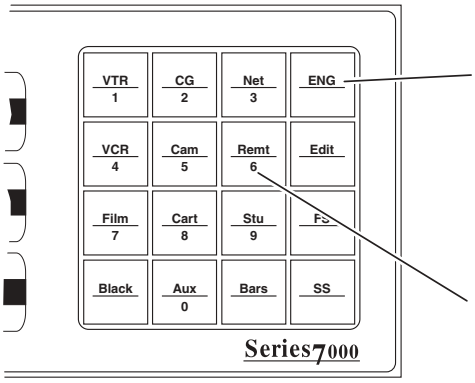
Figure 2-62. Suffix and Prefix Configuration for Panels with Keypads



The keypads of control panels can be configured in the arrangement most convenient for you. Two commonly used suffix set layouts, telephone and calculator style, are shown in Figure 2-63 and are supplied as defaults in configuration software. The figure also illustrates the two default prefix setups, Broadcast and Post-Production. The keypad defaults both use the telephone suffix set, which you can change to the calculator layout shown in the Post-Production example. Custom suffixes may be defined using a single alphanumeric character per button in arbitrary order. The prefix and suffix(es) together form a complete source or destination name. For example, press prefix VCR, followed by suffix 2 to select the source (or destination) VCR2.

Figure 2-63. Control Panel Keypad Layouts

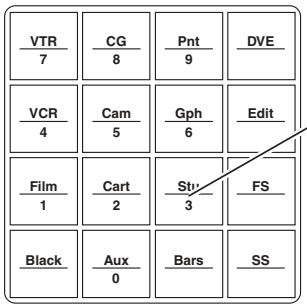
Broadcast Prefixes Configuration



Prefix characters assigned by configuration

Suffix characters assigned by configuration--telephone keypad layout shown in Broadcast example. Calculator keypad layout shown in Post-Production example.

Post-Production Prefixes Configuration



On a Server Panel configured with shift-accessed Prefixes and Suffixes, you could use lens chips with four rows of text (top two for prefix; bottom two for suffix selections). You could also elect to use only a shift-accessed prefix or suffix set along with the standard sets and use lens chips with three rows of text.

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The Server panel can use a **Shift Function** which allows it to access an additional set of 16 prefixes and/or 16 suffixes – increasing the number of sources and destinations which can be selected directly through the keypad. When building keypad sets for the Server panel, build one standard set and another shift-accessed set. Name them such that you can easily tell which is which. Suffixes must be one printable ASCII character. You will add each suffix set to a separate Keypad Set (which adds standard and shifted prefixes), then include both Keypad Sets in the Template you construct for the Server Panel.

The SCP Panel has three sets of 2x4 button keypads to create a 24-button keypad (see Figure 2-64). It uses one and a half Keypad Sets in three (3) clusters of 2x4 buttons for a total of 24 prefixes and 24 suffixes.

Figure 2-64. SCP 24-Button Keypad

Top Half of First Keypad Set (Rows 1 & 2)

Bottom Half of First Keypad Set (Rows 3 & 4)

Top Half of Second Keypad Set (Rows 1 & 2)

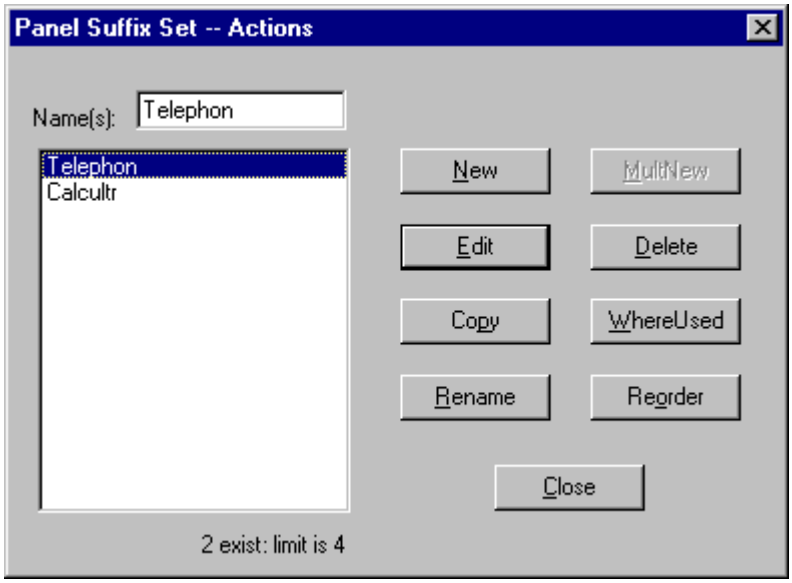
Bottom Half of Second Keypad Set not used (Rows 3 & 4)

Before you can select a Source or Destination using a Control Panel keypad, you must assign prefixes and suffixes to the buttons on the panel (or use the default sets). This is a multi-step process in which you define prefixes and suffixes, then associate them with a template that you download to selected control panels. (All applicable Source and Destination names are also available through the **PREV** and **NEXT** buttons on control panels that have **PREV/NEXT** buttons, no matter how the keypad has been configured.) You can configure the Panel Suffix Set at any time during the configuration process.

To Configure the Panel Suffix Set

1. Under the **Configuration** menu select **Panels** and then **Suffix Set** to access the Panel Suffix Set Actions window.

Figure 2-65. Panel Suffix Set Actions Window

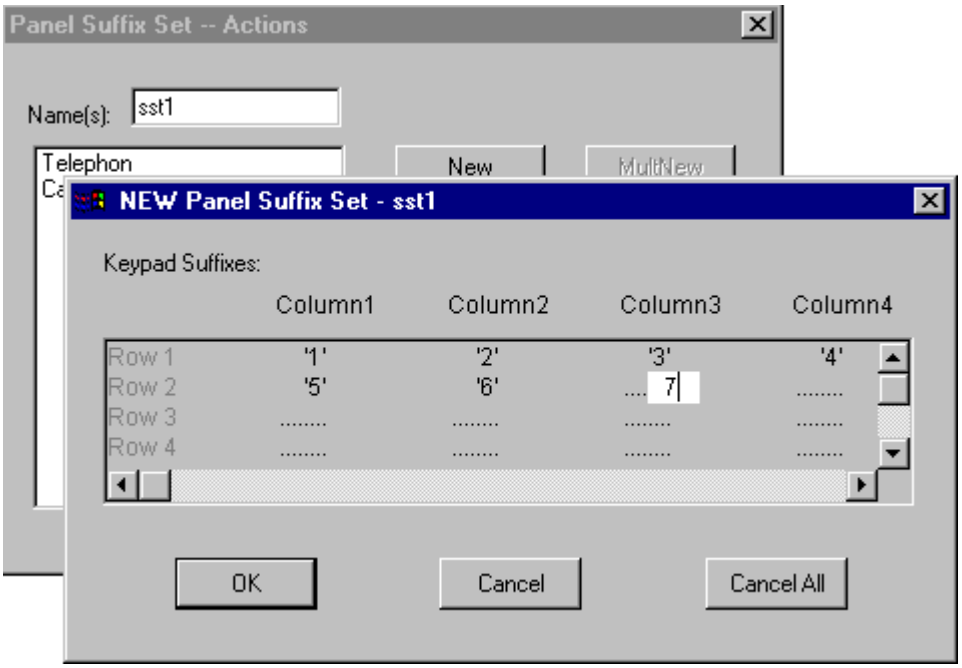


The limit displayed below the **Name(s)** window reflects the number you've entered in the **Pnl Suffix Sets** field of the Configuration Limits window and not necessarily the maximum number the SMS7000 can handle. For more information see *Limits* on page 2-8.

2. **Name(s):** Give the Panel Suffix Set a name (up to eight characters) for a custom suffix set or select either **Telphon** or **Calcultr**. Names should be logical, to make sense with your routing system.

3. Click the appropriate button to proceed.

Figure 2-66. New Panel Suffix Set Window



4. **Keypad Suffixes:** In the multi-column window, enter data as directed by following field information. The rows and columns are arranged in a grid which matches the control panel button locations for most panel types.

   - **Column1**, **Column2**, **Column3**, and **Column4**
     Click the row and column corresponding to the button position on the panel keypad to which you want to assign a suffix, then type in the chosen suffix (numbers 0 through 9 are most common, but any single printable ASCII character is acceptable). (Note, breakaway condition is indicated by an asterisk (*) in the eighth character position in a panel display. To avoid confusion, do not use an * as a suffix.)

5. Click **OK** to accept currently displayed entries.

Keypad Set (Keypad Panels Only)

When you configure the Keypad set, you configure keypad Prefixes and also select a previously configured suffix set that completes the Keypad Set. Although usually alphabetic, each prefix character can be any printable character string up to eight ASCII characters long. (The asterisk should not be used as the eighth character in a Prefix, because the system uses the asterisk in this position to indicate that a breakaway condition exists.) If you have a Server Panel or SCP Panel, remember to build two Keypad Sets on the server – one is used for standard access, the other for shift key access. For optimum performance configure the most frequently used prefixes and suffixes for the unshifted keypad and suffix sets. (If you want to use shift-accessed prefixes but not shift-accessed suffixes, attach the same suffix set to both Keypad Sets.) Refer to Figure 2-62 and Figure 2-63.

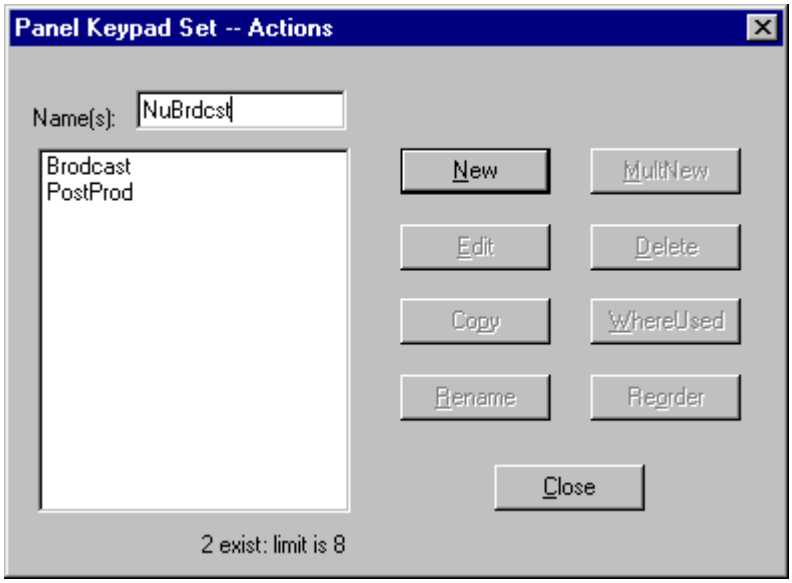
Keypad Sets will appear in the list of available Sets displayed in the Control Panel configuration Template Forms.

If you are building two keypad sets for a Server Panel or a SCP Panel, remember to name them so that it is clear which set is to be accessed through the panel's shift function or the second set in the case of the SCP. The SCP Panel will only use the top half of the second keypad set. There is no need to load prefixes or suffixes into the bottom half of the second Keypad Set.

To Configure a Keypad Set

1. Under the **Configuration** menu select **Panels** and then **Keypad Set** to access the Panel Keypad Set Actions window.

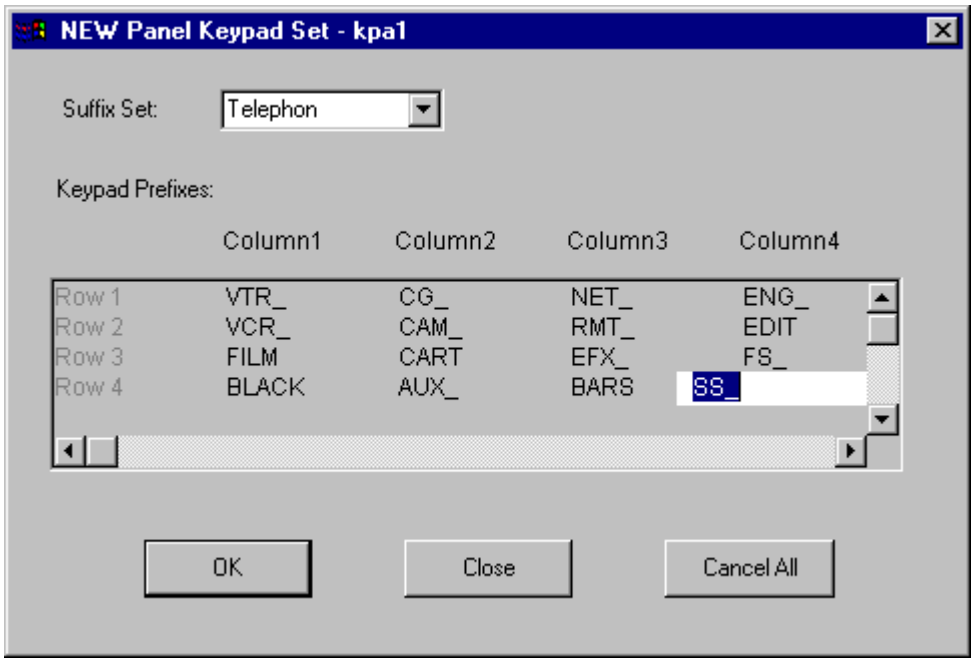
Figure 2-67. Keypad Set Actions Window



2. **Name(s):** Give the Panel Keypad Set a name (up to eight characters) for a custom keypad set or select either **Broadcast** or **PostProd**. It should be named logically, to make sense with your routing system.

3. Click the button corresponding to the action you want to perform.

Figure 2-68. New Panel Suffix Set Window



4. **Suffix Set:** Select the Suffix Set to be used in this Keypad set from the drop-down list.

5. **Keypad Prefixes:** In the multi-column window, enter data as directed by following field information. The rows and columns are arranged in a grid which matches the control panel button locations for most panel types.

   - **Column1**, **Column2**, **Column3**, and **Column4**
     Click the row and column corresponding to the button position on the panel keypad to which you want to assign a suffix, then type in the prefix (up to eight characters). See the keypad illustrations earlier in this section for typical prefix names.

Note If you've used underscores in place of spaces don't forget to enter them here as illustrated in Figure 2-68.

Breakaway condition is indicated by an asterisk (*) in the eighth character position in a panel display. To avoid confusion, do not use an * in a prefix.

6. Click **OK** to accept currently displayed entries.

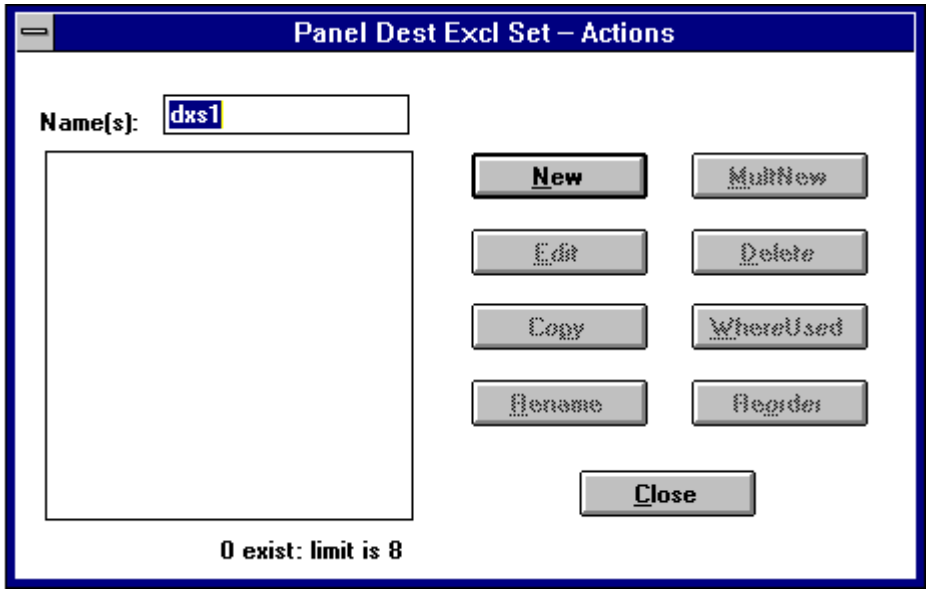
Dst Exclusion Set

The 7000 allows you to configure Destination Exclusion Sets which exclude selected Destinations from control by panels assigned a template containing the Dst Exclusion Set.

To Configure a Destination Exclusion Set

1. Under the **CONFIGURATION** menu select **PANELS** and then **DST EXCLUSION SET** to access the Destination Exclusion Set Actions window.

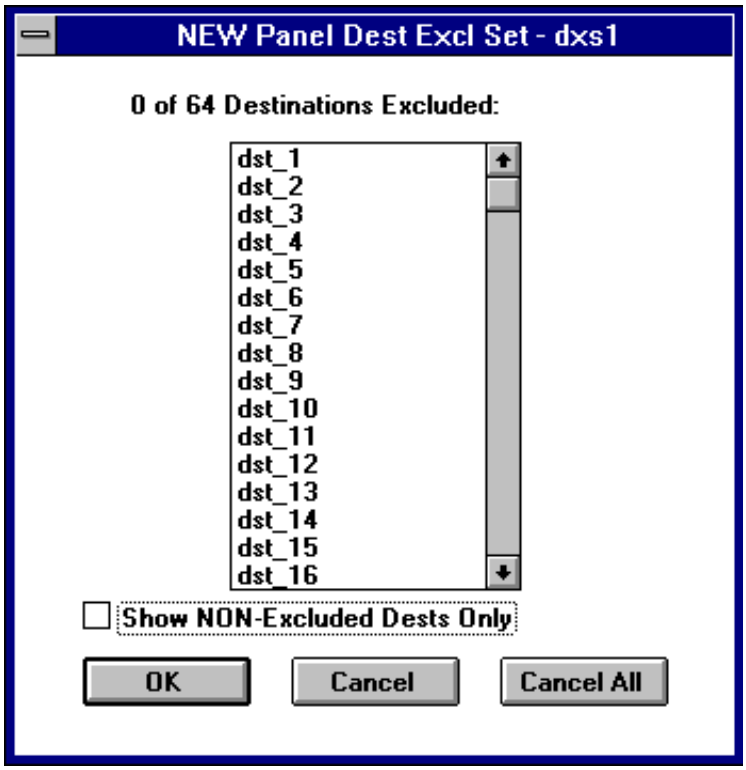
Figure 2-69. Destination Exclusion Set Actions Window



2. **NAME(S):** Give the Destination Exclusion Set a name (up to eight characters). It should be named logically, to make sense with your routing system.

3. Click **NEW.**

Figure 2-70. New Panel Dest Excl Set Window



4. **SHOW NON-EXCLUDED DESTS ONLY**: Select to display only Non-excluded Destinations. (While in this mode, **OK** is grayed out.)

5. **N OF N DESTINATIONS EXCLUDED:** Select a Destination to add to the Destination Exclusion Set by clicking on it.
   or
   Select multiple Destinations by highlighting them using the **SHIFT** key for consecutive Destinations or the **CONTROL** key to select out of sequence Destinations.

   The text will reflect the number of Destinations selected and the number of total Destinations.

6. Click **OK** to accept currently displayed entries.

Salvo Permission Set

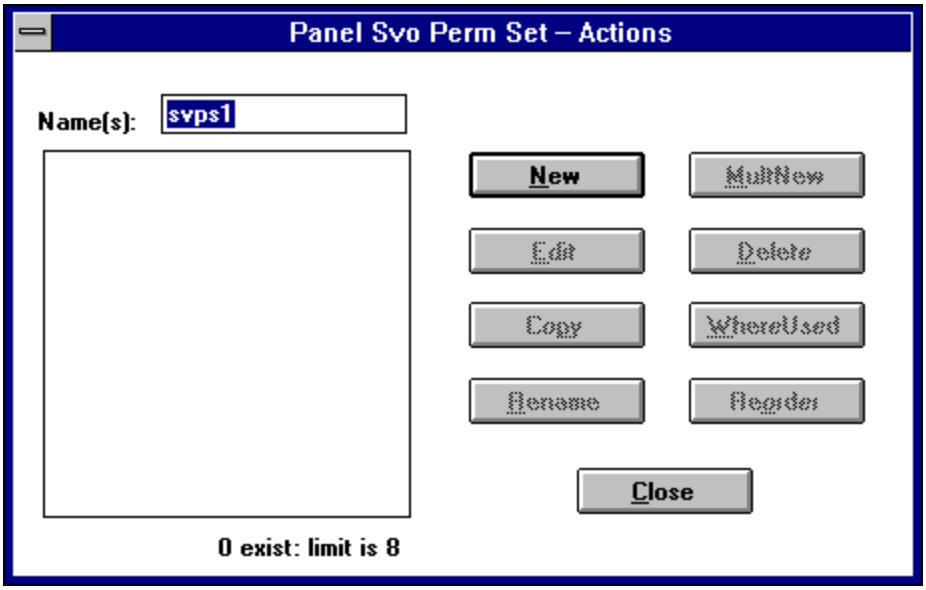
The 7000 allows you to configure Salvo Permission Sets which permit specific Salvos for use with specific Panel Templates. A Salvo Permission Set may be used on more than one template.

Note The Panel name and the Template name **must** be identical for the Salvo Permission set to work.

To Configure a Salvo Permission Set

1. Under the **CONFIGURATION** menu select **PANELS** and then **SALVO PERMISSION SET** to access the Salvo Permission Set Actions window.

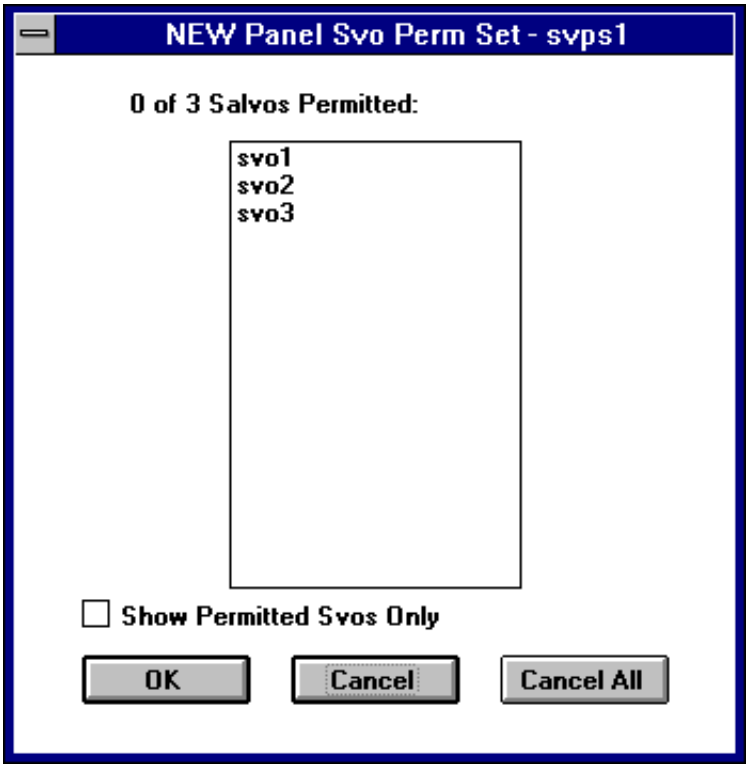
Figure 2-71. Salvo Permission Set Menu



2. **NAME(S):** Give the Salvo Permission Set a name (up to eight characters). It should be named logically, to make sense with your routing system.

3. Click **NEW.**

Figure 2-72. New Panel Salvo Permission Set Window



4. **SHOW PERMITTED SVOS ONLY** Select to display only Permitted Salvos. (While in this mode, **OK** is grayed out.)

5. **N OF N SALVOS PERMITTED:** Select a Salvo to add to the Salvo Permission Set by clicking on it.
   or
   Select multiple Salvos by highlighting them using the **SHIFT** key for consecutive Salvos or the **CONTROL** key to select out of sequence Salvo.

   The text will reflect the number of Salvos selected and the number of total Salvos.

6. Click **OK** to accept currently displayed entries.

Client Server Groups

A Server Control Panel will provide source and destination selections for up to 15 Client Panels (a maximum of eight (8) is recommended for optimum performance). Server Panels must be on the same Control Panel Bus Port as the Client Panels they provide selections for. Each Series 7000 Control Panel Bus Port will support up to 16 control panels. Providing a name for each Client-Server Group allows the Series 7000 MCPU to route messages appropriately.

When setting up Templates for the control panels in your system, you will assign Server and Client Panels to their appropriate groups.

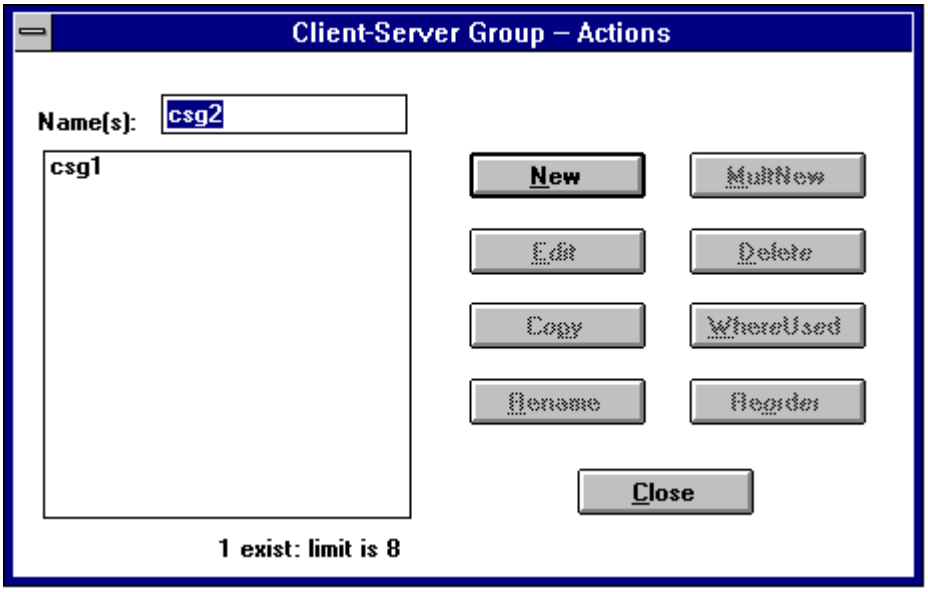
Each Client-Server Group should contain no more than one (1) Server Panel and at least one (1) but not more than fifteen (15) Client Panels. For optimum performance it is recommended that you use a maximum of eight (8) Client Panels.

Non-default Source Presets set by a Server Panel for Client Panels (up to 18 per panel) in its group are lost if the system suffers a power failure. If this is a serious consideration in your facility, we recommend powering the MCPU, Server, and Client panels with an Uninterruptable Power Supply (UPS).

To Name Client-Server Groups

1. Under the **CONFIGURATION** menu select **PANELS** and then **CLIENT-SERVER GROUPS** to access the Client-Server Groups Actions window.

Figure 2-73. Client-Server Group Actions Window



2. **NAME(S):** Give the Client-Server Group a name (up to eight characters). It should be named logically, to make sense with your routing system.
3. Select **NEW.** The name will appear in the box.
4. Repeat steps 2 and 3 for all panel group names to be included in the Templates for Client-Server Groups.
5. Select **CLOSE**.

PXY Groups

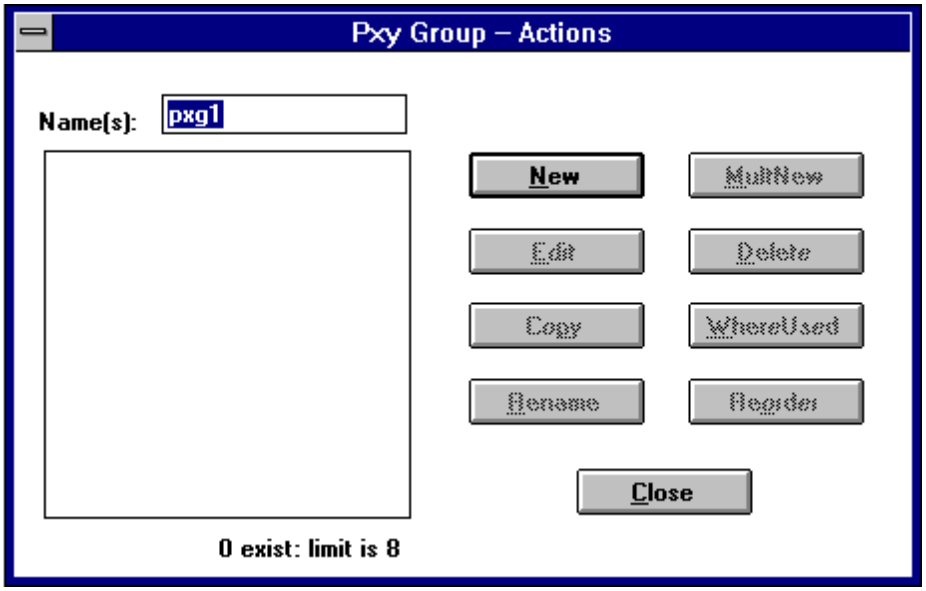
Programmable X-Y (PXY) panels operate in groups similar to Client-Server Groups. A PXY Group consists of a PXS Master panel (typically configured with Sources), none or a single PXD panel (typically configured with Destinations), and from none to 15 PXYE panels for Source, Salvo, or Destination expansion.

The PXY Group requires a PXS Master panel. The PXS panel can combine with up to 15 PXYE panels or 14 PXYE panels and a single PXD panel. Speed degradation may occur if more than 6 or 7 PXYE panels are used in one group.

To Name Pxy Groups

1. Under the **CONFIGURATION** menu select **PANELS** and then **PXY GROUPS** to access the PXY Groups Actions window.

Figure 2-74. Pxy Group Actions Window



2. **NAME(S):** Give the PXY Group a name (up to eight characters). It should be named logically, to make sense with your routing system.
3. Select **NEW.** The name will appear in the box.
4. Repeat steps 2 and 3 for all panel group names to be included in the Templates for PXY Groups.
5. Select **CLOSE**.

Pages

There are two paging panels: the EDP, and the SDP.

The Eight Destinations Paging (EDP) panel has eight bus displays. The eight bus displays will show a single page of eight Sources, eight Destinations, or eight Salvos at a time. The eight items to be displayed are configured by creating a page. After creating up to the maximum of 64 Source pages, 64 Destination pages, or 32 Salvo pages, the pages may be grouped together to form sets. These Page Sets allow several pages to be displayed using the **PREV/NEXT** knob feature in either Src Page Mode to display Source Pages, Dst Page Mode to display Destination Pages, or Svo Page Mode to display Salvo Pages.

The Single Destination Paging (SDP) panel uses page sets to display two pages (16 items) at a time of Sources, Destinations, or Salvos. The panel will use a maximum of 32 Source pages, 32 Destination pages, and 4 Salvo pages.

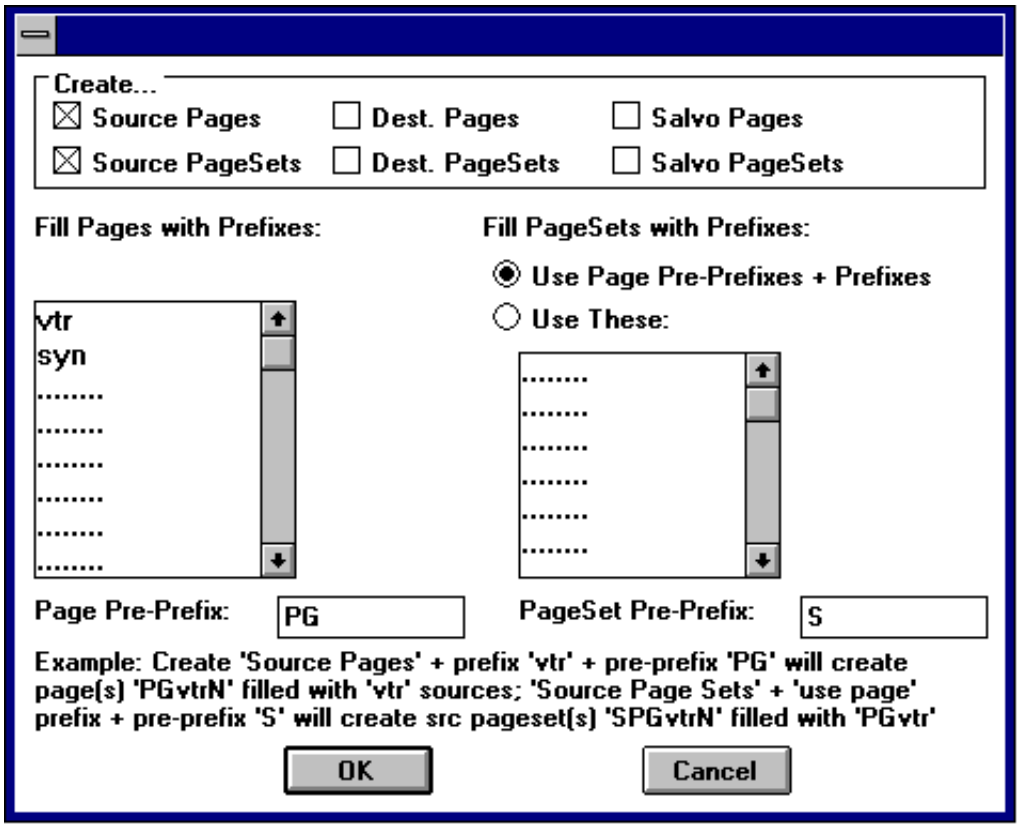
Auto Configure creates simple pages and page sets. All the items in a given page or page set will have the same prefix. To create some pages or page sets to contain more than one prefix, the pages or page sets have to be created on a page-by-page basis.

Individual Source Pages, Destination Pages, and Salvo Pages are all created in the same way. Also Page Sets are all created in the same way.

To Auto Configure Pages and/or Page Sets

1. Under the **CONFIGURATION** menu select **PANELS** and then **PAGES (FOR EDP PANEL)** and then **AUTO CONFIGURE PAGE INFO** to access the Auto Configure Page window.

Figure 2-75. EDP Page Auto Configure Page Info Window



2. **CREATE...** Check the boxes for the page and/or page set types to create. In the example, Source Pages, and Source Page Sets are created.

3. **FILL PAGES WITH PREFIXES**: Enter the prefix that to be used to fill pages. In the example, pages of Sources starting with the prefix **vtr** and pages of all Sources starting with the prefix **syn** will be created.

4. **PAGE PRE-PREFIX:** Enter characters (if any) to be added to the beginning of the prefix, to make up the page name. In the example, by adding PG, it will create Source pages named PGvtrn and PGsynn.

5. **FILL PAGE SETS WITH PREFIXES:** Select either **USE PAGE PRE+PREFIXES:** or **USE THESE:**

   - **USE PAGE PRE+PREFIXES:**
     Check here to create Page Sets that contain all of the pages created with the same prefix. In the example, one Page Set would contain all the PGvtrn pages and the other Page Set would contain all the PGsynn pages.

   - **USE THESE:**
     Check here and enter the Prefixes that you want grouped into sets. This feature is used only to create Page Sets and only Page Sets should be checked in the **CREATE** box.

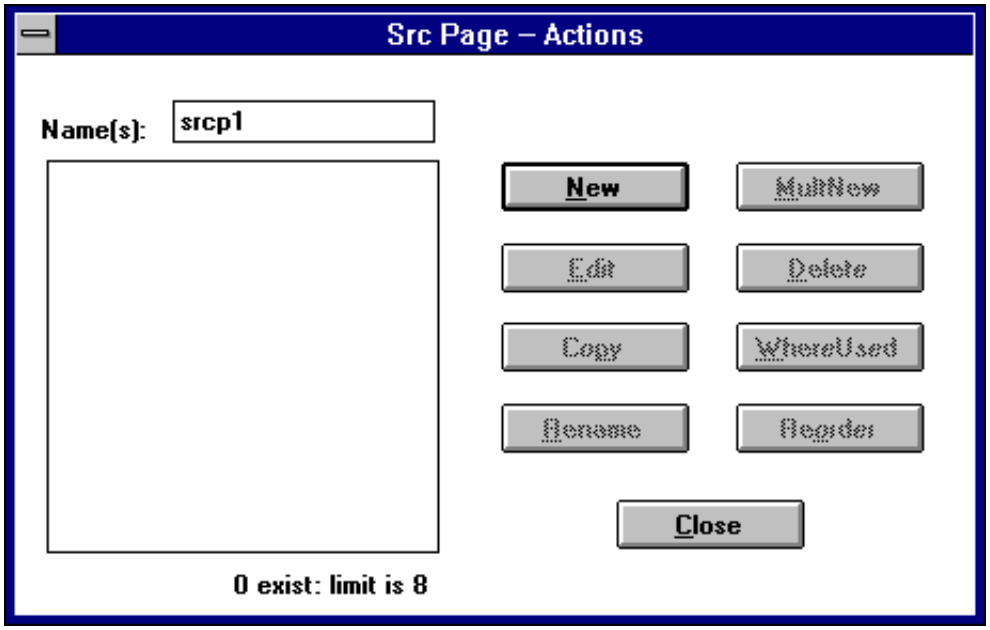
6. **PAGE SET PRE-PREFIX:** Enter character (if any) to be added to the beginning of the page prefix, to make up the page set name. In the above example, the Page Sets created would be SPGvtrn and SPGsynn.

7. Click **OK** to accept currently displayed entries.

To Configure Individual Source, Destination, and Salvo Pages

1. Under the **CONFIGURATION** menu select **PANELS** and then **PAGES** and then either Src Pages, Dst Pages, or Salvo Pages to access the associated Page Actions window.

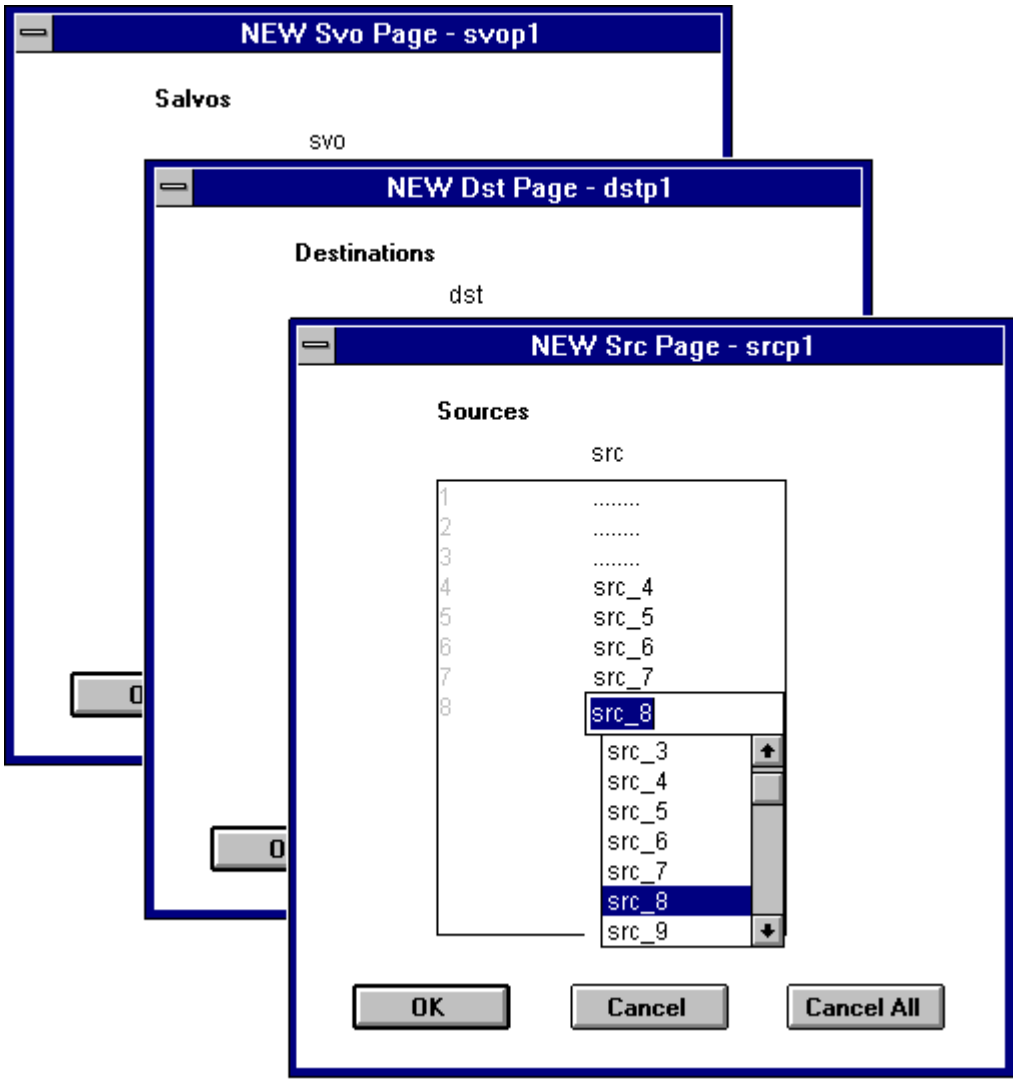
Figure 2-76. EDP Page Actions Window



2. **NAME(S):** Give the Page a name (up to eight characters). It should be named logically, to make sense with your routing system.

3. Click **NEW.**

Figure 2-77. New Page Windows



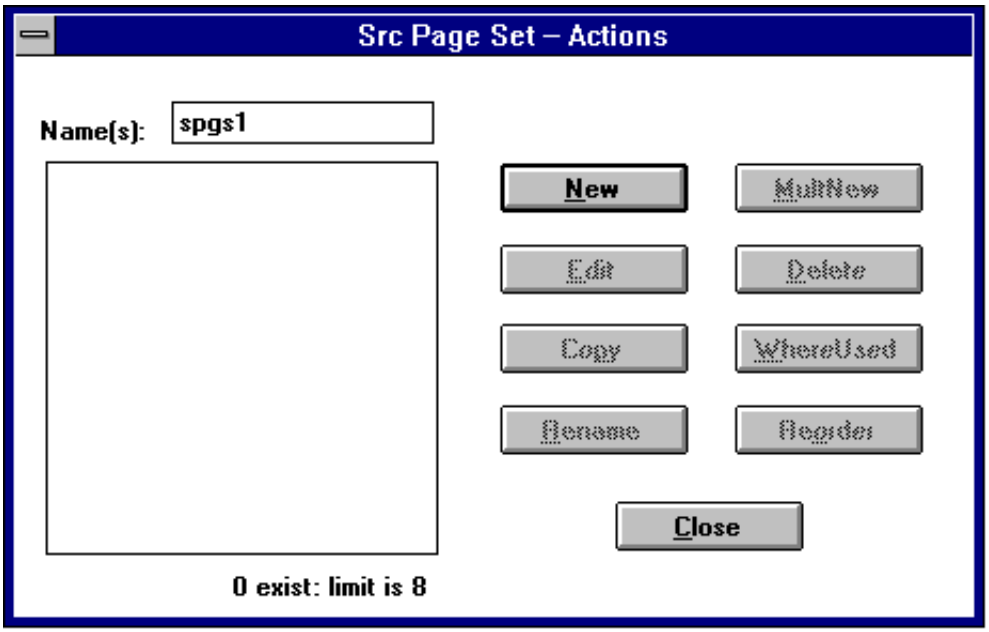
4. **SOURCES** Select items to be included in the page from the drop-down list.

5. Click **OK** to accept currently displayed entries.

To Configure Individual Source, Destination, and Salvo Page Sets

1. Under the **CONFIGURATION** menu select **PANELS** and then **PAGES** and then either Src Page Sets, Dst Page Sets, or Salvo Page Sets to access the associated Page Sets Actions window.

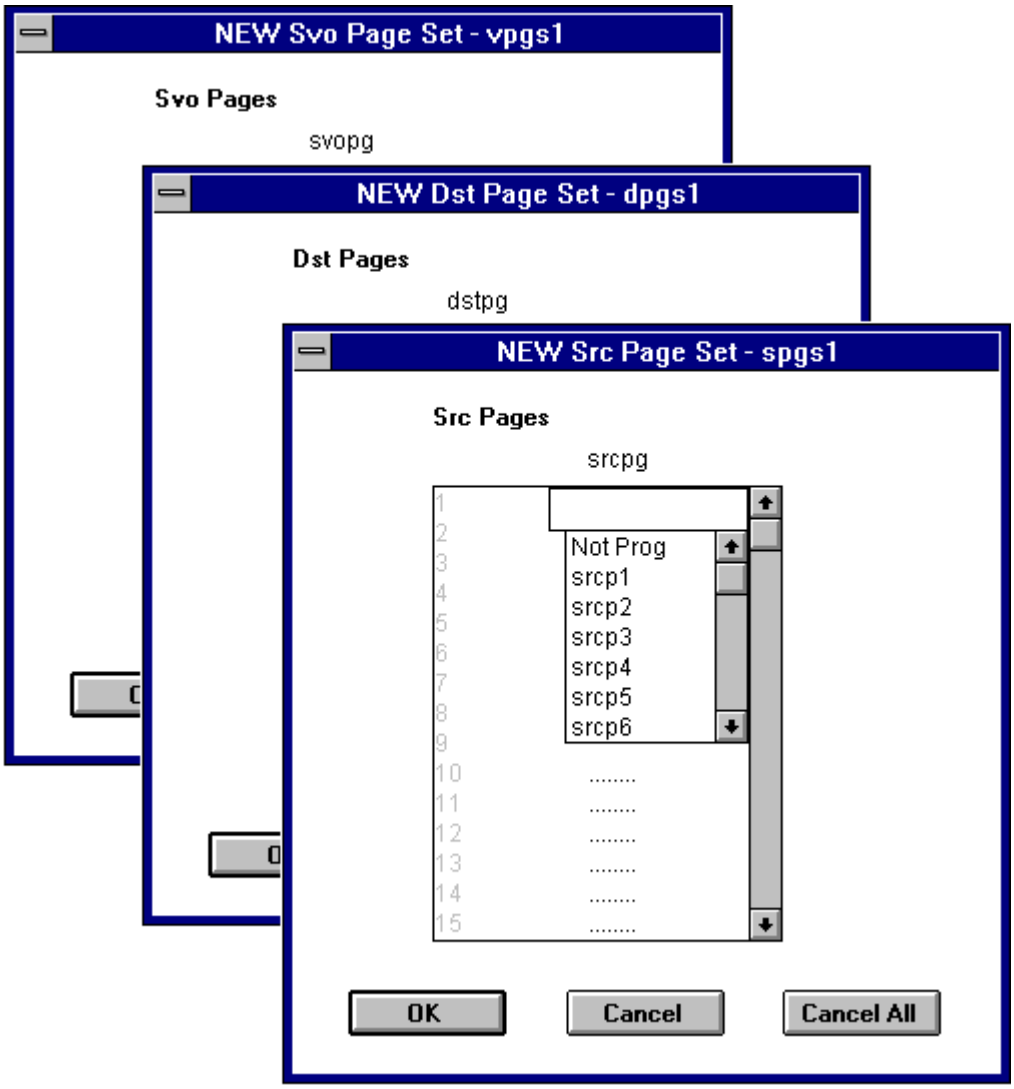
Figure 2-78. EDP Page Set Actions Window



2. **NAME(S):** Give the Page Set a name (up to eight characters). It should be named logically, to make sense with your routing system.

3. Click **NEW.**

Figure 2-79. New Page Set Windows



4. **SRC PAGES** Select items to be included in the page set from the drop-down list.

5. Click **OK** to accept currently displayed entries.

Panel Templates

Control panels receive a generic name and address from the MCPU when they are placed on-line. Beyond this initial information, panels must be configured with templates in order to function. You can send a control panel template to a control panel when the GUI is on-line to the MCPU.

Control Panel Types

Table 2-10. Control Panel Types

Panel	Acronym
Universal Control Panel	UCP
Multibus 8 Control Panel	MB8
32 Button-per-Source	BPS32 (P32)
48 Button-per-Source	P48
Client	CLN
Server	SVR
[a]Source Identification	SID
Simple Control Panel	SCP
Multibus 4 Control Panel	MB4

Panel	Acronym
Single Under Monitor Display	UMD1
Dual Under Monitor Display	UMD2
Triple Under Monitor Display	UMD3
Single Destination Paging	SDP
[a]Machine Control Only	MCO
[a]Cubicle or Studio	COS
Eight Destination Paging	EDP
Programmable X-Y PXY group	PXS, PXD, and PXYE

[a] Custom Units

If Destinations are configured to Select buttons, one of the Select buttons should be assigned the default Destination. If Levels are configured to Select buttons, one of the Select buttons should be assigned the Default Tally Level. In general, it is advisable to configure each system level to a Select button when levels are configured to Select buttons.

The Panel name and the Template name must match in order for that template's Salvo Permission set to work.

The EDP, Server-Client Panels, the PXY family Panels, Under Monitor Displays, COS, and the Source Identification Panel (SID) templates have panel-specific configuration items which are detailed separately from the common panel template information.

Configuration menu options will vary according to control panel type. Table 2-11 lists the Operating Flags used in Control Panel templates.

Table 2-11. Operating Flags

Flag	Definition
ChopLock	When set, prevents the panel from initiating chops.
DataProt	Custom panels only. Enables bit in Take packets.
DestLock	When set, disables Destination changes at the control panel.
EnabPswd	When set, enables use of Password and Flag modes.
Hold Pst	When set, panels hold presets for additional Takes. (If not set, presets are cleared after each Take.)
HoldRemt	When using Joystick Override option on a BPS panel, setting this flag causes the Joystick selected Source to remain when the Joystick closure is released. Otherwise, the Source would revert to the prior selection.
LvlInvLk	When set, inhibits the invert Level feature of the panel (BPS and PXS panels only).
LvlLock	When set, prevents users from initiating a breakaway from a panel to the extent possible, although some sources (by definition) cause a breakaway to occur, due to their fewer number of levels.
Mon.Ctrl	When set, allows the panel to control system Monitor Crosspoints while operating in Destination Mode, with each destination Take.
MultProt[a]	When set, allows protects to be placed on multiple Destinations, which are not active on any bus for that panel.
PanlLock	When set, the panel becomes read only. This prevents changes to the primary matrix, although monitor control (if active) is not affected.
ProtLock	When set, prevents the Panel from initiating Protects.
ProtOvrd[a]	When set, allows the panel to override Protects placed by other panels or devices in the system.
QuicTake	On a Client Panel, displays indicate status, unless a Preset is available from the associated Server Panel. Memory register Takes require only that the operator press the recall button of the desired register. Registers can be interrogated using the PST/ID button. On a SCP Panel, allows Takes to occur with a single key press of a select button, for example, without pressing the Take button.
SalvLock	When set, prevents salvo operation from affected panels.
SelfProt	When set, prevents panel from changing crosspoints until the Protect is removed.
SMTimeIn	When set, returns the panel automatically to Source Mode after specified length of time with no button activity. If this is enabled during configuration, a window appears specifying this time (in 1 second increments).
SrcLock	When set, disables **PREV** and **NEXT** buttons for Source selection only.
StrOpChs	When set, stores operator settings in battery backed-up memory.

[a] These flags should be used with caution, since they have potentially far-reaching effects with minimal feedback to operators.

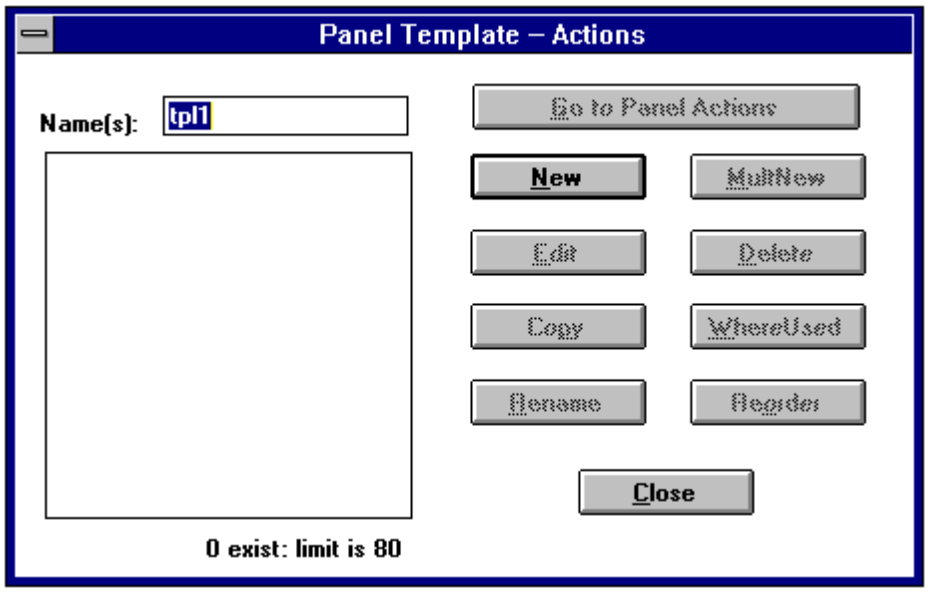
CAUTION Use Protect Override carefully. Panels whose locally set Protects have been overridden are not informed of the override and operators may be unaware of changes to their protected Destinations.

Use the MultProt flag carefully. It may affect many Destinations and panels and the operators of those panels are not informed, including the panels so configured.

To Configure a Control Panel Template

1. Under the **Configuration** menu select **Panels** and then **Template** to access the Panel Template Actions window.

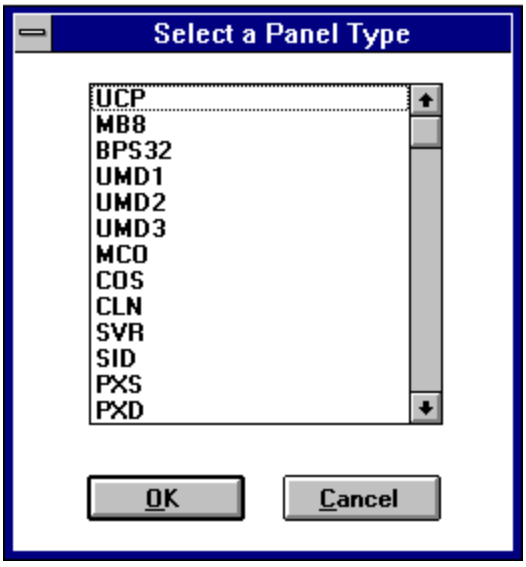
Figure 2-80. Template Actions Window



2. **Name(s):** Give the panel Template a name (up to eight characters). It should be named logically, to make sense with your routing system.

3. Click **New.** The Select a Panel Type window will appear.

Figure 2-81. Select a Panel Type Window



4. From the scrolling list, highlight the type of panel you want to configure.

5. Click **OK** to accept currently selected panel type. The New Panel Template window will appear.

See Panel Template for specific instructions.

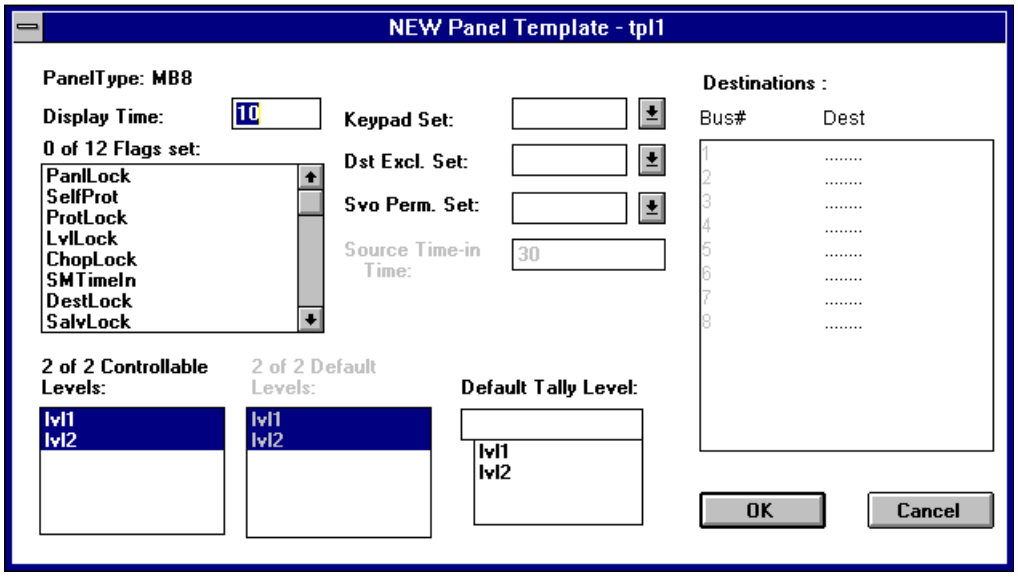
Table 2-12. Panel Template and Location

Panel	Page	Panel	Page
CLN	(page 2-109)	COS	(page 2-114)
EDP	(page 2-98)	MB8	(page 2-96)
MB4	(page 2-96)	P48	(page 2-105)
BPS32 (P32)	(page 2-106)	PXD	(page 2-112)
PXS	(page 2-110)	PXYE	(page 2-112)
SCP	(page 2-103)	SDP	(page 2-100)
SID	(page 2-115)	SVR	(page 2-108)
UMD	(page 2-113)	UCP	(page 2-102)

MB8 and MB4 Panel Template

The MB8 and MB4 panel templates look the same except that the MB4 only has four **BUS/DEST** entries in the **DESTINATIONS** box.

Figure 2-82. MB8 Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.

2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.

4. **KEYPAD SET:** Select the Keypad Set to be used by this template from the drop–down list.

5. **DST EXCL SET:** Select the Destination Exclusion Set (Destinations to exclude from control by this panel) from the drop-down list.

6. **SVO PERM. SET:** Select the set of Salvo Takes that this Panel will be able to access from the drop-down list. The name of the Template must exactly match the name of the Panel for the Salvo Permission set to be sent to the Panel. If not, Salvos will NOT be permitted at the panel.

7. **SOURCE TIME IN:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).

8. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.

9. **N OF N DEFAULT LEVELS:** Select the Levels you wish the panel to have selected upon initial power up. Will be a subset of Controllable Levels.

10. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

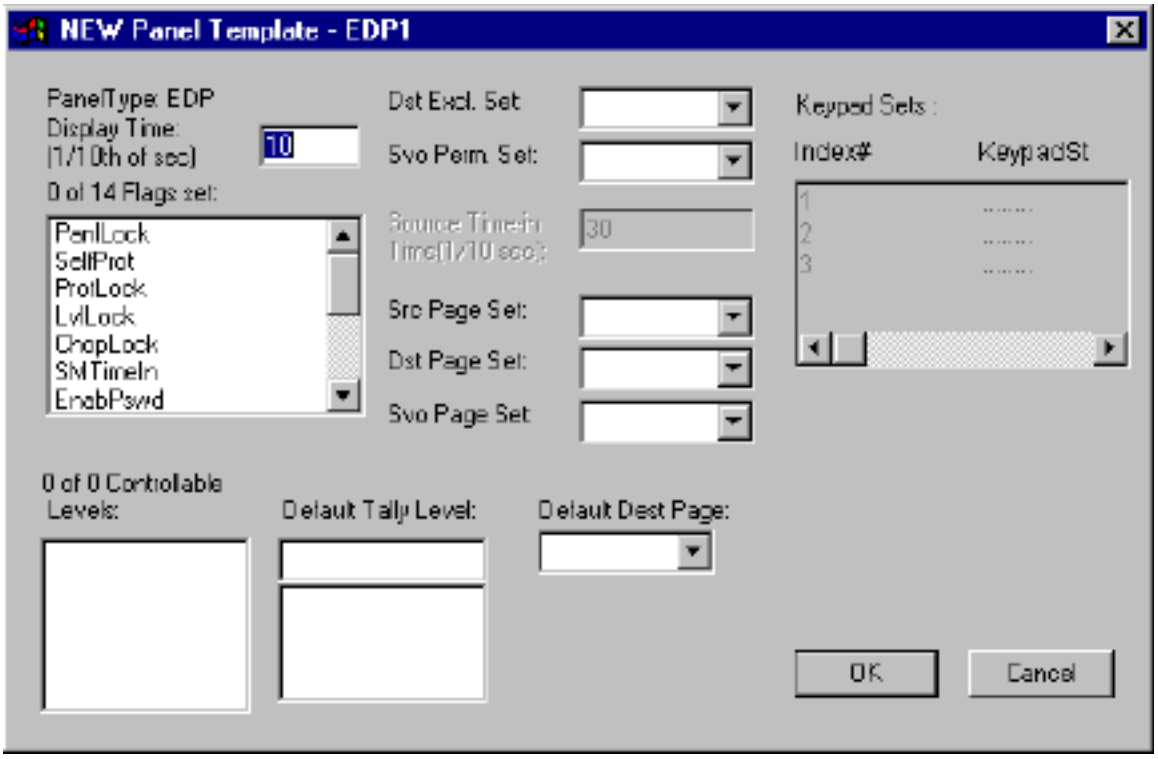
11. **DESTINATIONS:** In the multi-column window, enter data as directed by following field information.

    - **DEST:** Select the Destination to be assigned to a single-bus panel from the drop-down list.

12. Click **OK** to accept currently displayed entries.

EDP Panel Template

Figure 2-83. EDP Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.
2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).
3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.
4. **DST EXCL SET:** Select the Destination Exclusion Set (Destinations to exclude from control by this panel) from the drop-down list.
5. **SVO PERM. SET:** Select the set of Salvo Takes that this Panel will be able to access from the drop-down list. The name of the Template must exactly match the name of the Panel for the Salvo Permission set to be sent to the Panel. If not, Salvos will NOT be permitted at the panel.
6. **SOURCE TIME IN:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).
7. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.

8. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

9. **DEFAULT DEST PAGE:** Select the Dest Page to be assigned as the default from the drop-down list. Any of the Destination Pages can be used as the Default Destination Page.

10. **SRC PAGE SET:** Select the Src Page Set that this Panel will be able to access. Each Panel Template can have one Src Page Set.

11. **DST PAGE SET:** Select the Dst Page Set that this Panel will be able to access. Each Panel Template can have one Dst Page Set.

12. **SVO PAGE SET:** Select the Svo Page Set that this Panel will be able to access. Each Panel Template can have one Svo Page Set.

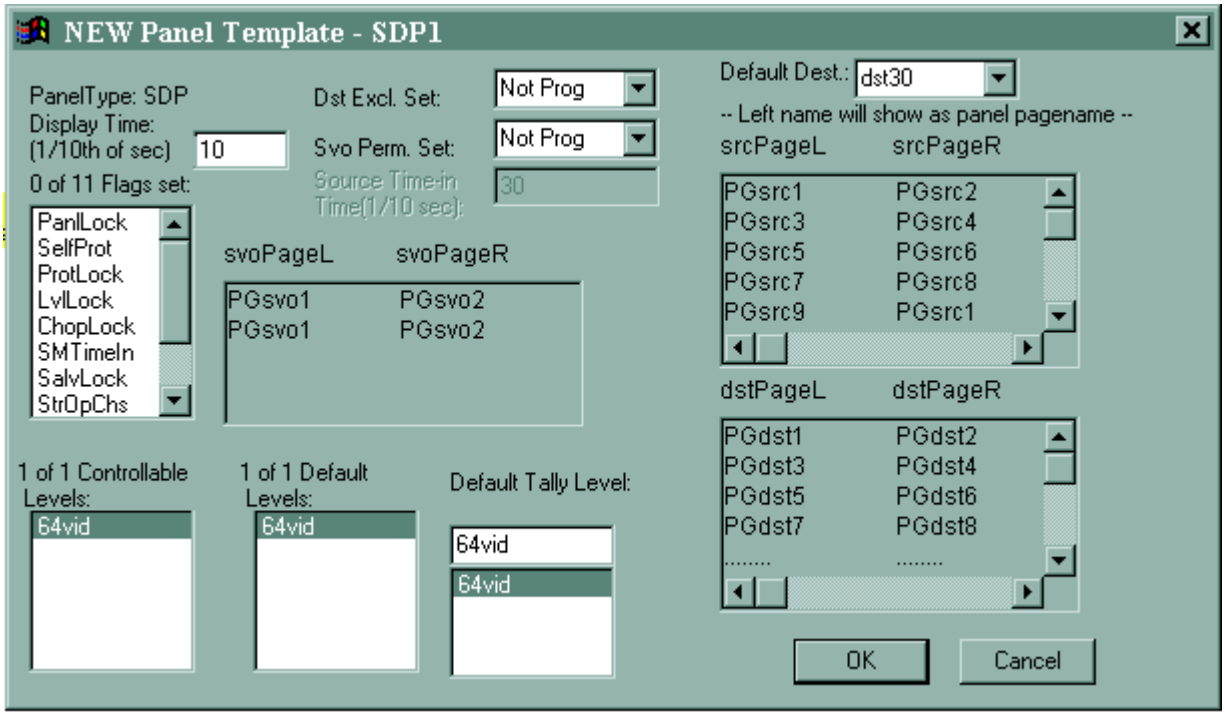
13. **KEYPAD SETS:** In the multi-column window, enter data as directed by following field information.

    - **KEYPADST:** Select the Keypad Set which will be accessed from the EDP Panel without using the shift buttons from the drop-down list for the first row.
      Select the Keypad Set which will be accessed using the **shift A** button from the drop-down list for the second row.
      Select the Keypad Set which will be accessed using the **shift B** button from the drop-down list for the third row.

14. Click **OK** to accept currently displayed entries.

SDP Panel Template

Figure 2-84. SDP Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.
2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).
3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.
4. **DST EXCL SET:** Select the Destination Exclusion Set (Destinations to exclude from control by this panel) from the drop-down list.
5. **SVO PERM. SET:** Select the set of Salvo Takes that this Panel will be able to access from the drop-down list. The name of the Template must exactly match the name of the Panel for the Salvo Permission set to be sent to the Panel. If not, Salvos will NOT be permitted at the panel.
6. **SOURCE TIME IN:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).
7. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.
8. **N OF N DEFAULT LEVELS:** Select the Levels you wish the panel to have selected upon initial power up. Will be a subset of Controllable Levels.

9. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

10. **SVOPAGEL** and **SVOPAGER** Select the Page of Salvos that this panel will be able to access from the drop-down list. Salvo pages will be displayed in sets of two. Select one page for **SVOPAGEL** and one page for **SVOPAGER**. The same page can be used more than once. The total number of pages that can be displayed is four.

11. **DEFAULT DEST:** Select the Destination to be assigned as the default from the drop-down list.

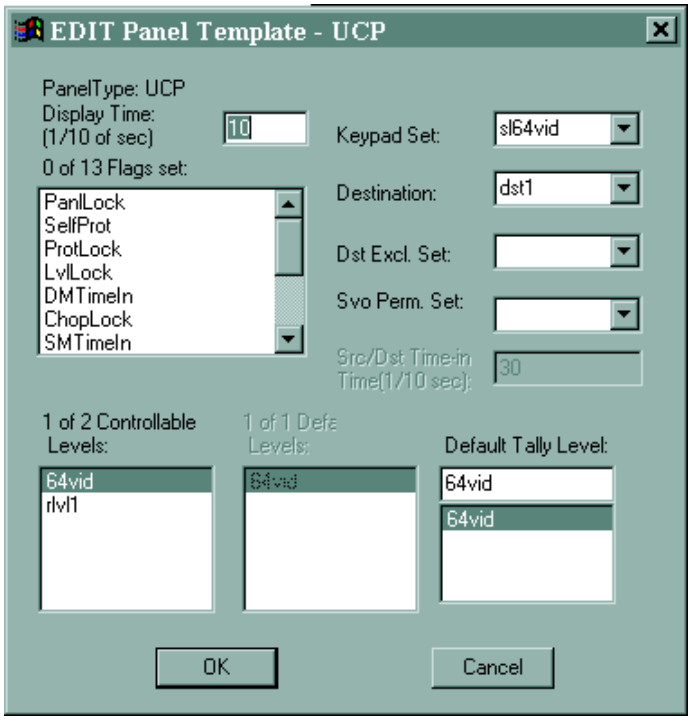
12. **SRCPAGEL** and **SRCPAGER** Select the Page of Sources that this panel will be able to access from the drop-down list. Source pages will be displayed in sets of two. Select one page for **SRCPAGEL** and one page for **SRCPAGER**. The same page can be used more than once. The total number of pages that can be displayed is sixteen.

13. **DSTPAGEL** and **DSTPAGER** Select the Page of Destinations that this panel will be able to access from the drop-down list. Dstination pages will be displayed in sets of two. Select one page for **DSTPAGEL** and one page for **DSTPAGER**. The same page can be used more than once. The total number of pages that can be displayed is sixteen.

14. Click **OK** to accept currently displayed entries.

UCP Panel Template

Figure 2-85. UCP Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.

2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.

4. **DST EXCL SET:** Select the Destination Exclusion Set (Destinations to exclude from control by this panel) from the drop-down list.

5. **SVO PERM. SET:** Select the set of Salvo Takes that this Panel will be able to access from the drop-down list. The name of the Template must exactly match the name of the Panel for the Salvo Permission set to be sent to the Panel. If not, Salvos will NOT be permitted at the panel.

6. **SOURCE TIME IN:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).

7. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.

8. **N OF N DEFAULT LEVELS:** Select the Levels you wish the panel to have selected upon initial power up. Will be a subset of Controllable Levels.

9. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

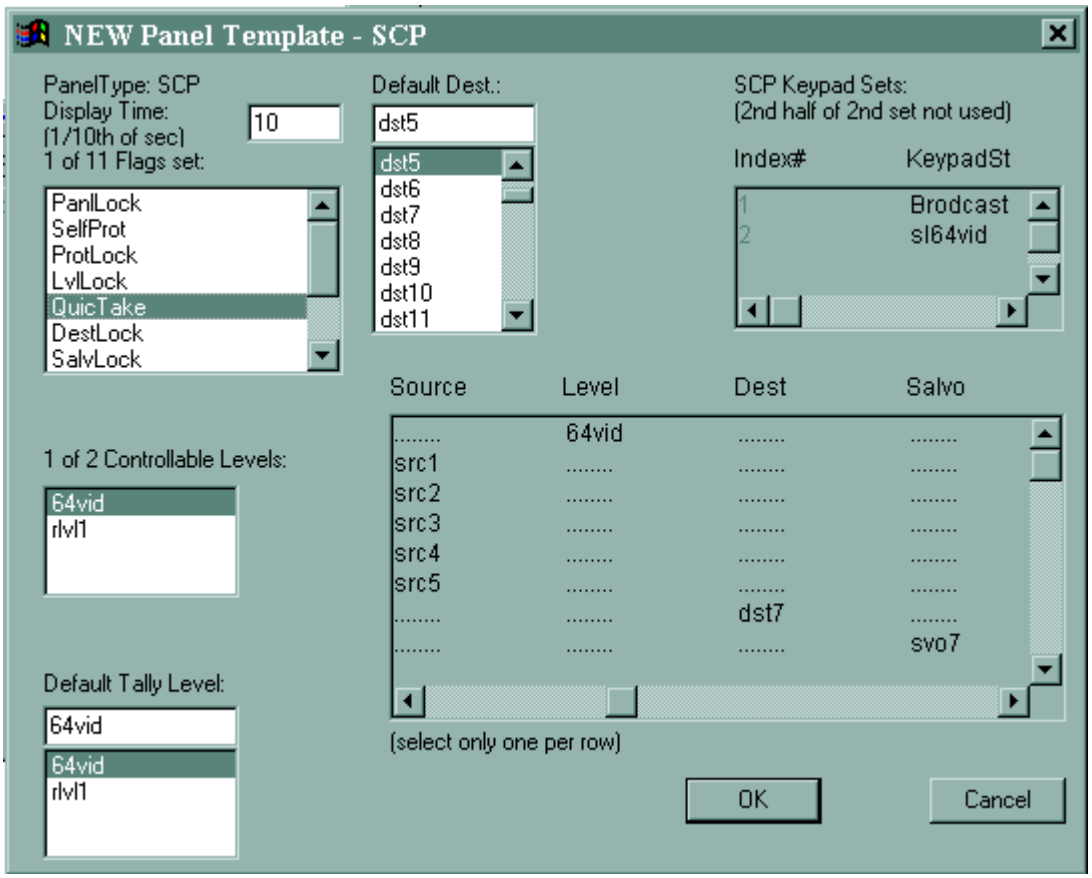
10. **KEYPAD SET:** Select the Keypad Set to be used by this template from the drop–down list.

11. **DESTINATION:** Select the Destination to be assigned from the drop-down list.

12. Click **OK** to accept currently displayed entries.

SCP Panel Template

Figure 2-86. SCP Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.

2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.

4. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.

5. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

6. **DEFAULT DEST:** Select the Destination to be assigned as the default from the drop-down list.

7. **KEYPAD SETS:** In the multi-column window, enter data as directed by following field information.

   - **KEYPADST:** Select the Keypad Set which will be used for the first sixteen buttons from the drop-down list for the first row.
     Select the Keypad Set which will be used for the seventeenth to the twenty-fourth button from the drop-down list for the second row.

     Only the first half of the second Keypad set will be used.

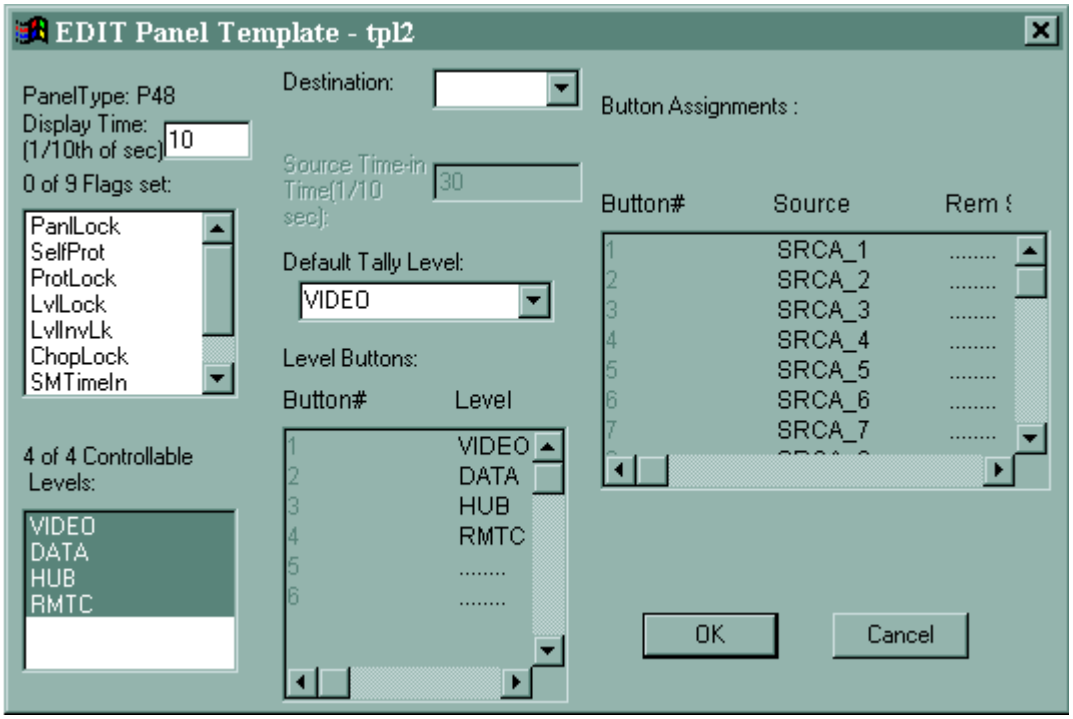
8. **SOURCE/LEVEL/DEST/SALVO** In the multi-column window, enter data as directed by following field information.

   - Enter one item from the drop-down list for each row.

9. Click **OK** to accept currently displayed entries.

P48 Panel Template

Figure 2-87. P48 Panel Template Window



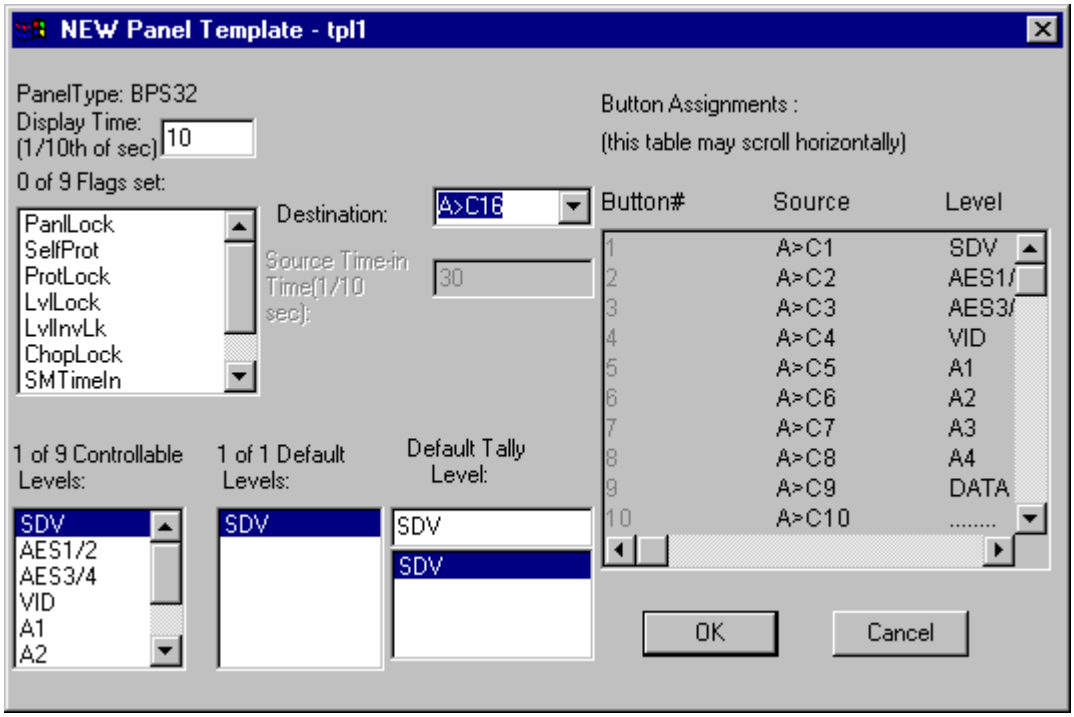
1. **PANEL TYPE:** The selected template is displayed.
2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).
3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.
4. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.
5. **DESTINATION:** Select the Destination to be assigned as the default from the drop-down list.
6. **SOURCE TIME IN:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).
7. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.
8. **LEVEL BUTTONS:** In the multi-column window, enter data as directed by following field information.
   - **LEVEL:** Select a Level for each one of the six Level buttons

9. **BUTTON ASSIGNMENTS:** In the multi-column window, enter data as directed by following field information.
   - **SOURCE/REMSRC** Enter one item from the drop-down list for each row.
10. Click **OK** to accept currently displayed entries.

BPS32 (P32) Panel Template

This panel has a Source mode and a Level mode. In Source mode, each programmable button on the panel can be programmed to control a Source. In Level mode, each programmable button on the panel can be programmed to control a Level. See *Levels* on page 2-33 for more details on Levels. The Invert mode lets you select one Level button, for example button 3, press Invert, and get all Levels except button 3.

Figure 2-88. P32 Panel Template Window



1. **Panel Type:** The selected template is displayed.
2. **Display Time:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).
3. **n of n Flags set:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.
4. **n of n Controllable Levels:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.

5. **n of n Default Levels:** Select the Level(s) you wish the panel to have selected upon initial power up. Will be a subset of Controllable Levels.

6. **Destination:** Select the Destination to be assigned as the default from the drop-down list.

7. **Source Time In:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).

8. **Default Tally Level:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

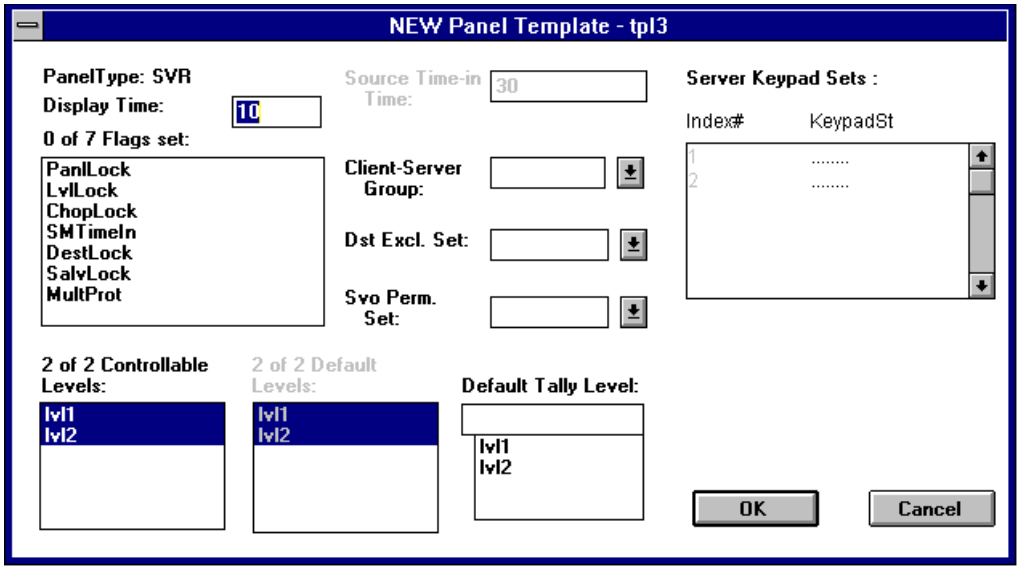
9. **Button assignments:** In the multi-column window, make selections as indicated by the following field information. To do so, click the cell (when empty, indicated by a series of periods) opposite the button you wish to configure, make a selection from the drop down list which appears, and press the Tab key or click outside the cell to accept the selection.

   - **Source/Level/Remsrc** (Remote Source)**:** Choose a Source, Level, or Remote Source from the corresponding drop-down list for each row. Remote Sources are available only by means of the optional Joystick Override (See "Joystick Override" in the *Series 7000 User Manual* for more details.). Levels may be assigned to the Level mode panel buttons for creation of Breakaway Takes. Note that there is no correlation between the Source, Level, and Rem Src columns; they simply happen to be assigned to the same button, but are available only when in the appropriate mode. The Level column auto fills from the available Levels in the configuration, however you can change any or all of these entries.

10. Click **OK** to accept currently displayed entries.

SVR Panel Template

Figure 2-89. New Server Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.

2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.

4. **DST EXCL SET:** Select the Destination Exclusion Set (Destinations to exclude from control by this panel) from the drop-down list.

5. **SVO PERM. SET:** Select the set of Salvo Takes that this Panel will be able to access from the drop-down list. The name of the Template must exactly match the name of the Panel for the Salvo Permission set to be sent to the Panel. If not, Salvos will NOT be permitted at the panel.

6. **SOURCE TIME IN:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).

7. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.

8. **N OF N DEFAULT LEVELS:** Select the Levels you wish the panel to have selected upon initial power up. Will be a subset of Controllable Levels.

9. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

10. **CLIENT-SERVER GROUP:** Select the Client-Server group to which this Server Panel will belong. (Client-Server panel groups, as many as 15 Client Panels and 1 Server Panel, must be physically connected to the same port of the Control Panel Bus. Each group is given a unique name.)

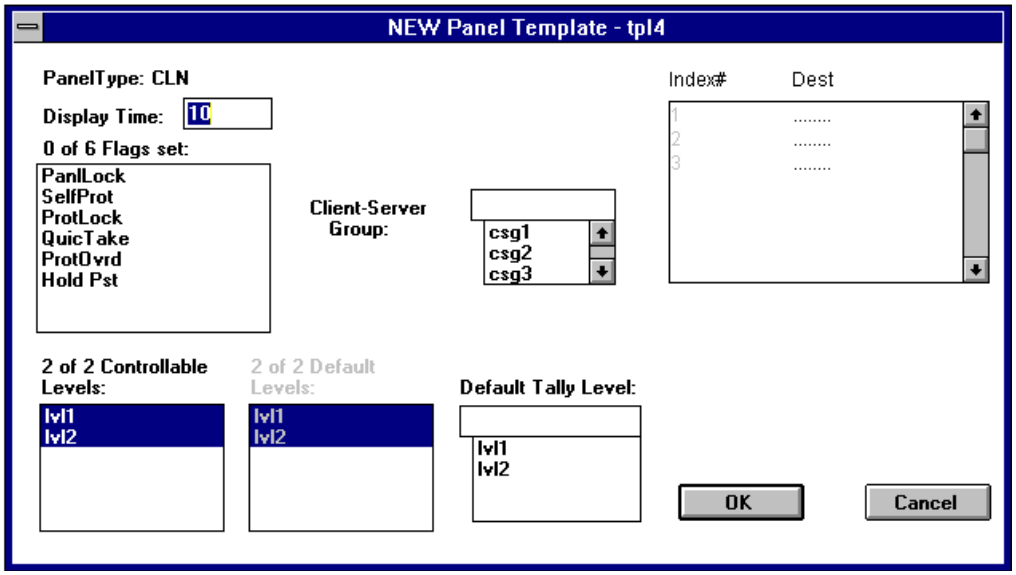
11. **KEYPAD SETS:** In the multi-column window, enter data as directed by following field information.

    - **KEYPADST:** Select the Keypad Set which will be accessed from the Server Panel without using the shift button from the drop-down list for the first row.
      Select the Keypad Set which will be accessed using the **shift** button from the drop-down list for the second row.

12. Click **OK** to accept currently displayed entries.

CLN Panel Template

Figure 2-90. New Client Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.

2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.

4. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.

5. **N OF N DEFAULT LEVELS:** Select the Levels you wish the panel to have selected upon initial power up. Will be a subset of Controllable Levels.

6. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

7. **CLIENT-SERVER GROUP:** Select the Client-Server group to which this Client Panel will belong. (Client-Server panel groups, as many as 15 Client Panels and 1 Server Panel, must be physically connected to the same port of the Control Panel Bus. Each group is given a unique name.)

8. In the multi-column window, enter data as directed by following field information.

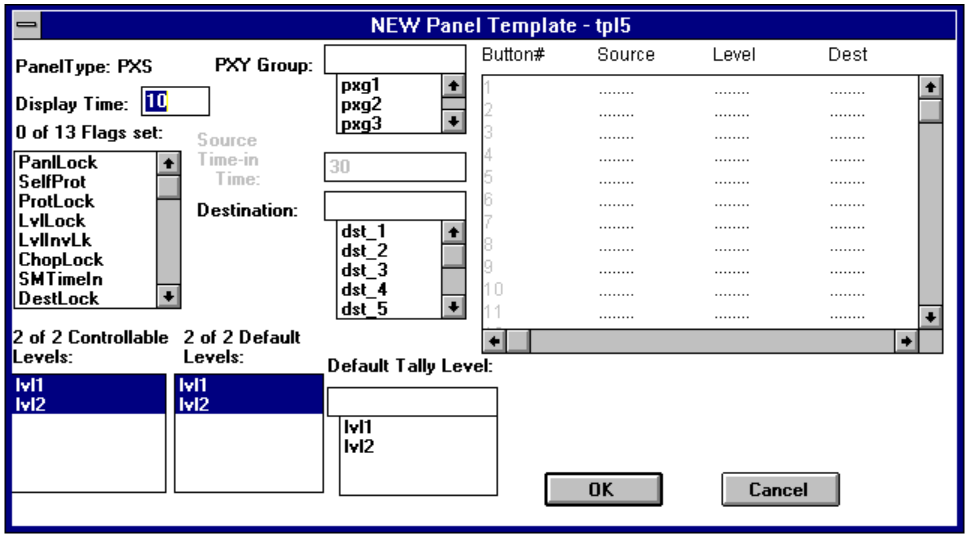
   - **DEST:** Select the default Destination for the left-most Destination Group (group of buttons and displays) on the Client Panel from the drop-down list for the first row.
     Select the default Destination for the middle Destination Group from the drop-down list for the second row.
     Select the default Destination l for the right-most Destination Group from the drop-down list for the third row.

9. Click **OK** to accept currently displayed entries.

PXS Panel Template

PXS panels need to be configured to a Group, assigned a Destination, and have button assignments.

Figure 2-91. New PXS Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.

2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.

4. **SOURCE TIME IN:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).

5. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.

6. **N OF N DEFAULT LEVELS:** Select the Levels you wish the panel to have selected upon initial power up. Will be a subset of Controllable Levels.

7. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

8. **PXY GROUP:** Select the PXY group to which this PXS Panel will belong. (The PXS can function alone or can work with one or more PXYE panels or a single PXD panel. Each group is given a unique name.)

9. **DESTINATION:** Select the Destination to be assigned from the drop-down list.

10. In the multi-column window, enter data as directed by following field information. Scrolling may be required to make the Salvo column visible.

    - **SOURCE**, **DEST**, and **SALVO**
      Select the Source, Dest, or Salvo to assign to each Select button from the drop-down list. Each Select button may have either a Source, a Destination, or a Salvo.

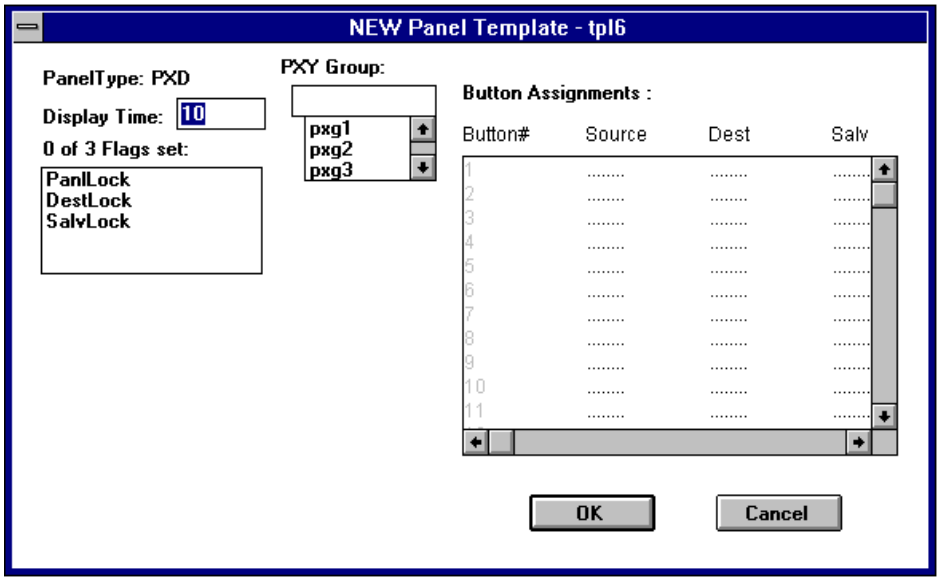
    - **LEVEL** Select the Level to assign to each Select button from the drop-down list. This is in addition to the Source, Destination, or Salvo assigned.

11. Click **OK** to accept currently displayed entries.

PXD or PXYE Panel Template

PXD or PXYE panels need to be configured to a Group and have button assignments.

Figure 2-92. New PXD Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.

2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.

4. **PXY GROUP:** Select the PXY group to which this PXD or PXYE Panel will belong from the drop-down list. (The PXS can function alone or can work with one or more PXYE panels or a single PXD panel. Each group is given a unique name.)

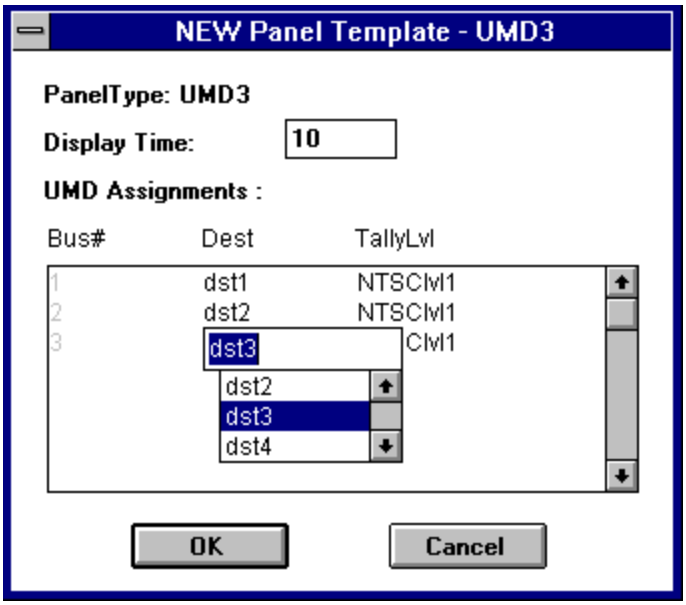
5. In the multi-column window, enter data as directed by following field information. Scrolling may be required to make the Salvo column visible.

   - **SOURCE**, **DEST**, and **SALVO**
     Select the Source, Dest, or Salvo to assign to each Select button from the drop-down list. Each Select button may have either a Source, a Destination, or a Salvo.

6. Click **OK** to accept currently displayed entries.

UMD1, UMD2, or UMD3 Panel Template

Figure 2-93. New UMD3 Panel Template Window



7. **PANEL TYPE:** The selected template is displayed (shown is the UMD3).

8. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

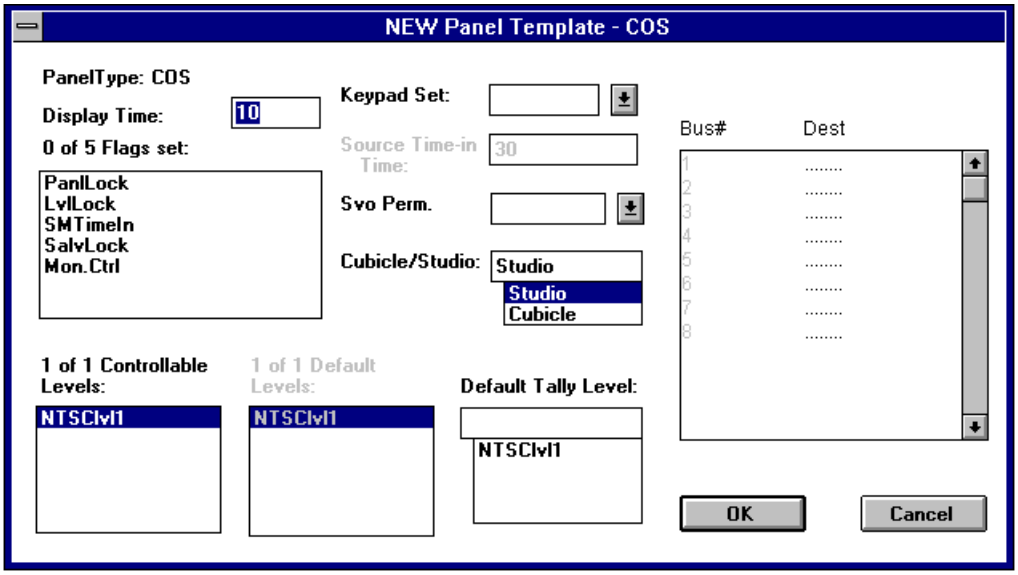
9. **UMD ASSIGNMENTS:** In the multi-column window, enter data as directed by following field information. The UMD1 will have one bus row, the UMD2 will have two bus rows, and the UMD3 will have three bus rows.

   - **DEST** Select the Destination to assign to this UMD template from the drop-down list.
   - **TALLYLVL** Select the Tally Level to assign to this UMD template from the drop-down list.

10. Click **OK** to accept currently displayed entries.

COS Panel Template

Figure 2-94. New COS Panel Template Window



1. **PANEL TYPE:** The selected template is displayed.
2. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).
3. **N OF N FLAGS SET:** The order and number of flags varies with panel type. Setting flags in a template will affect the panel see Table 2-11.
4. **KEYPAD SET:** Select the Keypad Set to be used by this template.
5. **SVO PERM. SET:** Select the set of Salvo Takes that this Panel will be able to access from the drop-down list. The name of the Template must exactly match the name of the Panel for the Salvo Permission set to be sent to the Panel. If not, Salvos will not be permitted at the panel.
6. **SOURCE TIME IN:** Appears when SMTimeIn Flag is set. Time, in seconds, which will elapse before an undisturbed panel will return to Source Mode. Maximum is 255 (255 seconds).
7. **N OF N CONTROLLABLE LEVELS:** Select the Levels you wish the panel to control. If these include data levels, assign only the forward level to the panel; the system will handle the reverse level.
8. **N OF N DEFAULT LEVELS:** Select the Levels you wish the panel to have selected upon initial power up. Will be a subset of Controllable Levels.
9. **DEFAULT TALLY LEVEL:** Select the Level the panel will show status for in the AllLevel state. Subset of Default Levels.

10. **CUBICLE/STUDIO:** Select whether this panel is a Studio or Cubicle panel from the drop-down list.

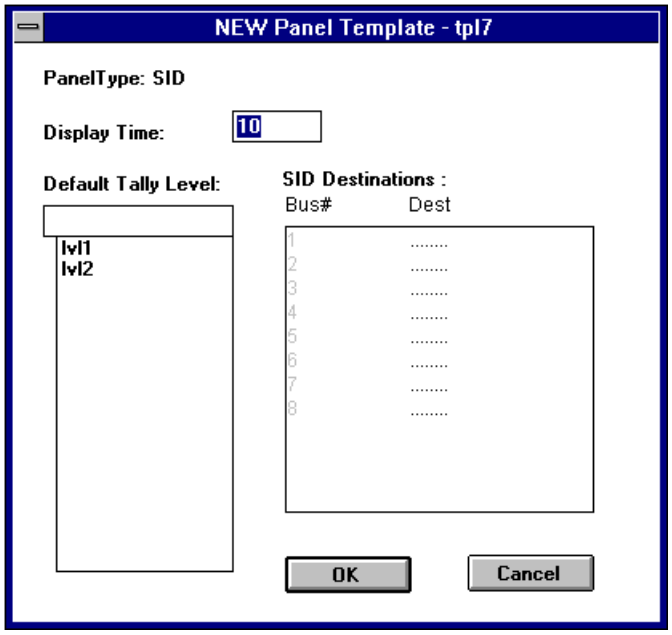
11. In the multi-column window, enter data as directed by following field information. The UMD1 will have one bus row, the UMD2 will have two bus rows, and the UMD3 will have three bus rows.

    - **DEST** Select the Destination to assign to each bus from the drop-down list.

12. Click **OK** to accept currently displayed entries.

SID Panel Template

Figure 2-95. New SID Panel Template Window



13. **PANEL TYPE:** The selected template is displayed (shown is the SID).

14. **DISPLAY TIME:** Time, in tenths of seconds, messages are displayed. Default is 10 (1 second). Maximum is 255 (25.5 seconds).

15. **DEFAULT TALLY LEVEL:** Select the default Tally Level from the drop-down list.

16. **SID DESTINATIONS:** In the multi-column window, enter data as directed by following field information. The UMD1 will have one bus row, the UMD2 will have two bus rows, and the UMD3 will have three bus rows.

    - **DEST** Select the Destination to assign to each bus from the drop-down list.

17. Click **OK** to accept currently displayed entries.

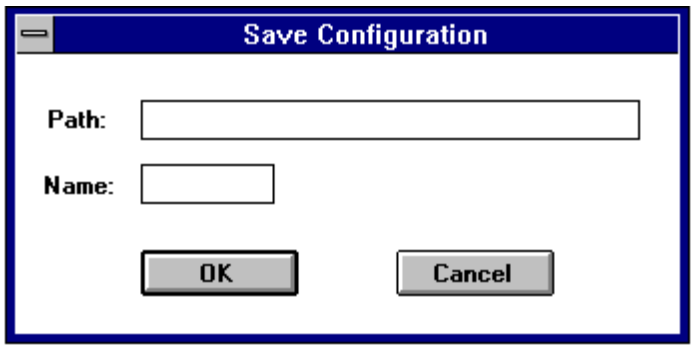
Saving Your Configuration

This Save procedure saves the configuration to the PC ONLY. A configuration file must be moved to the MCPU of the Series 7000 to affect router behavior. To transfer a configuration, see Sending a Configuration to the Series 7000 MCPU on page 3-1.

To Save a New Configuration File

1. Under the **FILE** menu select **SAVE AS** to access the Save Configuration window.

Figure 2-96. Save Configuration Window



2. **PATH:** No entry necessary to save to default directory CL created during GUI setup on the PC. To use another directory enter path here.
3. **NAME:** Enter the name of this configuration (up to eight characters).
4. Click **OK** to accept currently displayed entries.

Modified configuration files should be saved as new configuration files and given unique names. It is recommended that you use **SAVE AS** to verify the file name before saving.

Opening a Configuration

Backing Up or Copying a Configuration

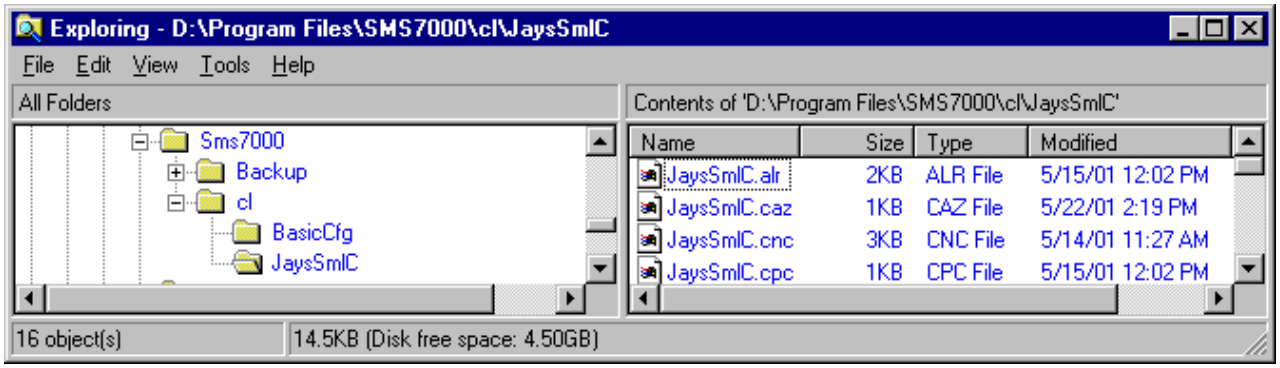
The **Save** and **Save As** commands work like they do in most Windows applications. To avoid overwriting a working configuration with a problematic one it's prudent to back up the good one before you begin making changes. One method to protect yourself is to open the configuration which is almost the way you want it, then immediately use the **Save As** command on the **File** menu to save your new configuration. For example, open **`MyCfg`** and save it as **`MyCfgNu`**. That way, you can always revert to **`MyCfg`** (which works) if **`MyCfgNu`** doesn't work.

For more extensive file management, backups, or to transfer a configuration for use in another facility, you may want to use Windows Explorer to move or copy them. Remember to close any open configurations before copying or moving them.

CAUTION Do not rename the configuration folders or files within them. For version control purposes, you may want to create a higher level folder with date or other information, for example: **`Configs Thru 21June01`**.

While configuration files can be stored elsewhere, they are frequently stored in a subdirectory of the SMS7000 installation. The configuration directory is typically named **`cl`** and contains subdirectories named for each of the configurations you've created. Each configuration subdirectory contains numerous files, each reflecting the configuration name. Note the hierarchy in Figure 2-97.

Figure 2-97. Windows Explorer View of Configurations



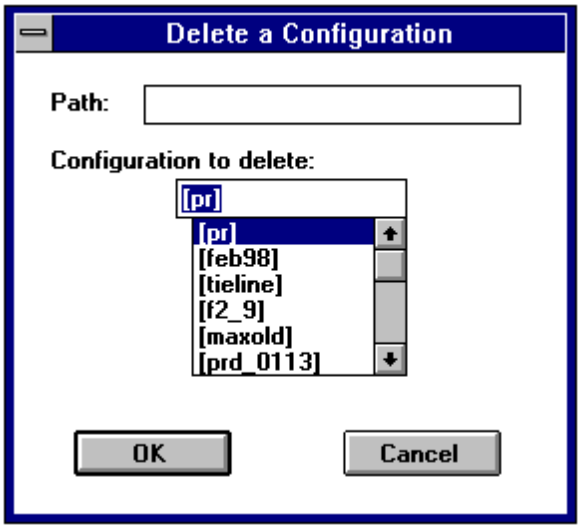
Deleting a Configuration File

Delete unused configuration files, when you are in the GUI environment but do not have a configuration file open. Deleted configurations cannot be recovered.

To Delete a Configuration File

1. Under the **File** menu select **Delete** to access the Delete a Configuration window.

Figure 2-98. Delete Menu and Delete a Configuration Window



2. **Path:** No entry necessary.
3. **Configuration to delete:** Select a configuration file to delete.
4. Click **OK** to accept currently displayed entries.

Figure 2-99. Delete Verify Window

5. Click **OK** to accept currently displayed entries.

Section 3

Connecting to the SMS 7000 Router

Introduction

To complete the configuration process the configuration file needs to be loaded into the Master Control Processing Units (MCPUs) controlling a SMS 7000 router. In OnLine mode the GUI is actively communicating with a SMS 7000 MCPU and can immediately affect router configuration and operation. OnLine mode is also used to configure backup Node Controllers, assign rooms and tielines, transfer Control Panel templates, view room assignments and tieline usage, and to perform GUI controlled operations.

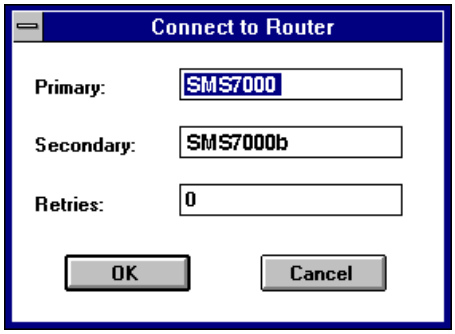
Configuration Transfer

Before a configuration can affect the behavior of the Series 7000, it must be sent to the 7000 MCPU.

To Download a Configuration File to the MCPU

1. Open the configuration (if not already open) on the GUI.
2. Select **ONLINE** from the main menu bar, followed by **CONNECT**.

Figure 3-1. Connect Menu and Connect to Router Window



3. **PRIMARY:** If you are networked with a single Series 7000, the name of the system-controlling MCPU will appear in this window. If you are serving more than one system, you can change this entry to contact the correct MCPU.

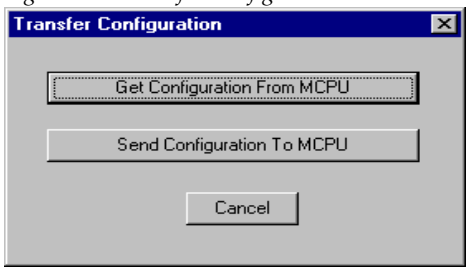
4. **SECONDARY:** If you are networked with a single Series 7000, the name of the backup system-controlling MCPU will appear in this window. If you are serving more than one system, you can change this entry to reflect the correct redundant MCPU.

5. **RETRIES:** How many times should your PC attempt contacting the MCPU before reporting a problem?

6. Click **OK** to go OnLine to the system MCPU.

7. If both the PC and the MCPU currently have configurations, the system will present a Transfer Configuration window.

Figure 3-2. Transfer Configuration Window



CAUTION "Encore Control" allows you to control the SMS7000 panels *only* from the Encore Panel Server. Enabling this feature, even if you do not exceed current limits, will remove all panel-related settings from this configuration. If you send this configuration to the SMS7000 MCPU all of the control panels controlled by the SMS7000 MCPU will be *taken offline* and you will not be able to retrieve template information from the panels.
This feature also provides:
Increased Source & Destination names, and
Increased Salvo Elements & Salvos.

Before you proceed, ensure that you've backed up your configuration

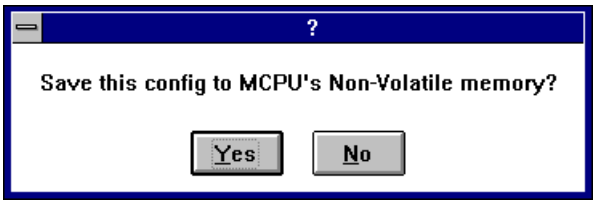
See the Encore documentation for requirements and approved procedures for the changeover to Encore Control.

Note If you've used the larger limits for Salvos, Salvo Elements, or Sources plus Destinations enabled by Encore Control, you may need to clear some memory in the MCPU FLASH before you can successfully send your configuration to the MCPU. To do so, see "MCPU Memory Management" in the *Series 7000 Release Notes* (version 8.0 or later).

8. Select **SEND CONFIGURATION TO MCPU**.The configuration from the PC will be transferred to the Series 7000 Primary MCPU replacing the resident configuration (in RAM only). Once the transfer to the Primary MCPU is complete, the Primary MCPU will start to transfer the configuration to a Secondary MCPU (if the system has a redundant/backup MCPU).

9. After the transfer of the configuration to the primary MCPU is complete, you will be prompted to save the configuration to the FLASH (non-volatile) memory. The Series 7000 system allows you to save the configuration to the FLASH memory on both the primary and the secondary MCPU modules at the same time. However; if the transfer from the Primary MCPU RAM to the Secondary MCPU RAM is not complete the configuration cannot be saved into FLASH until the transfer is complete.

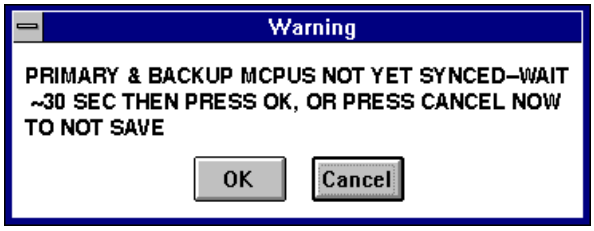
Figure 3-3. Question Window



10. If you click **NO** at this point and later you want to save the configuration file to MCPU FLASH, use the Maintenance menu, see *Save a Configuration to MCPU Flash* on (page 3-4).

11. If the transfer from the Primary MCPU to the Secondary MCPU is not complete and you say **yes** the following message will appear:

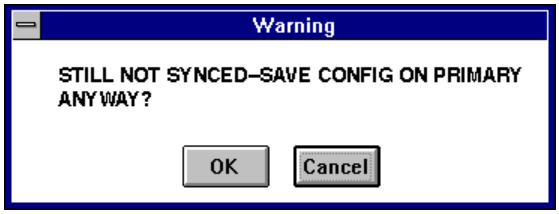
Figure 3-4. Sync Warning Window



12. If you click **OK** and the transfer is complete the configuration file will be saved into the MCPU FLASH.

13. If the transfer is still not complete the following message will appear:

Figure 3-5. Still Not Synced Warning Window

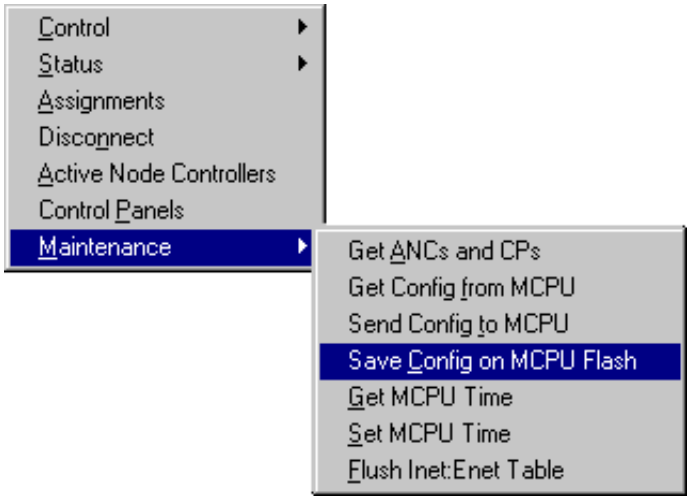


14. If you click **yes** it saves the configuration to FLASH on the Primary MCPU only.
If you click **Cancel** at this point you will need to save the configuration file to MCPU using the Maintenance menu.

Save a Configuration to MCPU Flash

- Under the **ONLINE** menu, select **MAINTENANCE**, then **SAVE CONFIG ON MCPU FLASH**.

Figure 3-6. Save Config on MCPU Flash Menu



You will remain in On–Line Mode until you elect to disconnect. If you wish, you can use the Transfer Configuration window to retrieve the current configuration from the 7000 MCPU by selecting the appropriate option.

Recovery From Encore Control

In the event that you save a configuration with Encore Control and then upload it to the 7000 MCPU without meeting the requirements, you will disable all panels controlled by the Series 7000 Control Frame. These instructions will help you recover the use of your control panels.

Reload your last working configuration which did not employ Encore Control. Use the procedure documented in *To Download a Configuration File to the MCPU* earlier in this section.

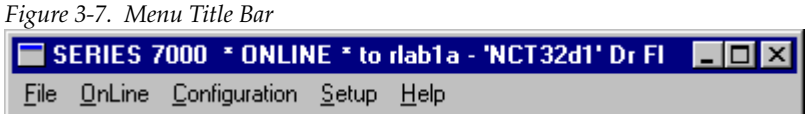
Lost Comm During Transfer

If while sending a configuration to the MCPU if communications are lost, you may need to reboot the MCPU to re-establish communication.

Title Bar Indicator

FL on the GUI title bar, indicates that the configuration could be different than what is in the MCPU's flash. **DR** means that the configuration could be different from what is on the PC's disk drive.

Figure 3-7. Menu Title Bar



Active Node Controllers

Whenever you connect to a router and go on-line the GUI will poll the system to collect information on what devices are present. All active Node Controllers including both Primary and Backup Node Controllers will appear in the Active Node Controllers Actions window.

Configured Node Controllers are linked to the proper Active Node Controller by the names assigned to the Active Node Controller and the Configured Node Controller. These names must be identical.

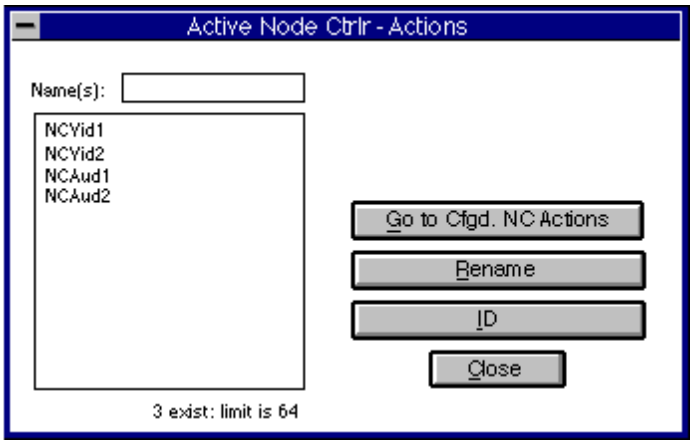
Primary and backup Node Controllers use identically configured templates. The primary Node Controller usually has a name such as NCVid1 and the backup Node Controller would be named NCVid2.

The Active Node Controllers Actions window allows you to identify and rename Active Node Controllers and by going to the Cfgd. NC Actions window you can rename Configured Node Controllers.

To Identify and Rename Node Controllers

1. Under the **ONLINE** menu select **ACTIVE NODE CONTROLLERS** to access the Active Node Ctrlr Actions window.

Figure 3-8. Active Node Controller Actions Window



A list of all Active node controllers in your system will appear in a pop-up window - providing the options to ID (identify) or Rename node controllers if desired. It is essential that each node controller have a unique name of eight or fewer characters (spaces, question marks, quotation marks, and asterisks should not be used). If subsets of your system were separately tested at the factory, some node controllers may have been identically named and must be renamed.

2. Starting at the TOP of the list and proceeding in order, begin selecting one module name at a time, then clicking the **ID** button.
   This will cause a yellow LED on the front of the selected module to flash steadily. (If no LEDs flash, the selected name is probably that of a mezzanine board with an emulated node controller attached – ignore these name(s) and continue.)

3. Locate the module with the flashing LED. Rename if desired (must be renamed if it is not unique). Stick a temporary label showing the module's name on the frame by the module. Write the module name and frame slot in your list.

4. Continue as above (including Step 1 to refresh the list) until you have labeled each module and included it in your list.

5. **GO TO CFGD NC ACTIONS** Select to access the Cfgd NC Actions window to see the list of configured NC templates.

6. **RENAME** Select to rename a Node controller.

7. **ID** Select to identify a Node Controller.

8. **CLOSE** Select to exit the window.

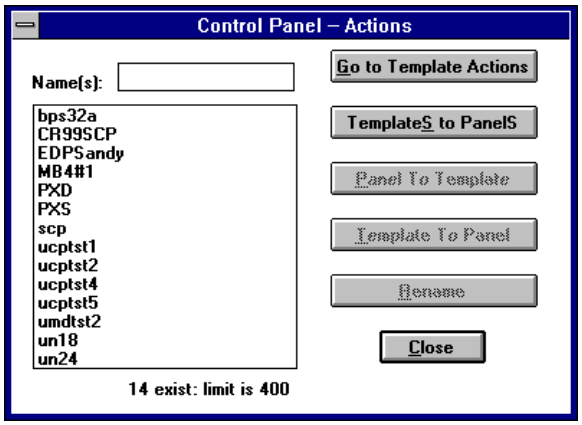
Control Panels

The Control Panel menu allows you to send control panel configuration information to and from control panels and to rename panels. It brings up a window which allows you to rename a panel or to transfer a control panel template from an active panel to a GUI panel template or from a GUI panel template to an active panel.

To Connect to Active Control Panels

1. Under the **ONLINE** menu select **CONTROL PANELS** to access the Control Panel Actions window.

Figure 3-9. Control Panel Actions Window



2. **NAME(S):** Select a Panel name from the menu list.
   Use a panel's ID function (panels which have ID buttons that are shared with another function such as the DEST/ID bill require four consecutive presses to activate the identification function) to identify the physical panel you want to rename, read a template from, or write a template to. Select that name from the menu list.

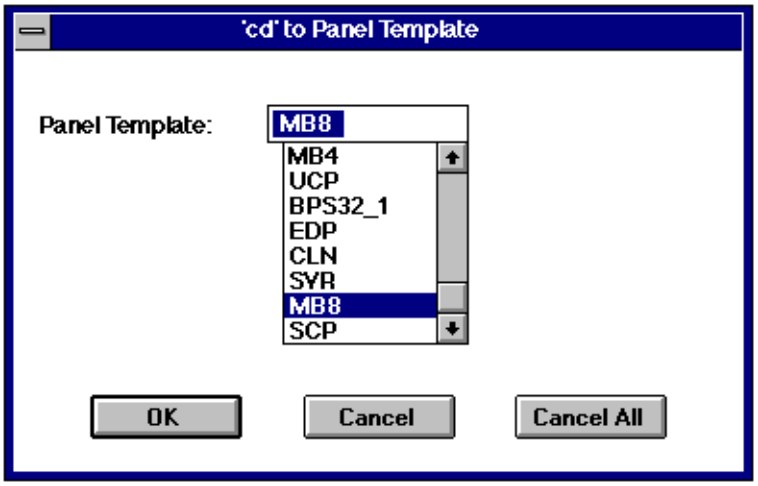
3. **GO TO TEMPLATE ACTIONS** Select to go immediately to the Panel Template Actions Window.

4. **TEMPLATES TO PANELS** Select to send all the configured and named templates to all the correspondingly named panels.

5. **PANEL TO TEMPLATE** Select to bring up a window which allows you to copy the configuration of the selected active control panel to a configured panel template.

Note The MB4 does not support retrieving the configuration from a panel to a panel template.

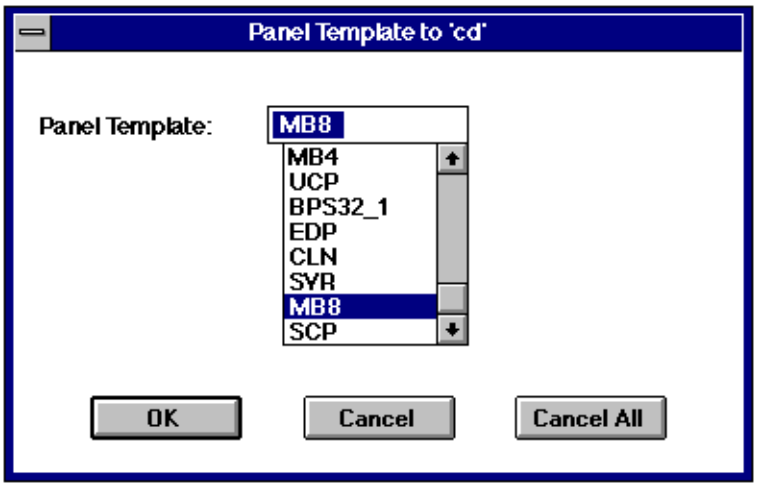
Figure 3-10. From Panel Template Window



- **PANEL TEMPLATE** Select a panel template to which the active panel's configuration will be copied.

6. **TEMPLATE TO PANEL** Select to bring up a window which allows you to send a panel template's configuration to an active control panel.

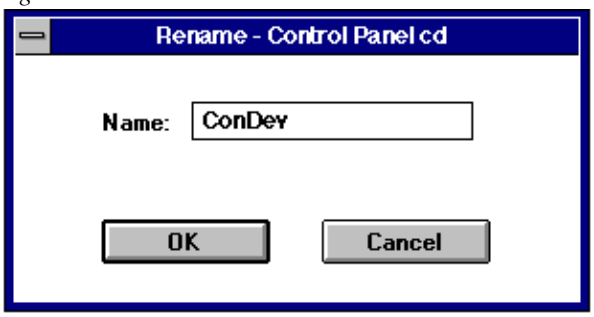
Figure 3-11. To Panel Template Window



- **PANEL TEMPLATE:** Select a panel template to copy to the selected active panel.

7. **RENAME** Select to rename a selected Control Panel.

Figure 3-12. Rename Control Panel Window



8. Click on **OK** to accept currently displayed entries.

Assignments

Assignments can be considered dynamic source exclusions. Sources can be assigned to destinations via the GUI or an external scheduling system. When the Assignment system is enabled, Takes can be done on the defined Assignment Restricted levels only if the Source is Assigned to the requesting Destination (or one of the other Destinations in its Room). Assignment affects Reserved Tielines and can also be used by the Tally System, if configured.

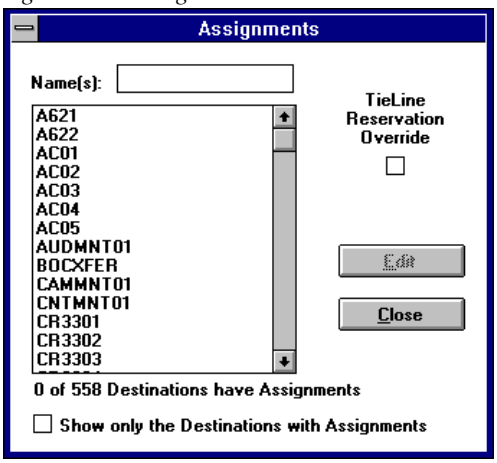
Cold Start Memory Loss

Assignment and Tieline Status information is stored in RAM and is lost if the system suffers a cold start. In the case of Tieline sources, this will cause the remote source name in the GUI Status Display and Series 7000 control panels to be replaced by the local matrix source name. The Tieline and remote source selection will come back up as they were, but they will appear to be lost. Perform another Take of the remote source name to correct the displays and restore the Tieline to In Use status.

To Modify Assignments

1. Under the **ONLINE** menu select **ASSIGNMENTS** to access the Assignments window.

Figure 3-13. Assignments Window



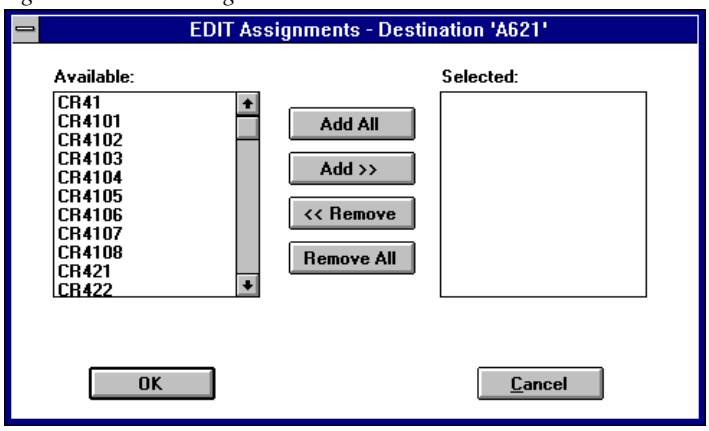
2. **TIELINE RESERVATION OVERRIDE:** This is an emergency flag. If enabled, all reserved Tielines will revert to first-come-first-served operation, allowing their control by all destinations – not just those to whom the Tieline was assigned. Remains in effect until this flag is disabled.

3. **SHOW ONLY THE DESTINATIONS WITH ASSIGNMENTS:**
If enabled, only Destinations with assignments will be listed.

4. **NAME(S):** Enter or click on a Destination name in the list to highlight it and cause it to appear in this window. (Or, double-click on a single name to go directly to the Edit window.)
If multiple destinations will have the same assignments, you can drag through the list to highlight multiple destinations. Then click **EDIT** to edit them all at once.

5. Select **EDIT**.

Figure 3-14. Edit Assignments Window



6. Select sources (one or more at a time) from the Available list

7. Use the **ADD** buttons to add the selected source(s) to the Selected list. Sources in the Selected list are assigned to the destination you are editing. To assign (Reserve) a Tieline to a Destination, assign its End Source to the Destination. Use the **REMOVE** buttons to remove a source(s) from the Selected list. The **ADD ALL** and **REMOVE ALL** buttons can be used to enter all or no sources in the selected list.

8. Click on **OK** to accept currently displayed entries.

Restore Assignments After an MCPU Cold Start

Assignments can be saved so that they can be restored after a MCPU cold start.

To Save Assignments

1. Verify that the **only** assignments currently in the system are the ones you want to save.

2. From the Diagnostic Terminal, type: **`wdstassign "hardasgn.cl"`**

   This file gets automatically written to the secondary MCPU as well

3. From the Diagnostic Terminal, type: **`copy 0 "smscold.ini"`** **`rdstassign "hardasgn.cl"`**<ctrl-D>

4. Then type: **`copy "smscold.ini" 0`**

   This allows you to view the file and verify the text above.

5. Then type: "**`peer"`**

6. Repeat step 3 for the secondary MCPU.

7. Type **`exit`** to return the Diagnostic Terminal to the primary MCPU.

This will cause the MCPU to read in these assignments on a cold start.

If the GUI sends a configuration to the MCPU, these assignments will be overwritten (in RAM). To get them back, type

`rdstassign “hardasgn.cl”`

from the Diagnostic Terminal, and you **may** also have to do this on the backup MCPU.

The read-in of the **`“smscold.ini”`** file is one of the last things that happens on a cold start. So things that depend on assignments to exist (for example, inferring usage of Reserved tielines during True Tally) won't work as desired if they happen before the file is read in. This is because Reserved Tielines' usage will not be reconstructed on a cold start.

Control

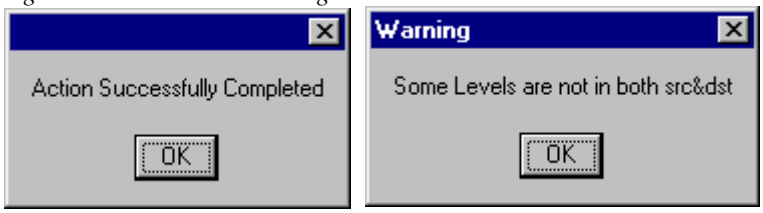
CONTROL allows you to perform Takes, Protect or UnProtect router Destinations, or execute Chops or Salvos. It is active only when the GUI is On–Line to the 7000 MCPU.

Control allows control of the 7000 in the following categories:

- Take (page 3-15)
- Take Salvo and Create From Status (page 3-16)
- Protect (page 3-18)
- UnProtect (page 3-19)
- Chop (page 3-20)

The system will inform you of successful completion or problems encountered using the windows shown in Figure 3-15.

Figure 3-15. Success or Warning boxes



If you approve the action and it is successfully completed, the **ACTION SUCCESSFULLY COMPLETED** window will be displayed.

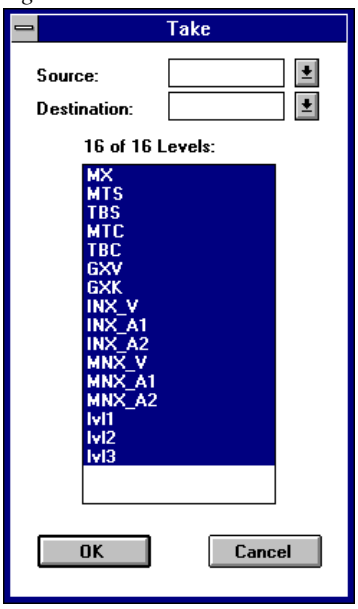
If you approve the action and there is a potential problem, the system will let you know with an appropriate message window.

Take

To Perform a Take Using the GUI

1. Under the **ONLINE** menu select **CONTROL** and then **TAKE** to access the Take window.

Figure 3-16. Take Window



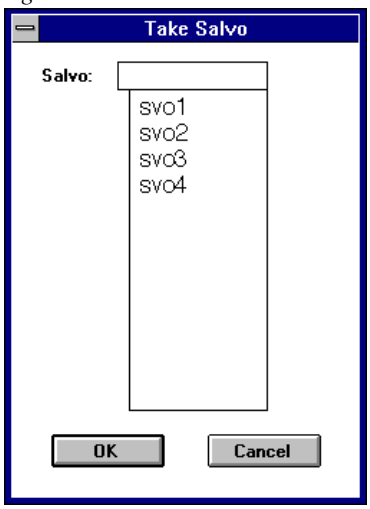
2. **SOURCE:** Pull down list. Select the Source you wish to take.
3. **DESTINATION:** Pull down list. Select the Destination you wish the Source taken to.
4. **N OF N LEVELS**: Select the Levels you wish involved in the take.
5. Click **OK** to initiate the Take.

Take Salvo

To Perform a Salvo Using the GUI

1. Under the **ONLINE** menu select **CONTROL** and then **TAKE SALVO** to access the Take Salvo window.

Figure 3-17. Take Salvo Window



2. **SALVO**: Select the Salvo you wish to initiate.
3. Click **OK** to initiate the Salvo.

New Salvo

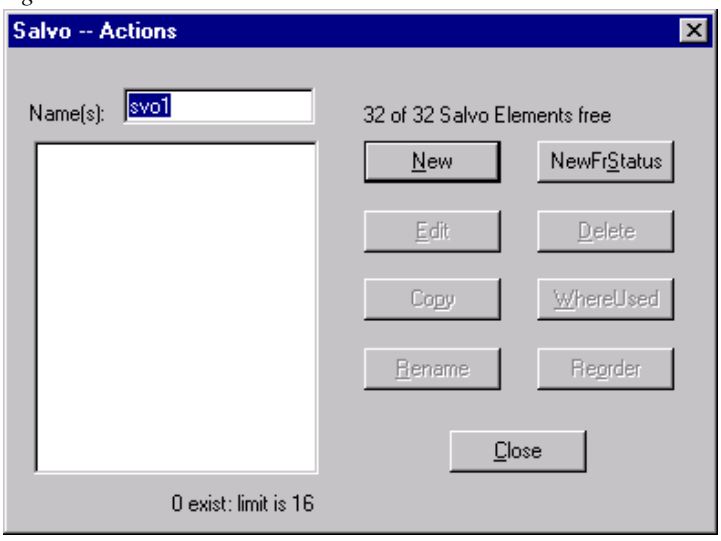
Online it is possible to save the status for a set of destinations and levels via an automatically created salvo. Executing the salvo will restore the status. These salvos are subject to the same limitations on number of salvo elements as are manually created salvos. For best results, observe the following restrictions when selecting the levels and destinations:

- If the salvo will restore status for a Data Matrix, select only the Data Matrix's Forward Level not the Data Matrix's Reverse Level, as status on the Reverse level will be restored automatically.
- If the system uses Tielines, do not select any Destinations that are Tieline Begin Destinations.
- If using a Port Router, do not select any Destinations that are the reverse view of a Port Router path (i.e., there's a Source with the same name as this Destination, and it is status on a [different] port router Destination). Save forward paths only.

To Capture Status as a New Salvo

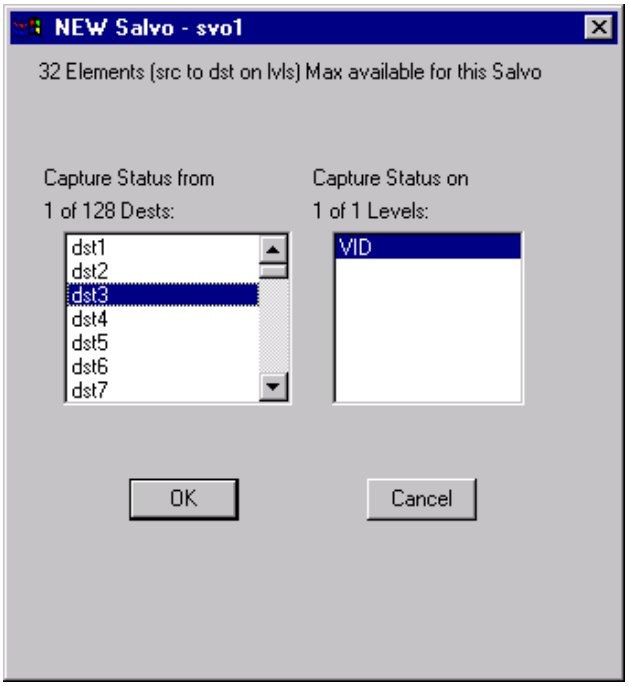
1. Select **SALVO** from the **CONFIGURATION** menu to access the Salvo Actions window.
2. Click on **NEWFRSTATUS**.

Figure 3-18. Salvo Actions Window



3. Select the levels and destinations to capture status on.

Figure 3-19. New Salvo Window



4. Click **OK**.

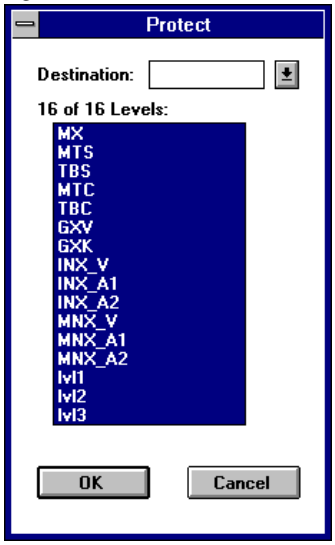
Protect

When applied by a control panel, a Protect will prevent changes to the selected Destination on the router that is associated with the control panel. If a Protect is applied by a control panel it must be removed by the same control panel. The same is true of Protects applied by the GUI. (Only the GUI can remove a GUI applied Protect.)

To Perform a Protect Using the GUI

1. Under the **ONLINE** menu select **CONTROL** and then **PROTECT** to access the Protect window.

Figure 3-20. Protect Window



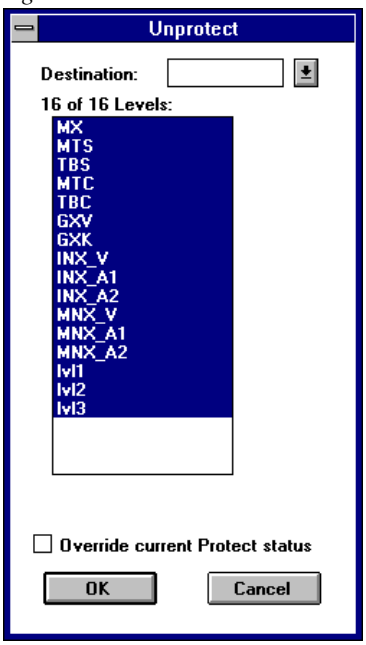
2. **DESTINATION:** Pull down list. Select the Destination to protect.
3. **N OF N LEVELS:** Select the Levels to protect on.
4. Click **OK** to initiate the Protect.

UnProtect

To Perform a UnProtect Using the GUI

1. Under the **ONLINE** menu select **CONTROL** and then **UNPROTECT** to access the UnProtect window.

Figure 3-21. UnProtect Window



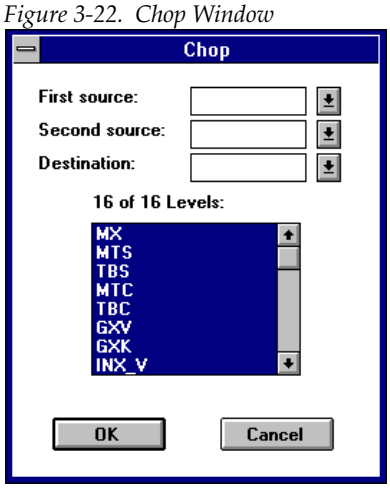
2. **OVERRIDE CURRENT PROTECT STATUS:** Click to override current protect status. This overrides protects placed at the control panel and should be used with extreme care.
3. **DESTINATION:** Pull down list. Select the Destination to unprotect.
4. **N OF N LEVELS:** Select the Levels to unprotect.
5. Click **OK** to initiate the Unprotect.

Chop

To Perform a Chop Using the GUI

1. Under the **ONLINE** menu select **CONTROL** and then **CHOP** to access the Chop window.

Figure 3-22. Chop Window



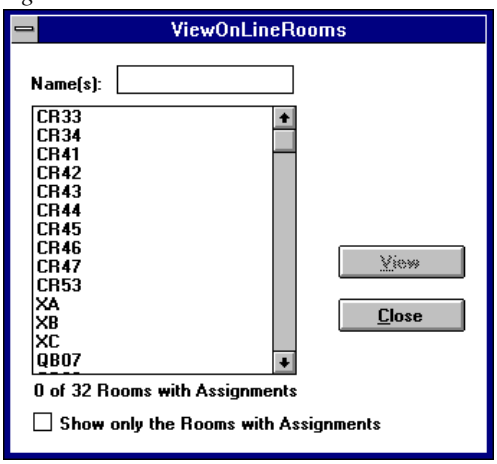
2. **FIRST SOURCE:** Pull down list. Select the first Source for the chop.
3. **SECOND SOURCE:** Pull down list. Select the second Source for the chop.
4. **DESTINATION:** Pull down list. Select the affected Destination.
5. **N OF N LEVELS:** Select the Levels to involve.
6. Click **OK** to initiate the Chop.
7. To stop Chopping, perform a Take to the affected destination.

View Room Assignments

If the Assignment System is enabled, Sources can be assigned to specific Rooms by external automation systems. The Series 7000 Tally System can be set to use Assignment as a condition of tally if desired. View Room Assignments allows you to determine which, if any, rooms are currently in use.

1. Under the **ONLINE** menu select **STATUS** and then **VIEW ROOM ASSIGNMENTS** to access the View OnLine Rooms window.

Figure 3-23. View On-Line Rooms Window

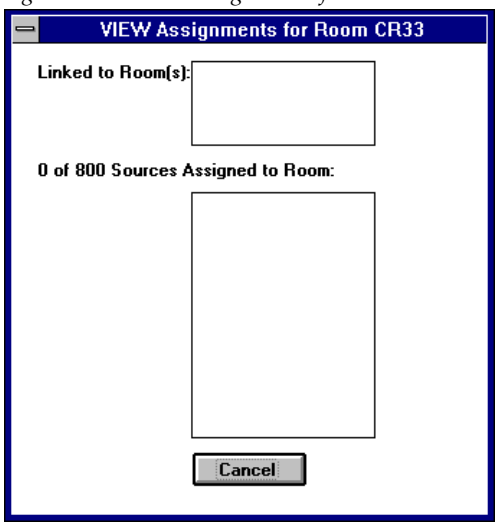


2. **SHOW ONLY THE ROOMS WITH ASSIGNMENTS:** Enable this to view only those rooms to which sources have been assigned.

3. **NAME(S):** Enter or click on a Room Name from the list to highlight it and cause it to appear in this window.

4. Click on **VIEW**. The Sources assigned to the Room selected are listed in the window.

Figure 3-24. View Assignments for Room Window

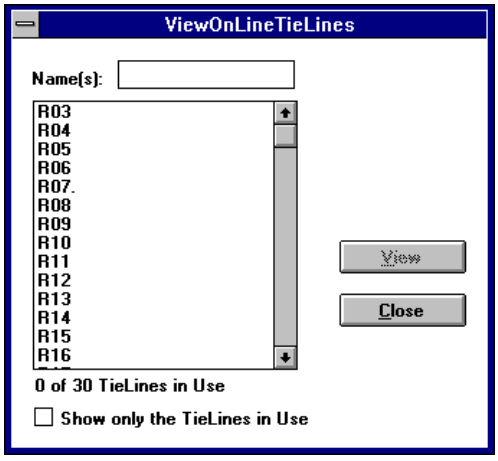


View Tieline Usage

View Tieline Usage allows you to determine which, if any, tie lines are currently in use.

1. Under **ONLINE** select **STATUS** and then **VIEW TIELINE USAGE** to access the View OnLine Tielines window.

Figure 3-25. View On-Line Tielines Window

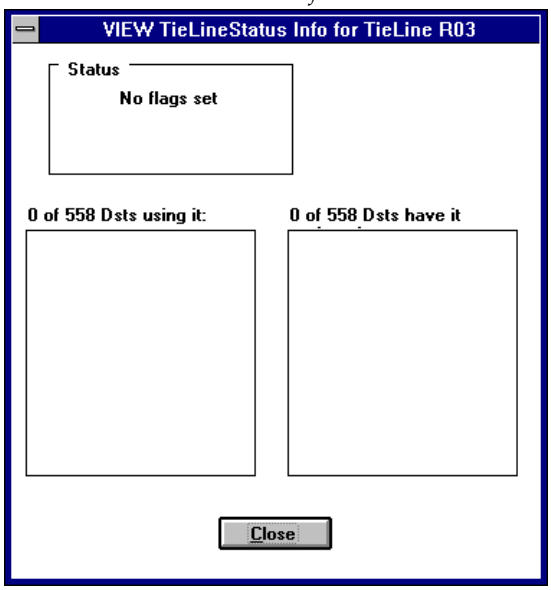


2. **SHOW ONLY THE TIELINES IN USE:** Enable this to view only those Tielines currently in use.

3. **NAME(S):** Click on a Tieline name from the list to highlight it and cause it to appear in this window.

4. Click on **VIEW**.

Figure 3-26. View Tieline Status Info Window



5. **STATUS:** This displays the status of the Tieline.
6. **N OF N DSTS USED:** Lists Destinations actively using this Tieline.
7. **N OF N DSTS ASSIGNED:** Lists assigned Destinations for this Tieline.
8. Click **CLOSE** to exit the window.

Maintenance Menu

The functions available under the Maintenance menu are intended for service and diagnostic uses and are not necessary for routine operation or configuration. These functions are performed automatically as configurations are sent to or retrieved from the Series 7000 MCPU.

These items are found by selecting **OnLine** and then **Maintenance** and one of the following:

- **Get ANCs and CPs**
  Retrieves information from the MCPU to refresh Node Controller and Control Panel information in the GUI.
- **Get Config from MCPU**
  Retrieves the entire configuration file from the MCPU.
- **Send Config to MCPU**
  Sends the currently open GUI configuration file to the MCPU.
- **Save Config on MCPU**
  Causes the configuration now in the MCPU to be stored in Flash memory, rather than held only in RAM.

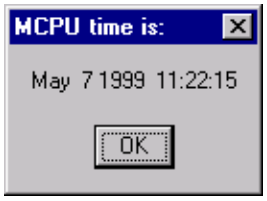


Figure 3-27. MCPU Time

- **Get MCPU Time**
  Displays the MCPU time.
- **Set MCPU Time**
  Sets the MCPU time to the GUI PC time.
- **Flush Inet:Enet Table**
  This is used to flush the MCPU's IP Address Ethernet address mapping table (ARP table). This will re-enable communication after switching MCPU modules. This feature is used because even if the new MCPU's IP address is set to match the old one, its Ethernet address is still different, and this difference can make other devices unable to communicate with this MCPU over Ethernet. Clearing the other devices' ARP tables will re-enable communication.

Section 4

Configuring Options

Introduction

The SMS-7000 can include Optional Interfaces which will need to be configured to work with the Matrix's configuration.

Port Router Interface

Port Router (NVision Models NV3128 & NVision3256)

When using a Port Router with the SMS 7000 system, observe the following limitations:

No Port Routers over TieLines.
No Chopping on Port Router Levels.
A Remote MCPU Physical Matrix can't be configured to be a Port Router.
A Port Router Level can't have married virtual matrices.
A Port Router Physical Matrix can't be divided into more than one virtual matrix.
Sources can't share inputs on a Port Router Level.
No **ONE TO MANY** connections.
No monitoring output.
No time stamping: a Take will change the port connections 2 to 3 fields before changing any local SMS 7000 matrix crosspoints.
The Visual Status Display may only show that two devices are connected, not which device is the controller or which device is being controlled.

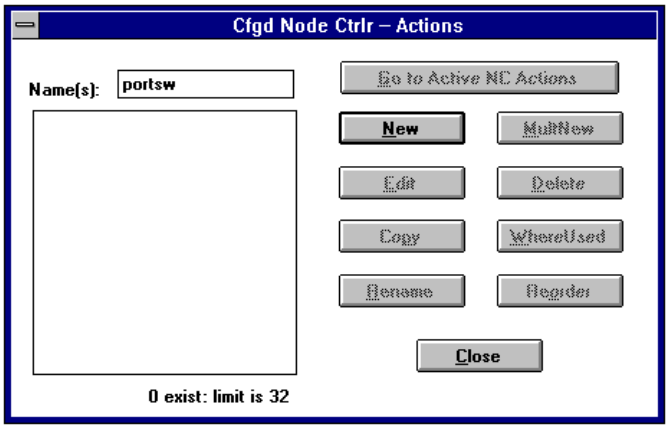
Configuration

To Configure the Node Controller for a Port Router

1. Under the **SETUP** menu select **NODE CONTROLLERS** to access the Cfgd Node Ctrlr Actions window.

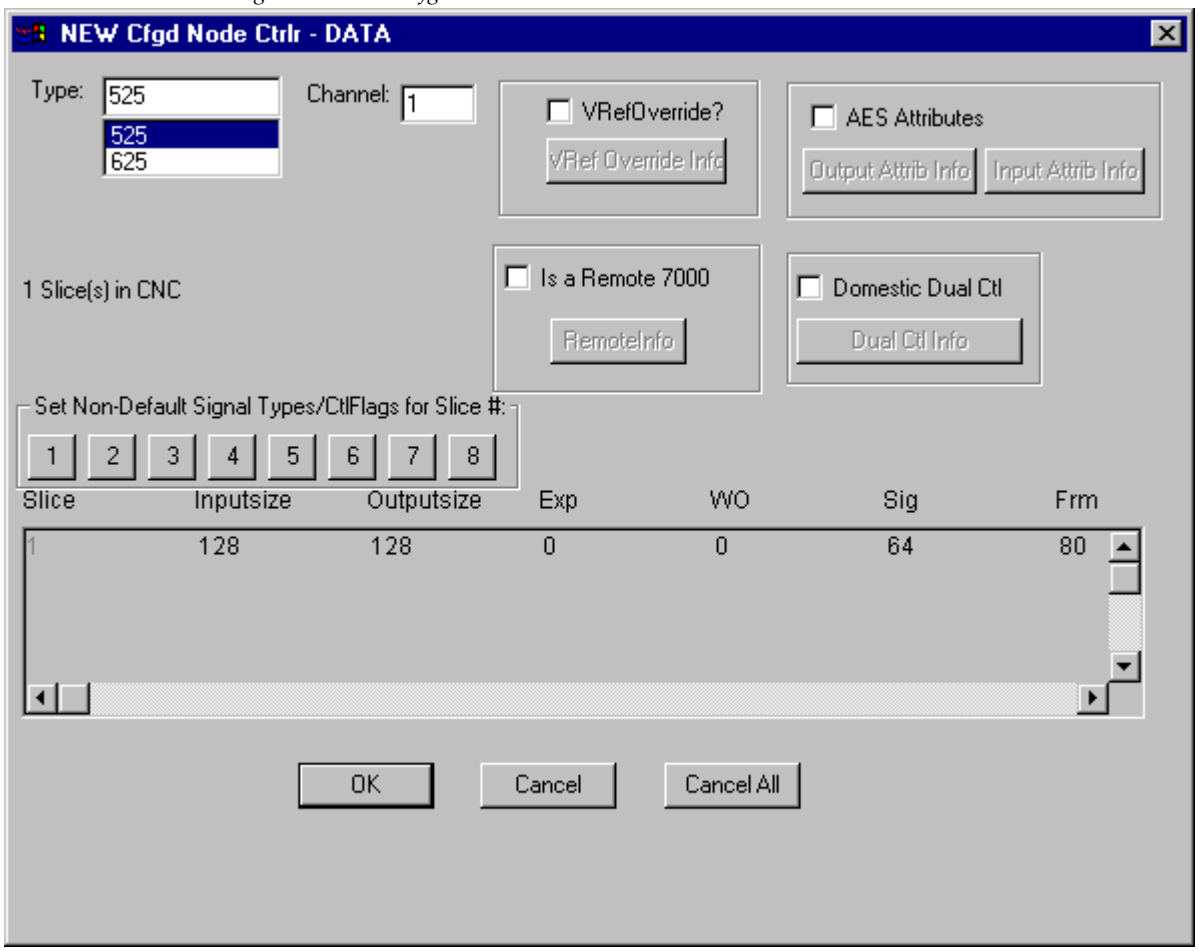
2. Enter a name for your Port Router.

Figure 4-1. Port Router Node Controllers Actions Window



3. Select **NEW**.

Figure 4-2. New Cfgd Node Ctrlr Window



4. **TYPE:** This setting will not be used, since the Port Router Type is determined by the REF signal connected to the Port Router.

5. **CHANNEL**: There are two reference inputs to the MCPU (it is capable of using NTSC for some Node Controllers and PAL for others). The inputs are labeled Video Ref 1 and Video Ref 2. The signal connected at Video Ref 1 and 2, tells the MCPU which input to use for this Node Controller. 1 = Use input Video Ref 1; 2 = Use input Video Ref 2

6. **SLICE INFO WINDOW:** Multi Column Window. The Port Router Node Controller should have only one slice.
   - **INPUTS**: Number of ports in the Port Router.
   - **OUTSIZE** Number of ports in the Port Router.
   - **EXP**: Not used with Port Routers. Default = 0
   - **WO** (Which Outputs) The Port Router will always use 0 here.
   - **SIG:** Pull down list. Select signal type 64.
   - **FRM** Pull down list. Select frame type 80.

7. **VRef OVERRIDE** Not used with a Port Switch Router

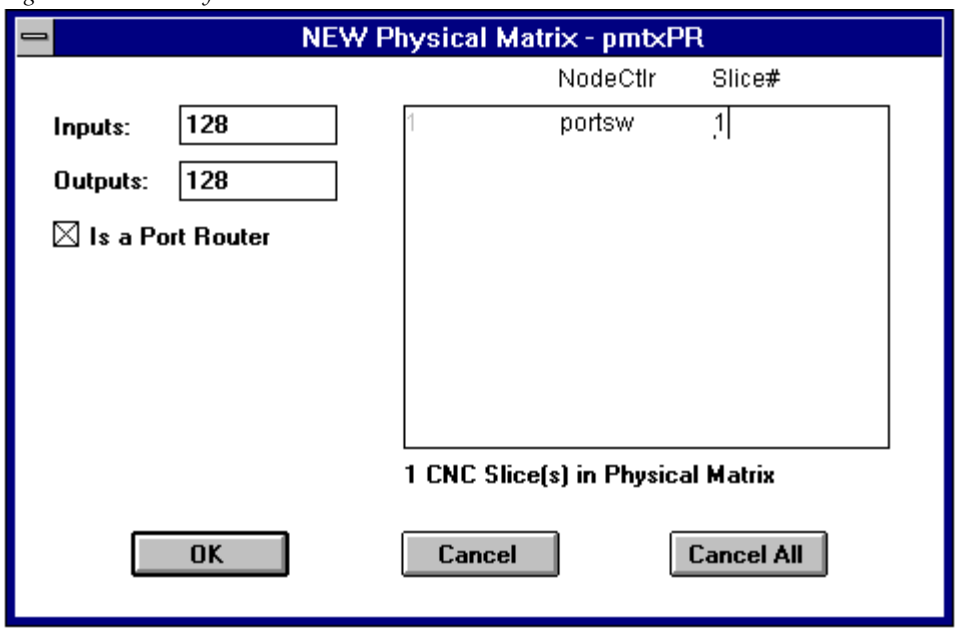
8. The **SET NON-DEFAULT SIGNAL TYPES/CTLFLAGS** should not be used.

9. Click on **OK** to accept currently displayed entries.
   Click on **CANCEL** to close the current dialog box without accepting changes.

Physical Matrix

When you create a Physical Matrix for your Port Router, check the **IS A PORT ROUTER** box. See *Physical Matrix* on page 2-26 for details.

Figure 4-3. New Physical Matrix Window



Virtual Matrix

Create a single Virtual Matrix using the Physical Matrix for the Port Router. See *Virtual Matrix* on page 2-31 for details.

Level

Create the Level for the Port Router. See *Levels* on page 2-33 for details.

Sources and Destinations

Create Sources and Destinations to use with your Port Router. See *Sources* on page 2-38 and *Destinations* on page 2-43 for details.

- **PORT** is a bidirectional communications connection.
- **SOURCE** is a controlled device, typically the device supplying video.
- **DESTINATION** is a controlling device, typically the device requesting the video Source.
- **DEVICE** can be both a controlling device and a controlled device (although not both at the same time). To allow control in both directions, the device must be configured as both a Source and a Destination.

Example

Port Router system contains:
2 VTRs (can be controlling or controlled), on Ports 4&5, a Machine Control Panel (controlling the VTRs) on port 7, and an Editor (a controlling device), on Ports 2&6.

Configure the Port Router to have

2 Sources
VTR1 with input 4
VTR2 with input 5

5 Destinations
VTR1 with output 4
VTR2 with output 5
Edit1 with output 2
Edit2 with output 6
MCP with output 7

Operation

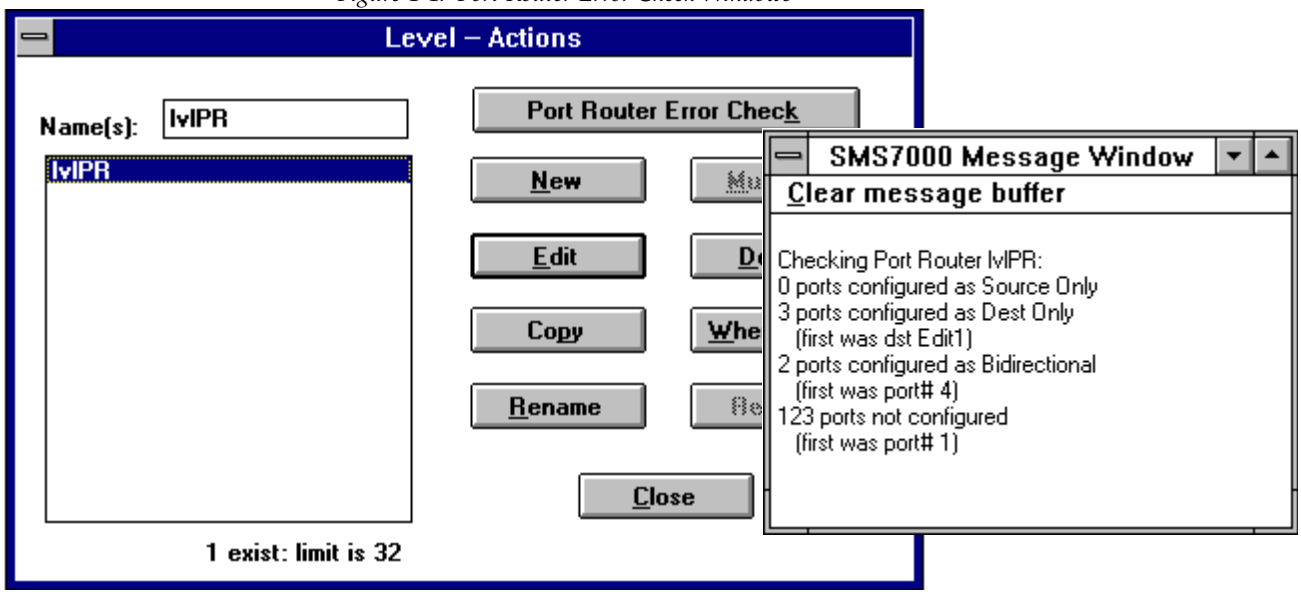
To feed Edit1 with VTR2, Take Source VTR2 to Dest Edit1.
To enable the Machine Control Panel to control VTR1, Take Source VTR1 to Dest MCP.

To Verify the Configuration

1. Open a Message window by selecting **MSG WINDOW** under the **HELP** menu.
2. Open the Levels window by selecting **LEVELS** under the **SETUP** menu.
3. Highlight the Port Router Level.
4. Click on the **PORT ROUTER ERROR CHECK** button.

   Descriptive information will appear in the Message window. You can now compare this information with your original intentions.

Figure 4-4. Port Router Error Check Windows



Kaleidoscope and Kadenza Interface

The Series 7000 interfaces to and allows the Kaleidoscope and Kadenza systems to control a portion of the Series 7000 as a Source Selector. (This manual uses the name KScope to refer to both of these systems.) The optional KScope Interface submodule is installed on the Series 7000 Node Controller module, and the Node Controller module is configured to assign specific Sources for KScope to access.

From the total number of Sources available on your system, the KScope Source Selector is able to choose a maximum of 32 video Sources and 32 Key Sources. When you configure the KScope Router, you select the 32 video and 32 Key Sources to be controlled by this router.

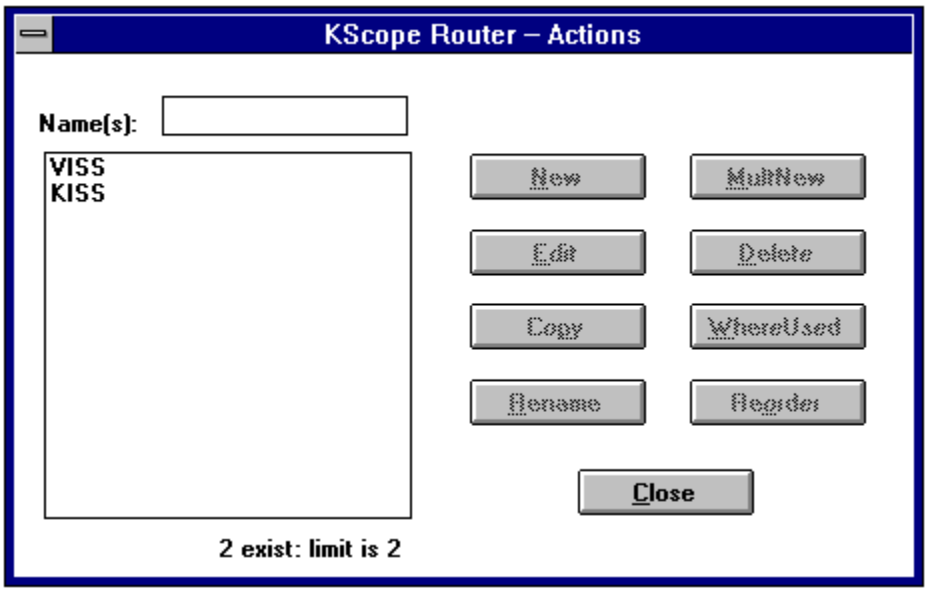
The KScope accepts a maximum of eight Video buses and eight Key buses (router Destinations). Each of the buses can select (take) one of the 32 Sources. The Series 7000 provides two 32x8 matrices called VISS (Video Input Source Selector) and KISS (Key Input Source Selector) to accommodate these buses.

When the KScope Interface is installed, it is preconfigured so that the first eight Series 7000 outputs (1-8) are reserved for the Video signal inputs to the Kaleidoscope/Kadenza processors. The second eight outputs (9-16) are reserved for the Key signal inputs to the Kaleidoscope/Kadenza processors. These inputs should be cabled accordingly. Refer to the Kaleidoscope/Kadenza manuals for specific cabling information.

To Configure the KScope Router

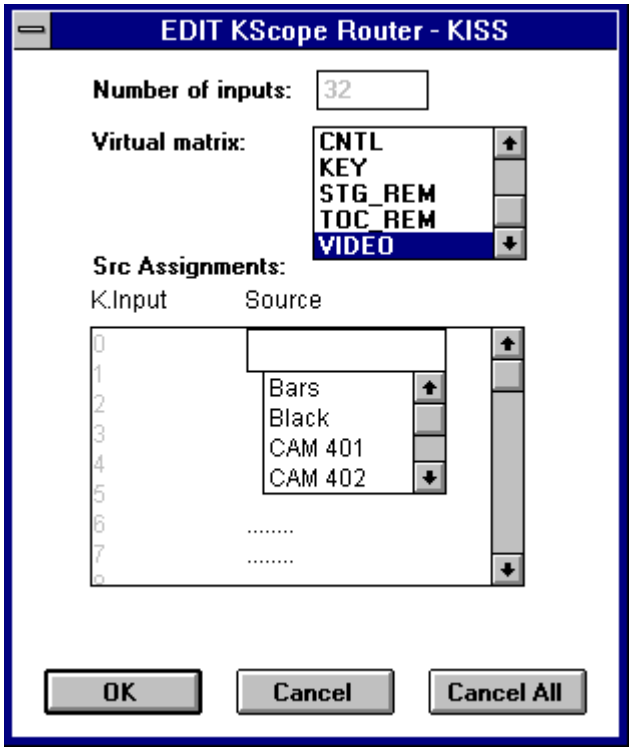
1. Under the **SETUP** menu, select **KSCOPE ROUTERS** to access the KScope Routers Actions window.

Figure 4-5. KScope Routers Menu and Actions Window



2. **NAME(S):** Click on **VISS** or **KISS**.
3. Select **EDIT**.

Figure 4-6. KScope Router Edit Window



4. **VIRTUAL MATRIX:** Select the Virtual Matrix associated with the KScope switcher from the drop-down list.

5. **NUMBER OF INPUTS** Indicates the number of inputs assigned to the KScope selector.

6. **SRC ASSIGNMENTS:** Select a valid Source name for each desired KScope input from the drop-down list.

Repeat for additional KScope selections.

7. Click on **OK** to accept currently displayed entries.
   Click on **CANCEL** to close the current dialog box without accepting changes.

Tally Module

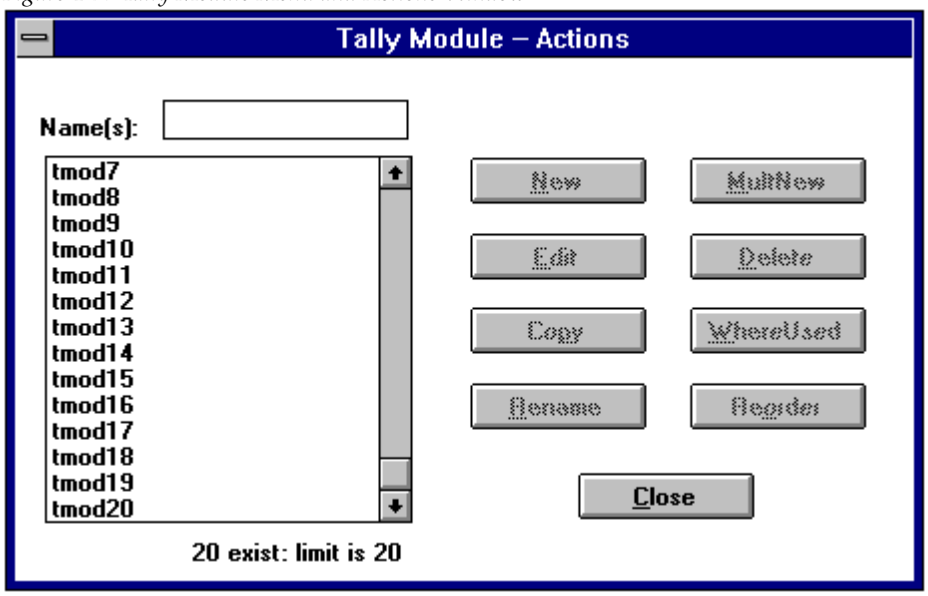
Tally Modules are optional. They are housed in a Grass Valley MAX Series frame. Each module has 16 opto-isolated inputs and 16 relay-closure outputs. The inputs and outputs are used to construct a tally system which visually or aurally alerts personnel when their router output is on-line, when their Source machine is selected, etc. See Section 4 of the *Installation* manual for installation instructions.

Tally Module addresses are set using a rotary switch on the front of each module. The rotary switch setting and the number appearing in the module name must match. For example, the Tally Module name **TMOD4** specifies that module with a rotary switch setting of four (4).

To Create a New Tally Module

1. Under the **SETUP** menu, select **TALLY** and then **TALLY MODULE** to access the Tally Module Actions window.
2. **NAME(S)** Default names, tmod1, tmod2, etc., must be used.
3. Click on **NEW**.

Figure 4-7. Tally Module Menu and Actions Window

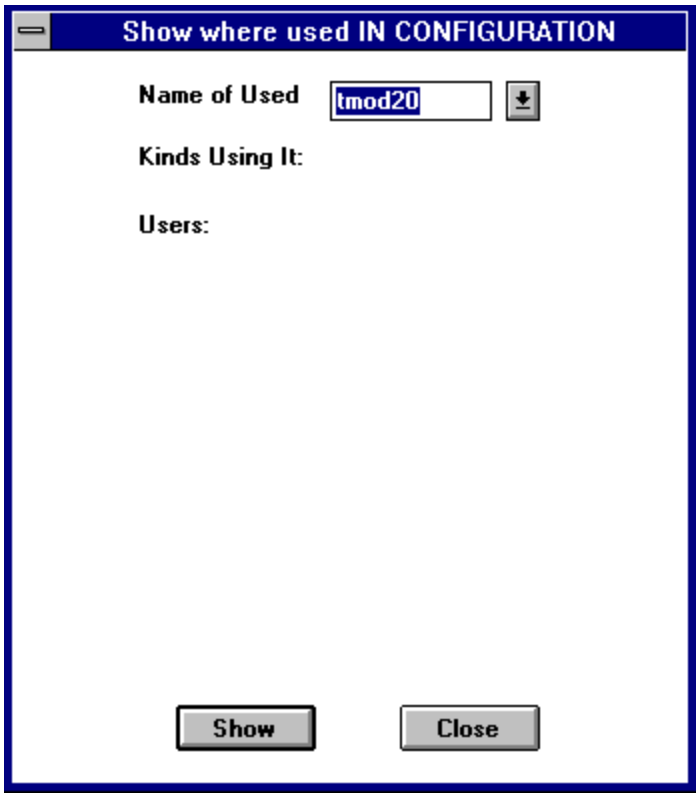


4. Click **Close** to accept currently displayed entries.
   Click **Cancel** to close the current dialog box without accepting changes.

To Delete a Tally Module

1. Select the last name in the names list.
2. Click on **WHERE USED** to verify that its relays and opto-isolators are not assigned.

Figure 4-8. Tally Module Where Used Window



3. Click on **SHOW** to obtain Kinds Using It: information.
4. Click on **CLOSE** to return to Tally Module Actions window.
5. Highlight the name.
6. Press **DELETE.**

Figure 4-9. Tally Module Delete OK Window

Note — Delete Tally Modules with extreme caution. Do not delete a module unless its name is at the bottom of the module list. If a module is deleted from within the body of the list, the index numbers of the modules listed after the deleted module will change when the configuration is saved and read in to the Series 7000 CPU. If this happens, you will have to reconfigure your tally system to correct the situation.

Direct Tally

Direct Tally, allows you to configure Tally Modules so that there is a direct 1:1 correlation between a particular opto-isolator input and a relay closure (output). The relay which is to respond to a particular opto-isolator input need not be on the same Tally Module as that opto input.

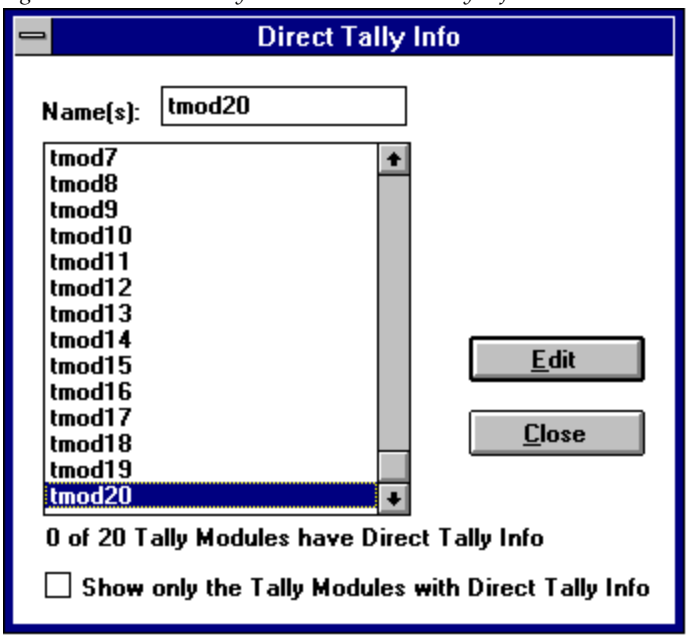
Relays which are assigned to Direct Tally are not available for additional assignment in conditional Source and Destination Tally systems.

It is advisable to keep a written record of your tally configuration so that you can make connections appropriately.

To Setup Opto-Isolator Input to Relay Correlation

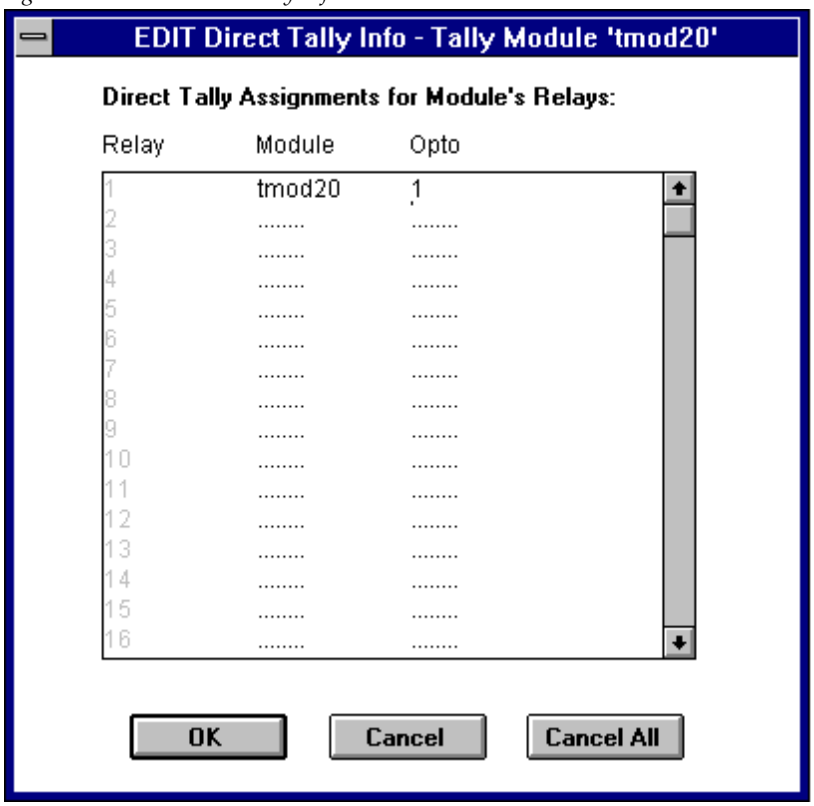
1. Under the **SETUP** menu, select **TALLY** and then **DIRECT TALLY** to access the Direct Tally Info window.

Figure 4-10. Direct Tally Menu and Direct Tally Info Window



2. Select a Module.
3. Click on **EDIT**.

Figure 4-11. Edit Direct Tally Info Window



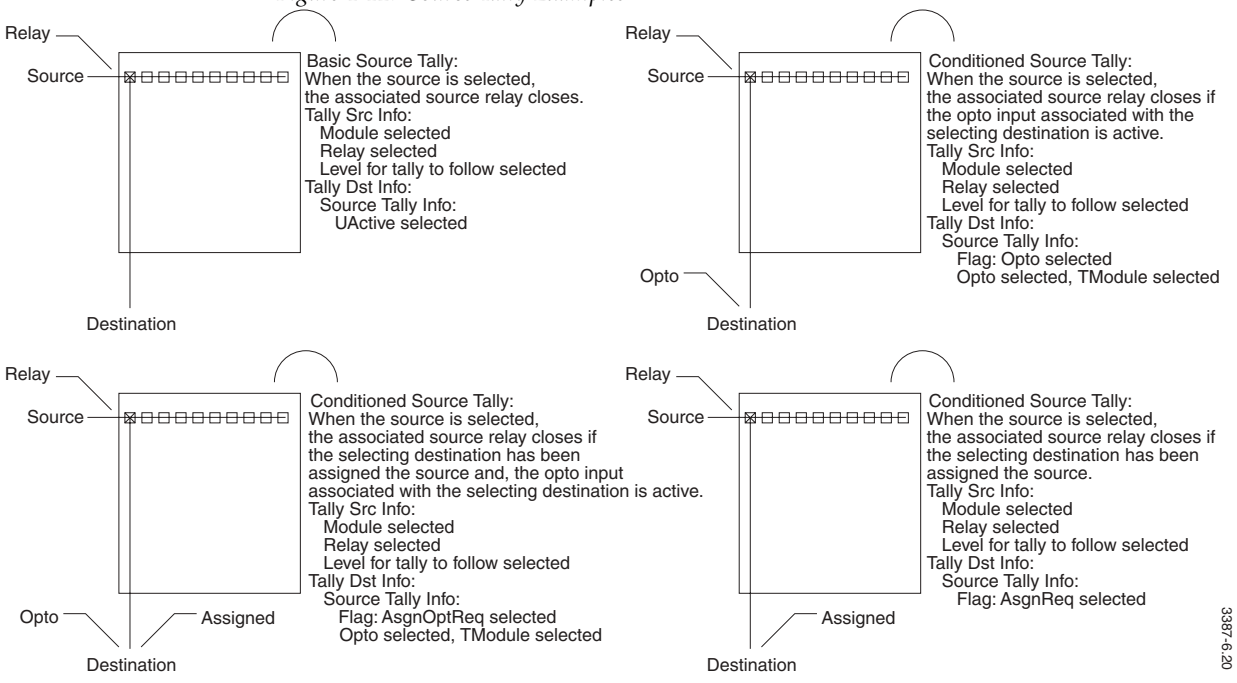
4. **DIRECT TALLY ASSIGNMENTS FOR MODULE'S RELAYS:** Multi-Column list.
   - **MODULE** Select the Tally Module from the drop-down list (does not have to be the module whose relay assignments you are editing)
   - **OPTO** Enter the opto-isolator input number which will cause that relay (on the module) to close.
5. Click on **OK** to accept currently displayed entries.
   Click on **CANCEL** to close the current dialog box without accepting changes.

Tally Source Info

Series 7000 software will allow you to set up two distinct source tally systems. Referred to as Tally System A and Tally System B, the two systems may not share opto-isolator inputs nor Source relay outputs (since there is only one relay per Destination, it can be shared and affected by both A and B systems). The two systems are typically set to respond to different sets of conditions and can therefore do two distinct jobs within the facility. In addition to two distinct source tally systems, 7000 also makes a distinction between Source and Destination tally.

Source Tally is closure of a relay assigned to the Source when that Source is selected to a Destination (as configured in this section). When you set up Source tally, you make selections in two different configuration areas: Tally Src Info (this section) and Tally Dst Info. In Tally Src Info, you assign a relay to a Source. In Tally Dst Info, you select the conditions under which a Destination will send tally to the Source. Figure 4-12 shows the four possible Source Tally setups and the necessary settings in the Tally Src Info and Tally Dst Info areas, and whether the Source must be Assigned to the Destination. If the Assignment feature is not enabled in your system, do not make Assignment a condition of tally.

Figure 4-12. Source Tally Examples



Because setting up Source and/or Destination Tally uses settings in two configuration areas, it is recommended that you make a written list of the Source names, and assigned tally modules, relays, and Levels to refer to when making settings in the Tally Destination Information area.

Because there is only one relay per Destination, it can be affected by both A and B system Source Tally selections.

Tally Source configuration uses the flags found in Table 4-1.

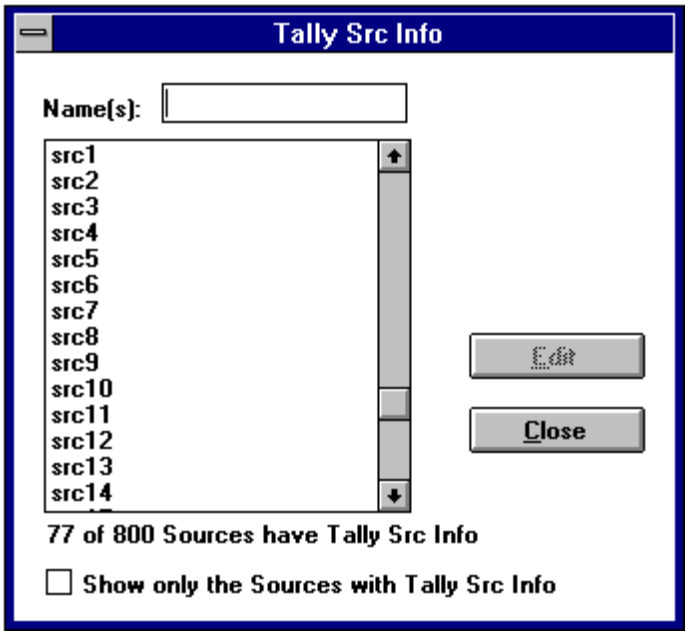
Table 4-1. Tally Source Flags A/B

Flags	Definition
None	Destination tally not active. No Destinations will be notified when this Source is selected.
STRel	When the Source is selected, and the associated Source tally relay closes, Destinations with this Source selected will be tallied.
AsgnReq	When the Source is selected, Destinations which have been assigned this Source will be tallied.
AsgnRelReq	When the Source is selected, and the associated tally relay closes, Destinations which have been assigned this Source will be tallied.
UActive	When the Source is selected, Destinations with this Source selected will be tallied - no other conditions.

To Configure a Source Tally

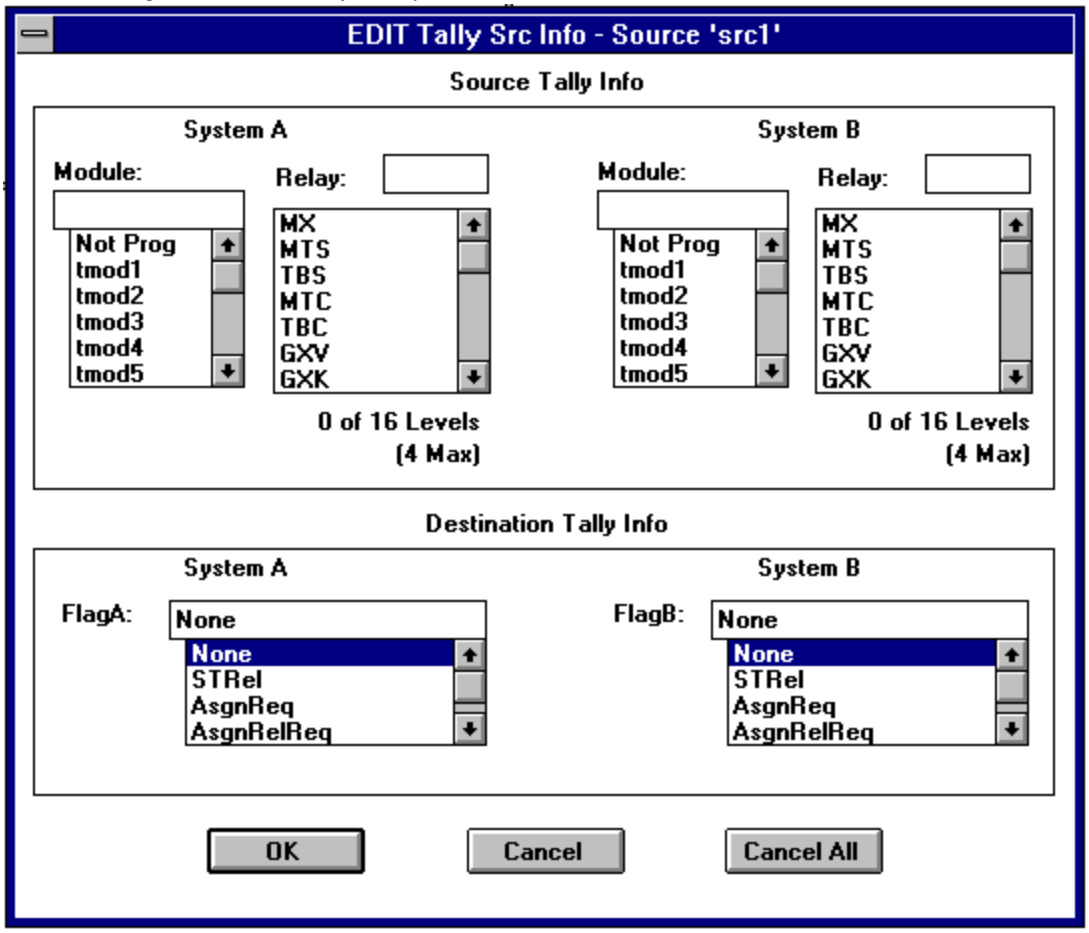
1. Under the **SETUP** menu, select **TALLY** and then **TALLY SOURCE INFO** to access the Tally Src Info window.

Figure 4-13. Tally Source Info Menu and Tally Src Info Window



2. Select a Source.
3. Click on **EDIT**.

Figure 4-14. Edit Tally Src Info Window



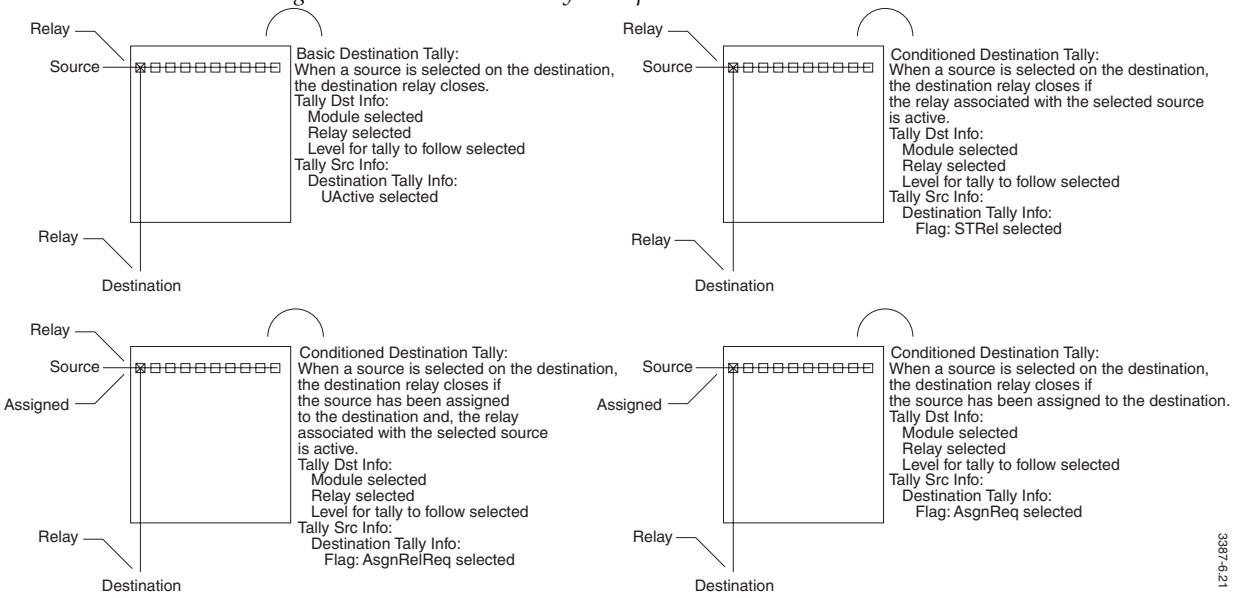
4. **SOURCE TALLY INFO:** Multi column window. Enter information for System A to correspond with System A information to be entered in the Tally Destination Info. System B is for an optional second system.
   - **MODULE:** Select the Tally Module on which the Source relay is located.
   - **RELAY:** Enter the number (1 through 16) of the relay you wish to use.
   - **N OF N LEVELS (4 MAX):** Select the Level(s) tally should follow.
5. **DEST TALLY INFO:** Multi Column window.
   - **SYSTEM A/ FLAG A:** Select condition for this Source to send a tally to a Destination. This applies to System A only.
   - **SYSTEM B/ FLAG B:** Select condition for this Source to send a tally to a Destination. This applies to System B only.
6. Click on **OK** to accept currently displayed entries.
   Click on **CANCEL** to close the current dialog box without accepting changes.

Tally Destination Info

Series 7000 software will allow you to set up two distinct Source tally systems. Referred to as Tally System A and Tally System B, the two systems may not share opto-isolator inputs nor Source relay outputs (only one relay can be assigned per Destination, therefore the Destination relay can be shared between the two systems). The two systems are typically set to respond to different sets of conditions and can therefore do two distinct jobs within the facility. In addition to two distinct Source tally systems, 7000 also makes a distinction between Source and Destination tally.

Destination Tally is closure of a relay assigned to a Destination when a Source is selected to that Destination. When you set up Destination tally, you make selections in two different configuration areas: Tally Dst Info (this section), and Tally Src Info. (You may also make Assignment a condition for tally – see Assignment earlier in this section.) In Tally Dst Info, you assign a relay to the Destination. In Tally Src Info you select the conditions under which a Source will send tally to the Destination. Figure 4-15 illustrates the four possible Destination Tally setups and the necessary settings in the Tally Dst Info and Tally Src Info areas, and whether a Source must be Assigned to the Destination. If you are not using Assignments, do not make assignment a condition of tally.

Figure 4-15. Destination Tally Examples



Because there is only one relay per Destination, it can be affected by both A and B system Source Tally selections.

Tally Destination configuration uses the flags found in Table 4-2.

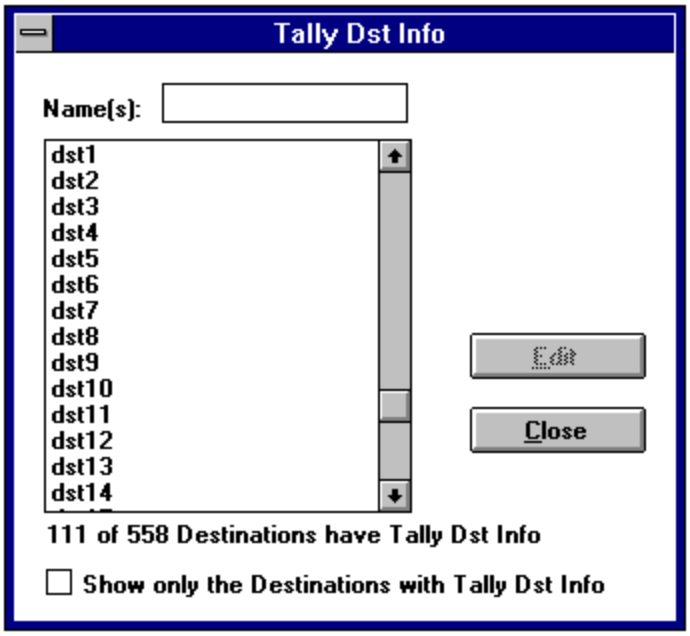
Table 4-2. Tally Destination Flags A/B

Flag	Definition
None	Source tally not active. No Sources will be notified when this Destination is selected.
Opto	When the Destination is selected, and the associated opto input is active, Sources will be tallied. This selection brings up the following sub-assignments: **OPTO:** Enter opto-isolator input number associated with this Destination. **OPTO TALLY MODULE:** Pull down list. Select the Tally module on which the opto-isolator input is located.
AsgnReq	When the Destination is selected, Sources which have been assigned to this Destination will be tallied.
AsgnOptReq	When the Destination is selected, and the associated opto input is active, Sources which have been assigned to this Destination will be tallied.
UActive	When this Destination is active, Sources will be tallied - no other conditions.

To Configure a Destination Tally

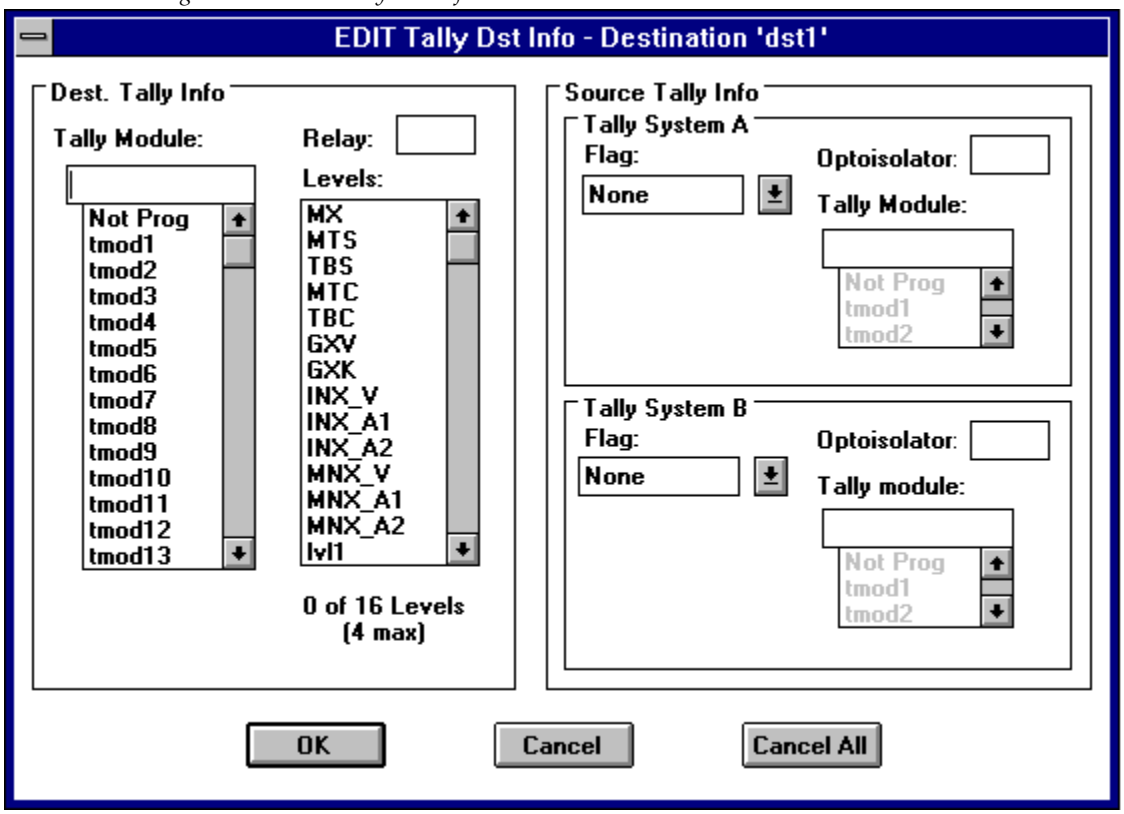
1. Under the **SETUP** menu, select **TALLY** and then **TALLY DESTINATION INFO** to access the Tally Src Info window.

Figure 4-16. Tally Source Info Menu and Tally Src Info Window



2. Select a Destination.
3. Click on **EDIT**.

Figure 4-17. Edit Tally Dst Info Window



4. **DESTINATION TALLY INFO**: Multi column window.
   - **MODULE:** Select the Tally Module on which the Destination relay is located.
   - **RELAY:** Enter the number (1 through 16) of the relay you wish to use.
   - **N OF N LEVELS (4 MAX):** Select the Level(s) tally should follow.
5. **SOURCE TALLY INFO:** Multi Column window.
   - **SYSTEM A OR B/ FLAG:** Select condition for this Destination to send a tally to a Source. This applies to related System only.
   - **SYSTEM A OR B/OPTOISOLATOR:** Enter number of optoisolator to use. This applies to related System with OPTO flag set.
   - **SYSTEM A OR B/TALLY MODULE:** Select Tally Module on which the optoisolator is located. This applies to related System with OPTO flag set.
6. Click on **OK** to accept currently displayed entries.
   Click on **CANCEL** to close the current dialog box without accepting changes.

Configuration for Control of Alien Matrices

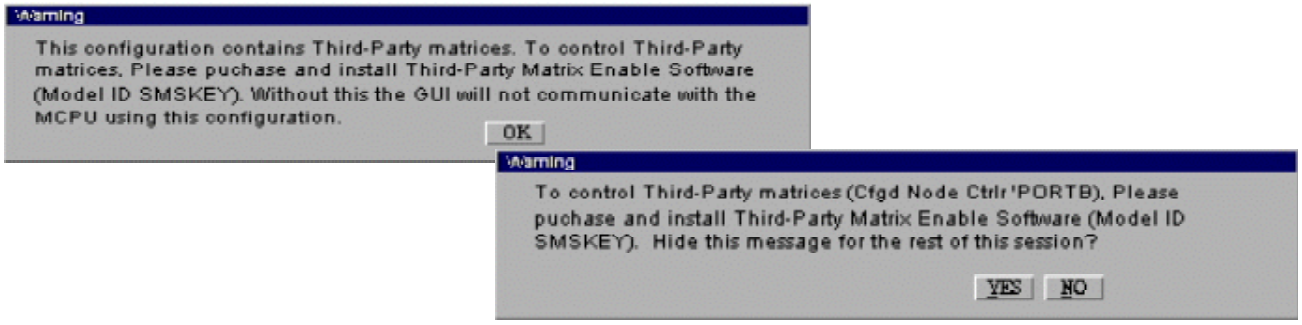
Use the Series 7000 GUI to configure the following items:

- Coprocessor on the Mezzanine card for Amezi use (the Global Serial, coax buses are also set up here)
- Asynchronous Mezzanine card (Cfgd Amezi) to set protocol and communication parameters
- Node Controller, both Active (ANC) and Configured (CNC)
- Standard Series 7000 Matrix Configuration

Third-Party Alien Matrix Enable

The Third-Party Enable Software Option allows configuration files containing third-party configuration information to be loaded into the MCPU. Matrices identified as third-party include any matrix that uses Datatek, ProBel, MGrid, or McCurdy as a protocol selection when configuring an Amezi. During configuration anytime that an entry is made that may be related to a third-party alien matrix a warning box appears.

Figure 4-18. Third-Party Alien Matrix Warning Boxes



Please contact Customer Service using the information found on the back of the title page to obtain the Third-Party Alien Matrix Enable Software Option.

Note When configuring interfaces to Performer, 20-TEN, or 440 routing switchers, please see special instructions on page 4-31.

Coprocessors on Mezzanines

Each mezzanine board has a coprocessor that requires configuration via the GUI. When a new mezzanine board comes on-line, the system MCPU must download a file for the specific function that board will perform.

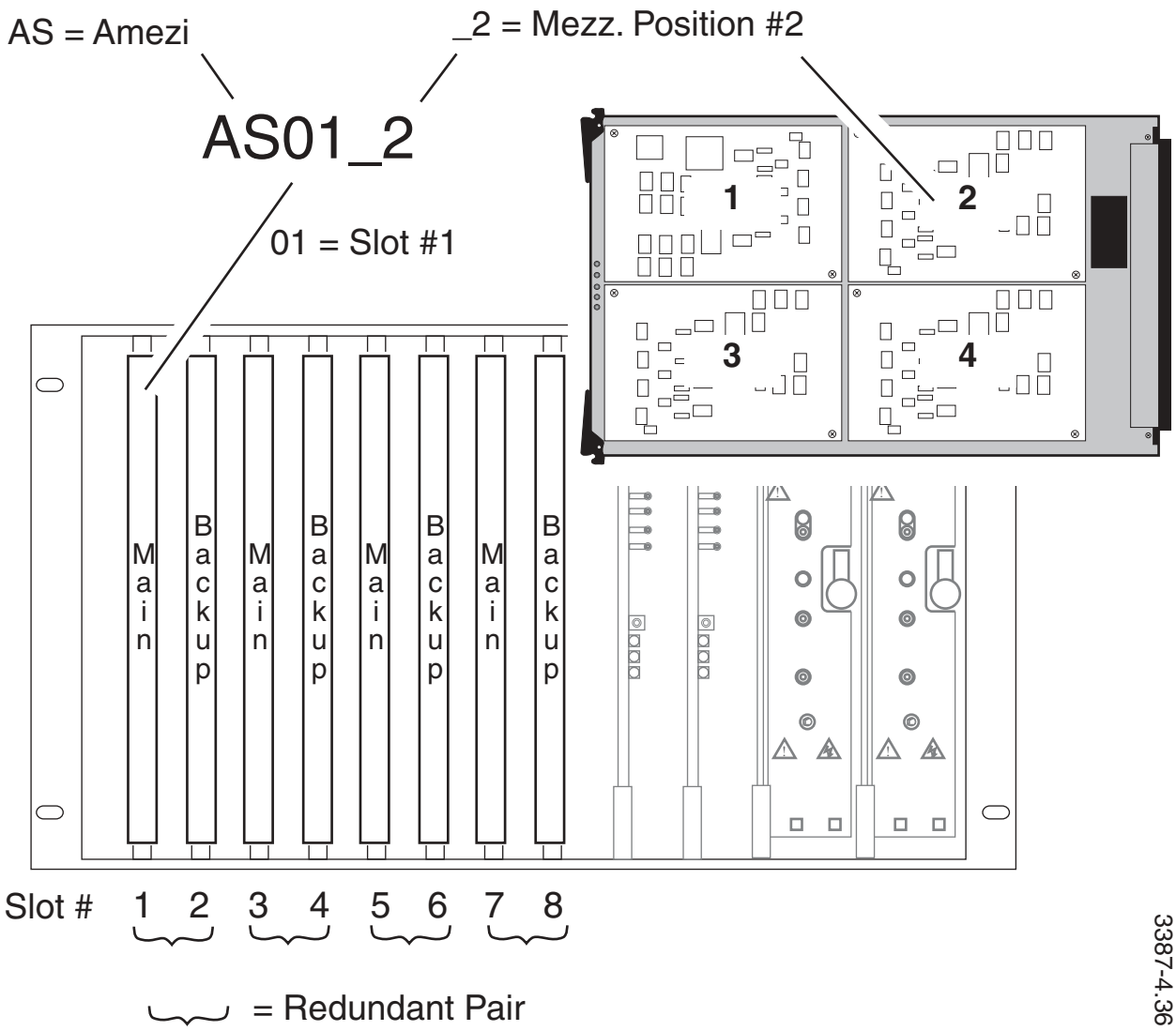
There are three possible files:

- Amezi.bin — for asynchronous mezzanine (serial control)
- CSOS.bin — for global serial channel (GSC) mezzanine (Control Panel or Node Bus)
- STMG.bin — for GSC mezzanine (Source Tally Manager see page 4-19)

When a mezzanine board comes on-line it is given a default name composed of three elements. Refer to Figure 4-19 for an example:

- Function — Asynchronous Mezzanine (AS), or Global Serial Channel for Control Panel, Node Bus, or Source Tally (GS)
- Slot — position in the Control Frame (01—08)
- Mezzanine Position (1—4)

Figure 4-19. Typical Default Mezzanine Name



When a Global Serial Channel (GS) is operating as a Source Tally Manager it needs the TM2 name to replace the GS slot_mezz format see page 4-19.

Bringing New Coprocessors On-line

To bring new coprocessors on-line you may either:

- Pre-configure your system for the addition

  Or

- Allow the system to automatically add coprocessor records

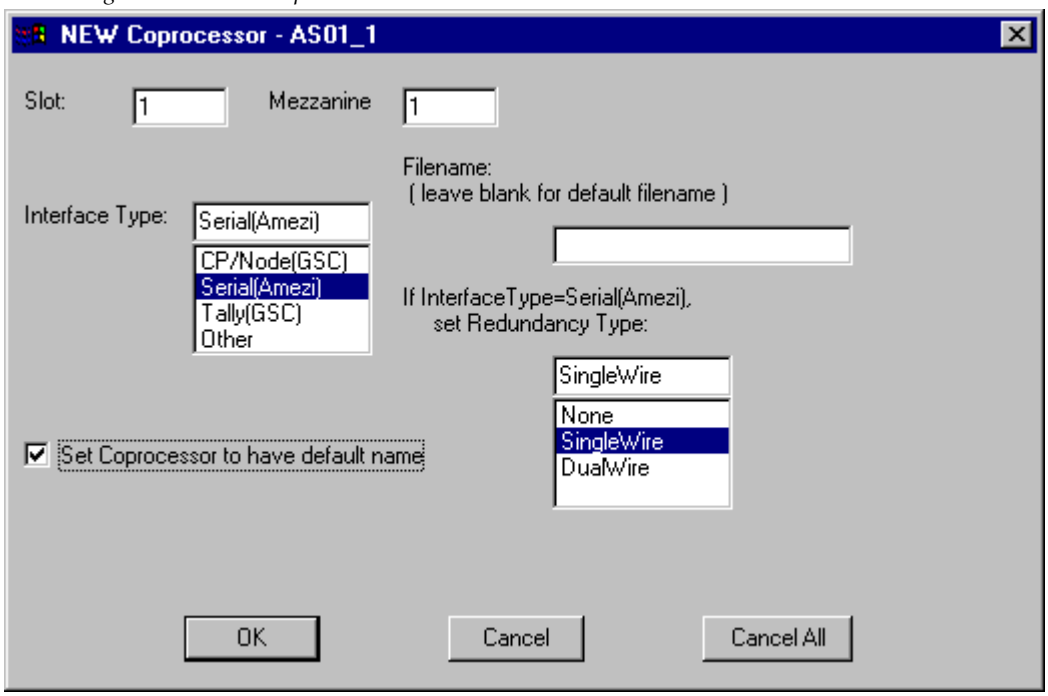
Pre-Configure New Coprocessors

If you know the Slot# (its slot position in the control frame, see Figure 4-19), the Mezzanine# (its position on the CIF board — 1 of 4), and the Interface Type of the coprocessors in your system you can create default names.

To Pre-Configure for the Addition of New Coprocessors

1. Under the **Setup** menu, select **Coprocessors** to access the Coprocessor Actions window.
2. Enter name of coprocessor to configure.
3. Click **New**.

Figure 4-20. New Coprocessor Window



4. Enter the **Slot#**, **Mezzanine#**, and **Interface Type**.
5. Click **Set Coprocessor to have default name** and leave the **Filename** field blank or, alternatively enter a **Filename** and leave the **Set Coprocessor to have default name** option unchecked.
6. Select a **Redundancy Type** if the coprocessor is an Amezi.
7. Click **OK** to accept currently displayed entries.
   Click **Cancel** to close the current dialog box without accepting changes.

When finished, you can proceed to *Install the Coprocessor Interface (CIF) Hardware*.

Automatically Add Coprocessor Records

The system will automatically add records for new coprocessors, when the GUI is online.

In systems equipped with version 5.37 or earlier software it is necessary to direct the MCPU to perform this function.

To Automatically Add Coprocessor Records (Version 5.37 or earlier)

1. Under the **Setup** menu, select **Coprocessors** to access the Coprocessor Actions window. Ensure that ONLY the coprocessors that are actually present, are listed. If any are listed, but are not actually present, they must be deleted at this time. After making any necessary deletions, carefully note the names of the coprocessors actually present.
2. Save the configuration to the GUI computer hard drive.
3. Observe the MCPU coprocessor record to be certain the deletions which may have been made above, actually occurred. This is done using the maintenance terminal **`ls coproc`** command. If any non-existing coprocessors continue to be listed, use the GUI under the **ONLINE** menu, select **MAINTENANCE** and then **SEND CONFIG TO MCPU** to send your modified configuration to the MCPU and re-check to be certain the record is accurate.

Install the Coprocessor Interface (CIF) Hardware

1. If adding a coprocessor mezzanine to an existing Communications Interface module (CIF), remove the module and carefully install the new mezzanine.
2. If adding a new CIF module and one or more new mezzanines, carefully note the type of each mezzanine and the CIF position in which it is installed.
3. Insert the CIF into an appropriate control frame slot. If you use a redundant pair of CIF modules, ensure that each is configured the same as its companion and insert them in adjacent slots (that is, 1&2, 3&4, 5&6, and so on.)

   Do not be concerned if multiple red indicators are illuminated on the CIF module. The number of illuminated indicators will depend upon whether the CIF is entirely new to the system, or one or more new mezzanines have been added to a CIF with previously-configured coprocessors.

To Configure the CIF

1. Under the **ONLINE** menu, select **MAINTENANCE** and then **SEND CONFIG TO MCPU**.

   Observe the indicators on the CIF module; as mezzanines come online their indicators will cease to be steadily illuminated and will flash intermittently (except for the large red LED at lower edge of the module which will extinguish), indicating proper operation.

2. Check either of the following

   a. Look at the Visual Status Display (VSD) at the bottom right corner

      If the display indicates **BKUP CONN BKUP SYNC**, then BOTH MCPUs will save config.

      If the display indicates **BKUP CONN** only, then the backup MCPU will **not** save config.

      If the display is blank, then the backup MCPU is not present.

   b. Alternatively, look at the MCPU's LED display

      If the 5th LED from the bottom of DS5, 6 is OFF on BOTH MCPUs, then they are in sync and BOTH MCPUs will save config.

      If the 5th LED from the bottom of DS5, 6 is ON on either or both MCPUs, then the backup MCPU will NOT save config.

3. Under the **ONLINE** menu, select **MAINTENANCE** and then **SAVE CONFIG ON MCPU FLASH**.

4. Under the **Setup** menu, select **Coprocessors** to access the Coprocessor Actions window. Check the list of coprocessors present in the system, the newly-added coprocessors should appear on the list.

   The default configurations automatically downloaded from the MCPU for AS and GS coprocessors are:

   - AS = amezi.bin, single-wire redundancy
   - GS = csos.bin, single-wire for CP or Node Bus interface

   GS Coprocessors are set for Control Panel or Node Bus use and only need to be changed for Tally Bus (TM2) use (or Renaming). Redundancy Type is always None.

   - TM2=stmg.bin for Source Tally Manager Interface

   AS (Amezi) Coprocessors will need only to be configured for Redundancy Type (and Renamed if necessary).

5. Configure a mezzanine for an Amezi used with a specific Alien Matrix or External Control Device by highlighting the desired Amezi (designated AS0x_x).

6. Click **EDIT** to set up Redundancy Type.

   Set the Redundancy Type for the Alien Matrix you're controlling.

Figure 4-21. Edit Coprocessor Window

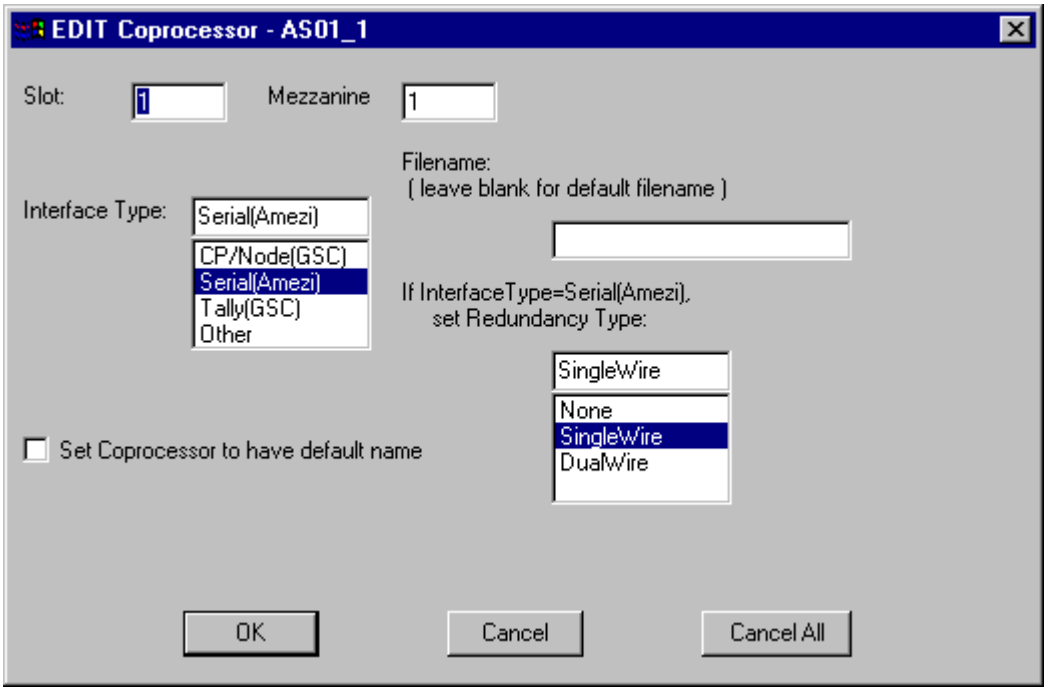


Table 4-3 lists the redundancy types supported for common 7000 Alien Matrix interfaces. Detailed redundancy and operation information for each of the Interfaces listed is presented in Appendix B in this manual. If you use dual-wire (two cables) you will need to connect to the proper RP type discussed earlier (RP6 or RP7 support dual-wire redundancy).

Note When configuring interfaces to Grass Valley Performer, 20-TEN, or 440 routing switchers, please see special instructions in the Configuration manual

Table 4-3. Suggested Alien Matrix Redundancy

Interface Type	Connection Type
Datatek 2000	Single Wire
Datatek 2400	Dual Wire
ProBel System 3	Single or Dual Wire

Interface Type	Connection Type
HX/TCI	Single or Dual Wire
440	Single Wire
Performer	Single Wire

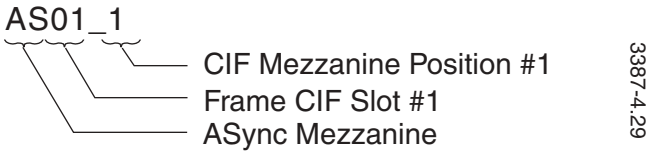
Interface Type	Connection Type
20-Ten	Single Wire
Native Protocol	Single or Dual Wire

7. Click on **OK** to accept currently displayed entries.
   Click on **CANCEL** to close the current dialog box without accepting changes.

Configuring the Asynchronous Mezzanine (Cfgd Amezi)

A specific Amezi card was designated for this Interface when coprocessors were configured (see *Coprocessors on Mezzanines* on page 4-20). The Coprocessor Actions window in the GUI will show the Amezi cards in the system using the default names in the form shown below (assuming the name has not been changed from the default):

Figure 4-22. Amezi Name



If the CIF module was in Slot #3 and the Amezi was in Position #2, the default name would be: **AS03_2**

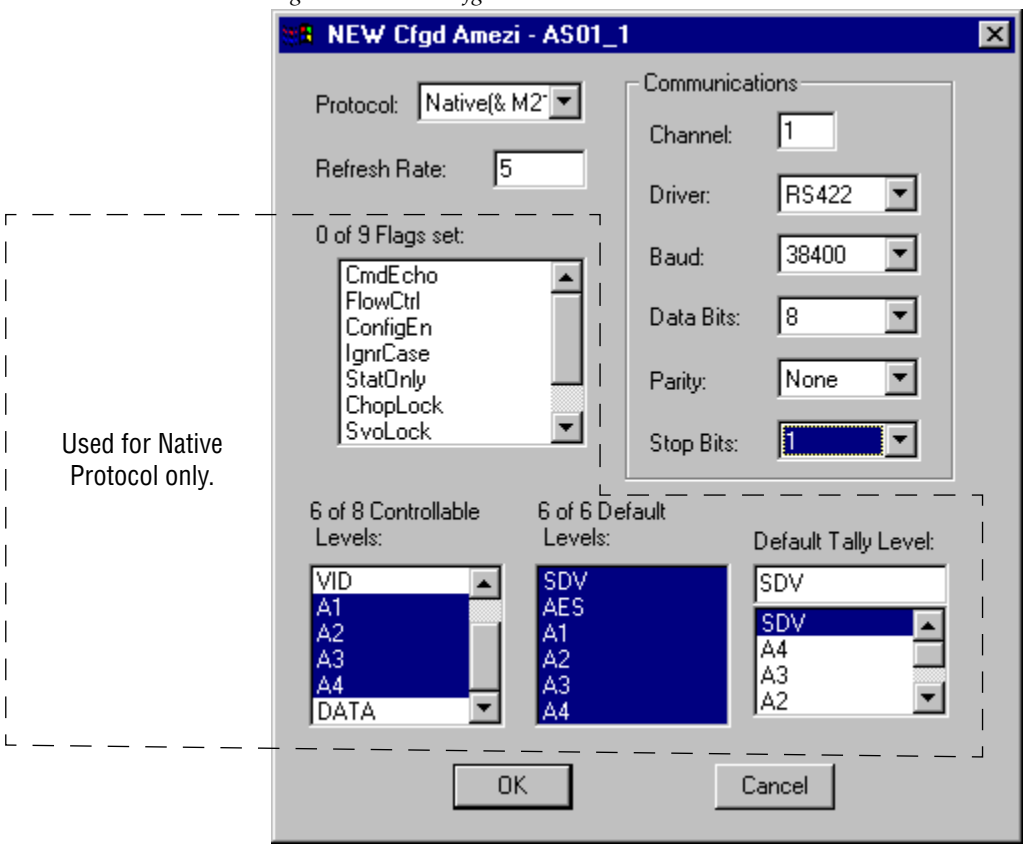
This is the Coprocessor name for the Amezi. Use this name when creating the Amezi Configuration (Cfgd Amezi) in the next step. The Amezi name in the Configured Amezi must be the same as the Coprocessor Amezi Name. If you change the Coprocessor Amezi Name during Coprocessor Configuration, you must change the name in the Configured Amezi record to match (and vice versa).

If you have redundant CIF modules, the redundant Amezi will be configured automatically with the same configuration information used for the primary.

To Configure an Amezi

1. Under the **Setup** menu, select **Cfgd Amezi** to access the Amezi Actions window.
2. Enter the Coprocessor Amezi name.
3. Click **Edit**.

Figure 4-23. Edit Cfgd Amezi Window



4. Set the communication parameters for the specific interface using Table 4-4.

Table 4-4. Suggested Communications Protocols

	Grass Valley Group				Non-Grass Valley Group		
Protocol	**HX/TCI**	**440**	**Performer**	**20–Ten**	**DataTek**	**DataTek**	**ProBel System 3**
Refresh Rate	7	note [a]	note [b]	note [c]	10	1	10
Channel	1	1	1	1	1	1	1
Driver	RS-422	RS-422	RS-422	RS-422	RS-232	RS-422	RS-422
Baud	38400	note [a]	note [b]	note [c]	9600	9600	9600
Data Bits	7	8	8	8	8	8	8
Parity	Odd	Odd	None	None	None	None	None
Stop Bits	1	1	1	1	1	1	1

[a] Refresh rate depends on the baud rate of the 440 and should be set between 5 and 62. For 19.2 K/baud, refresh = 5; for 2400 baud, refresh = 62. Set Baud rate to match the 440 X-Y Control Bus baud setting.

[b] Refresh rate depends on the baud rate of the Performer and should be set between 7 and 80. For 38.4 K/baud, refresh = 7; for 9600 baud or less, refresh = 80.

[c] Refresh rate depends on the baud rate of the 20-TEN and should be set between 10 and 80. For 38.4 K/baud, refresh = 5; for 9600 baud or less, refresh = 80.

5. **FLAGS:** Select appropriate flags, see Table 4-5. Native Protocol Specific – may not apply to all protocols.

6. **CONTROLLABLE LEVELS:** Select Level(s) controllable through this Amezi interface. Native Protocol Specific - may not apply to all protocols.
7. **DEFAULT LEVELS:** Select Level(s) to be selected upon initial power up. Becomes available after Controllable Levels are selected.
8. **DEFAULT TALLY LEVEL**: Select Level to be tallied if multiple Levels are involved in operation. Becomes available after Default Levels are selected.
9. If this is done while online, clicking the **OK** button will send the configuration to the Amezi card.

Table 4-5. Cfgd Amezi Flags

Flag	Definition
CmdEcho:	When set, the 7000 will wait to receive an echo of a command before sending the next. Protocol Specific – may not apply to all protocols.
FlowCtrl:	Select to enable Flow Control.
ConfigEn:	When set, the Amezi may be configured by a connected, capable, external device.
IgnrCase:	When set, the case of the transmitted and received data is ignored.
StatOnly:	When set, the Amezi will provide router status only through this port. No commands will be accepted.
ChopLock:	When set, the connected device is restricted from initiating chop activity.
SvoLock:	When set, the connected device is restricted from initiating salvos.
MonLock:	When set, the connected device is restricted from controlling system monitor crosspoints.
ProtOvrd:	When set, the connected device will be allowed to override protects placed by other system control panels.

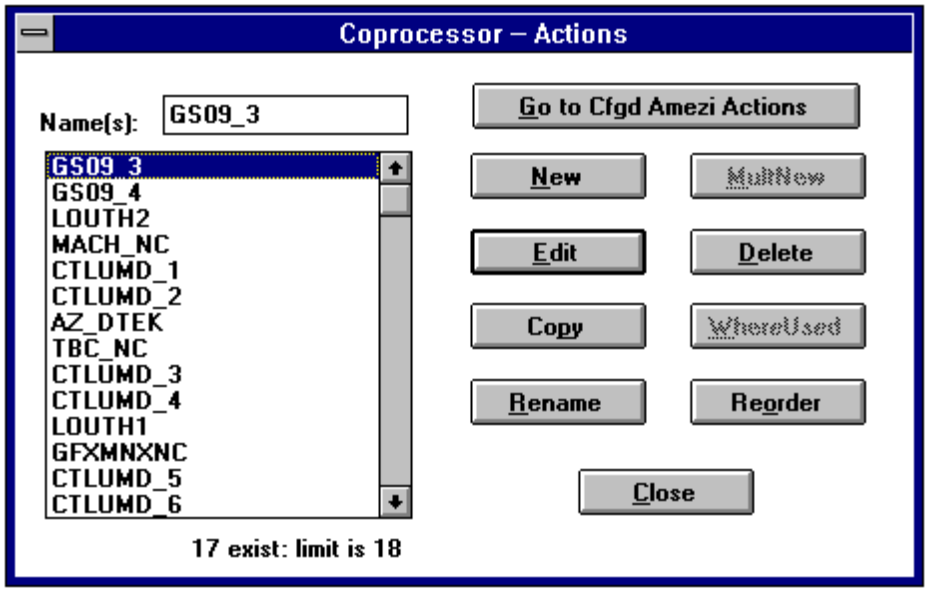
Source Tally Manager

The Global Serial Mezzanine dedicated to Source Tally modules is called the Tally Manager. If tally is added to a SMS-7000 that previously had standard GSC csos.bin configured, then the TM2 name must be manually edited in place of the original GSC name for that mezzanine.

To Manually Edit a GSC Name

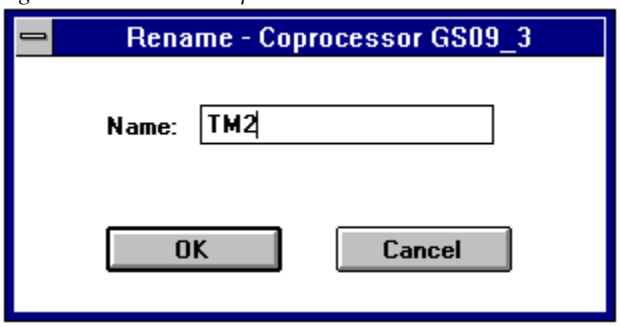
1. Under the **SETUP** menu, select **COPROCESSORS** to access the Coprocessors Actions window.

Figure 4-24. Coprocessors Menu and Actions Windows



2. Highlight the GSC name to be changed.
3. Click **RENAME**.

Figure 4-25. Rename Coprocessor Window



4. Enter **TM2** in the Rename - Coprocessor dialog box.
5. Click **OK**. Dialog box will close. **TM2** will appear in the Names list of the Coprocessor Actions window.
6. Click **CLOSE**.

Configuring the Alien Node Controller

Create a Configured Node Controller, refer to To Configure Node Controllers: on page 2-12.

If you configure the Alien Node Controller online, the download will occur as soon as the **OK** button is clicked.

If communication has been established between the Amezi you have just set up and its target device, an Active Node Controller name will appear for it in the Active Node Controllers Actions window. The Active Node Controller name will only appear when all configuration and hook-up steps have been successfully completed and the two units are communicating properly. If the name does not appear as expected, check cabling and selected communications parameters for both the Alien Matrix and the Amezi configuration.

The new name will be the name first applied to the associated Configured Amezi. Renaming the Configured Amezi **will not** affect the Active Node Controller default name. The Active Node Controller may be renamed. If the Active and Configured Node Controller names do not exactly match the Alien Matrix Interface cannot function. See Section 3, To Identify and Rename Node Controllers: on page 3-5.

Download the Edited Configuration to the MCPUs

After setting up the Alien Node Controller, refer to Section 2-Building a New Configuration, of this manual to setup Physical Matrix on page 2-20, Virtual Matrix on page 2-24, Levels on page 2-26, Sources on page 2-30, and Destinations on page 2-35, for the Alien Matrices. Save the edited configuration file. Then download the new Configuration to the MCPUs using the procedure in Sending a Configuration to the Series 7000 MCPU on page 3-1.

Test the Interface

To test the interface, use a Series 7000 control panel to switch a destination configured to include Alien Matrix levels. Verify the source change on an Alien Matrix control panel or status device. Verify that the source, destination, and levels intended to switch, actually did.

In the course of testing, be sure the Alien Matrix is able to perform as expected. If shared control is set for some Destinations, make sure the Alien control devices can still control them. If Exclusive control is set for a Destination, make sure the Alien control devices cannot control them.

Programming the Amezi Coprocessor

Version 5.37 or later software includes protocols for Performer, 20-TEN and 440 systems not provided in previous versions. To download this software from the MCPU to the coprocessor on an Amezi card use the Series 7000 Diagnostic Terminal to enter one of two possible command types:

- **`Slot`** – to program an Amezi card on a single CIF Module
- **`Pg`** – to program a redundant pair of Amezi cards on two CIF Modules

Procedure for a Single CIF Module Only

After completing the *Configuring the Asynchronous Mezzanine (Cfgd Amezi)* on page 4-26, use the Diagnostic Terminal to enter the following:

```
slot (slot number) mez (mezzanine position) "(Amezi
Name)" asy "azgvg.bin"
```

For example, for a CIF module located in controller frame slot 1 with an Amezi having the coprocessor name **`TWT`** in position 1, the command would read:

```
slot 1 mez 1 TWT" asy "azgvg.bin"
```

With this step complete, return to *Configuring the Alien Node Controller* on page 4-30, and continue as directed.

Procedure for Redundant CIF Modules Only

After completing the *Configuring the Asynchronous Mezzanine (Cfgd Amezi)* on page 4-26, use the Diagnostic Terminal to enter the following:

```
pg (slot number of first module of the pair) mez (mez-
zanine position) "(Amezi Name)" asy "azgvg.bin"
```

For example, it a redundant pair which are located in slots 3 & 4 with an Amezi mounted in position 1 on each CIF:

```
pg 3 mez 1 "TWT" asy "azgvg.bin"
```

With this step complete, return to *Configuring the Alien Node Controller* on page 4-30, and continue as directed.

Section 5

Using Print Config

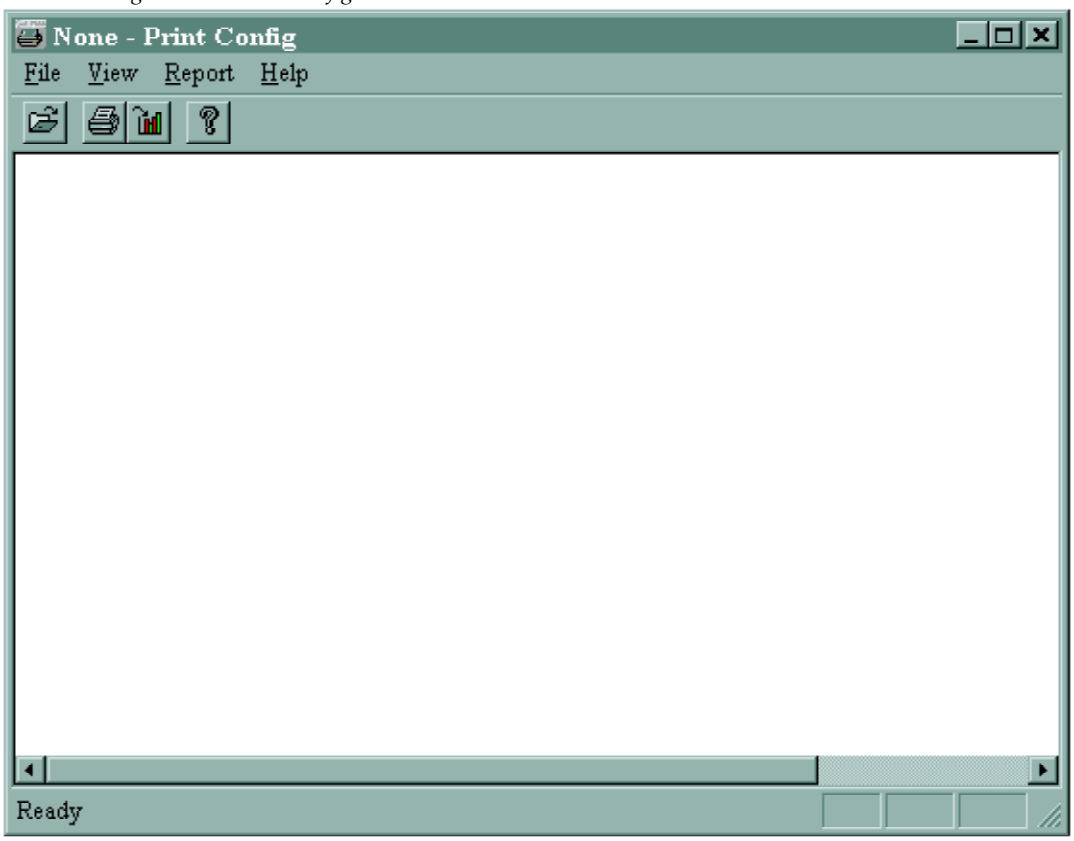
Introduction

The PRINTCFG program displays and prints Series 7000 configurations or writes them to a text file that can be read by spreadsheet programs.

Start the PRINTCFG program by double clicking on the SMS7000 Printcfg icon in the SMS7000 group in Windows.

The program runs and displays **PRINT CONFIG - NONE** in the title bar.

Figure 5-1. Print Config Main Window



Read

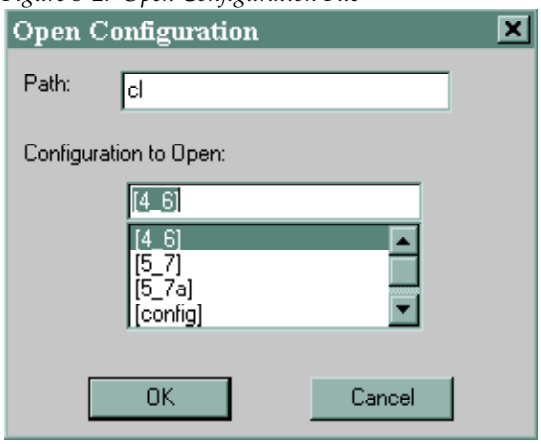
The PRINTCFG program can only read configurations that have been previously saved to disk by the GUI program. The PRINTCFG program does not read configurations directly from the Series 7000.

To Read a Configuration

1. Click on the **OPEN FOLDER** button or select the **FILE/OPEN** option from the menu.

   PRINTCFG displays a dialog box.

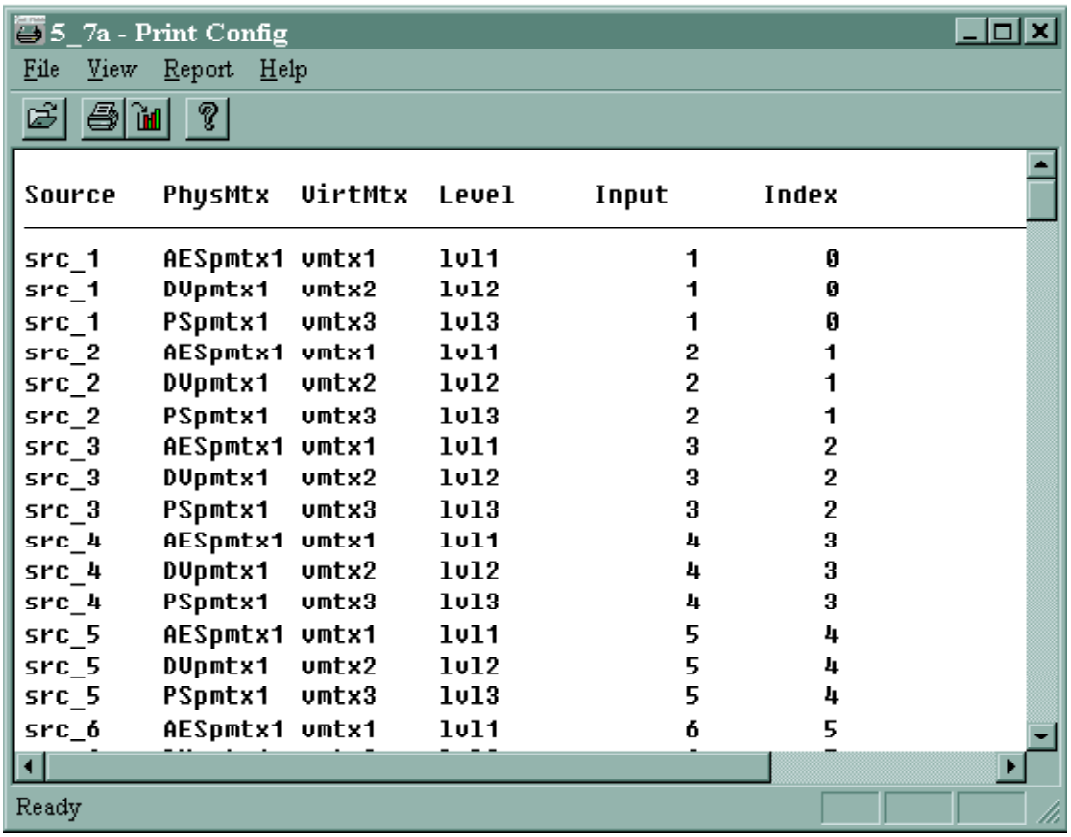
Figure 5-2. Open Configuration File



2. Highlight the configuration file to open.
3. Click on the **OK** button to read the specified configuration.

   When the configuration is read and formatted, PRINTCFG displays the report in the currently selected report format on the main screen and the name of the configuration in the title bar.

Figure 5-3. Report Displayed



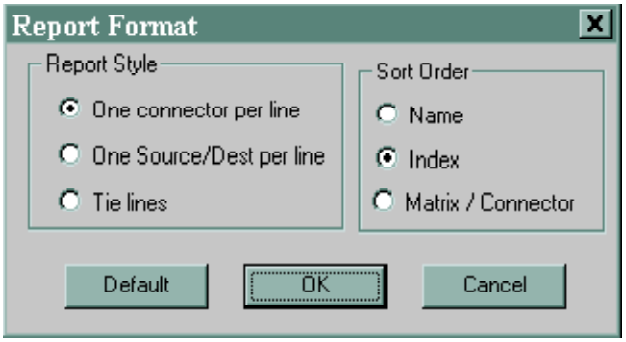
Report Format

To Change the Report Format

1. Select the **REPORT|SELECT REPORT** menu option.

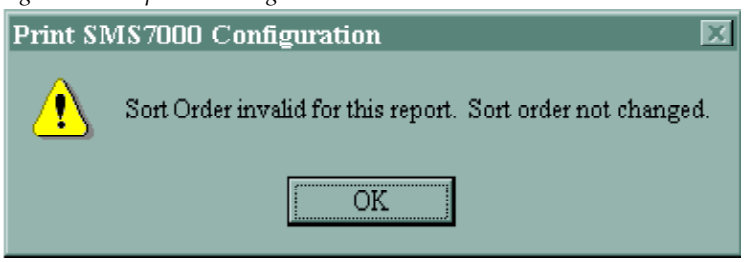
   PRINTCFG displays a dialog box with three choices of Report Style and three choices of Sort Order.

Figure 5-4. Report Format



The Matrix/Connector sort order may not be chosen for the One Source/Dest per line or Tielines reports. If an invalid choice is selected a warning window will appear.

Figure 5-5. Report Warning Window



2. Click on one report style and one sort order.

The **ONE CONNECTOR PER LINE** report lists each connection to a matrix I/O port on a separate report line.

The **ONE SOURCE/DEST PER LINE** report lists each Source or Destination on a single line, and shows all I/O connections for that Source or Destination on the same line.

The **TIELINES** report lists information for Tielines.

The **Default** button selects the default report.

3. Click the **OK** button to request the PRINTCFG program to format the data in the selected report format.

Note For some reports with large configurations, the PRINTCFG program displays the report information in a smaller font, so that you can scroll accurately to any part of the report. This smaller font is NOT used when the report is printed. The same font size is used for all printed reports.

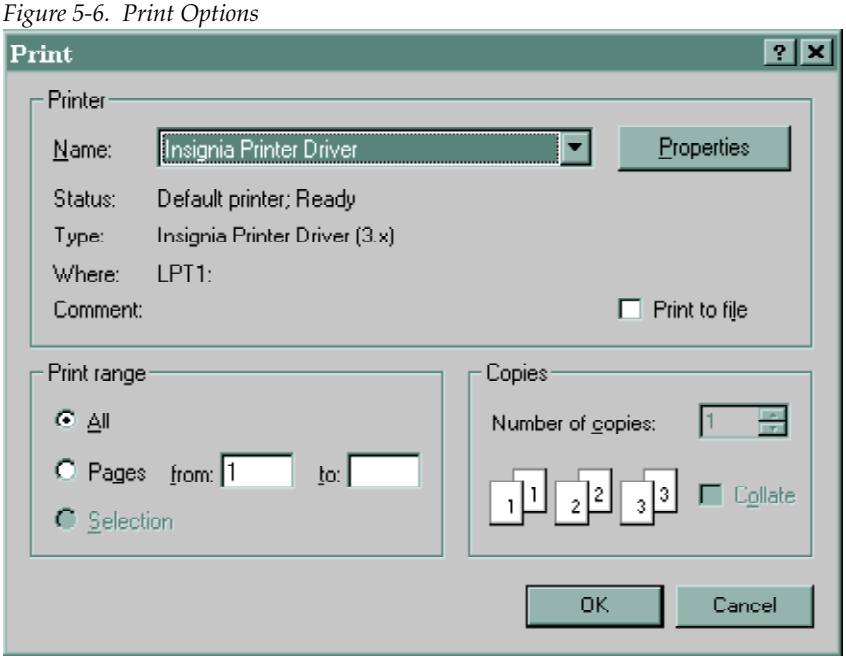
Print

To Print the Current Report

Select the **FILE\PRINT** option or click on the icon that looks like a printer.

The program will display a dialog box that permit you to specify various printing options that are specific to your printer and computer setup.

Figure 5-6. Print Options



You may print the entire report or any set of pages from the report. The dialog boxes do not show you how many pages are in the report, but you can determine this from using the **PRINT PREVIEW** option.

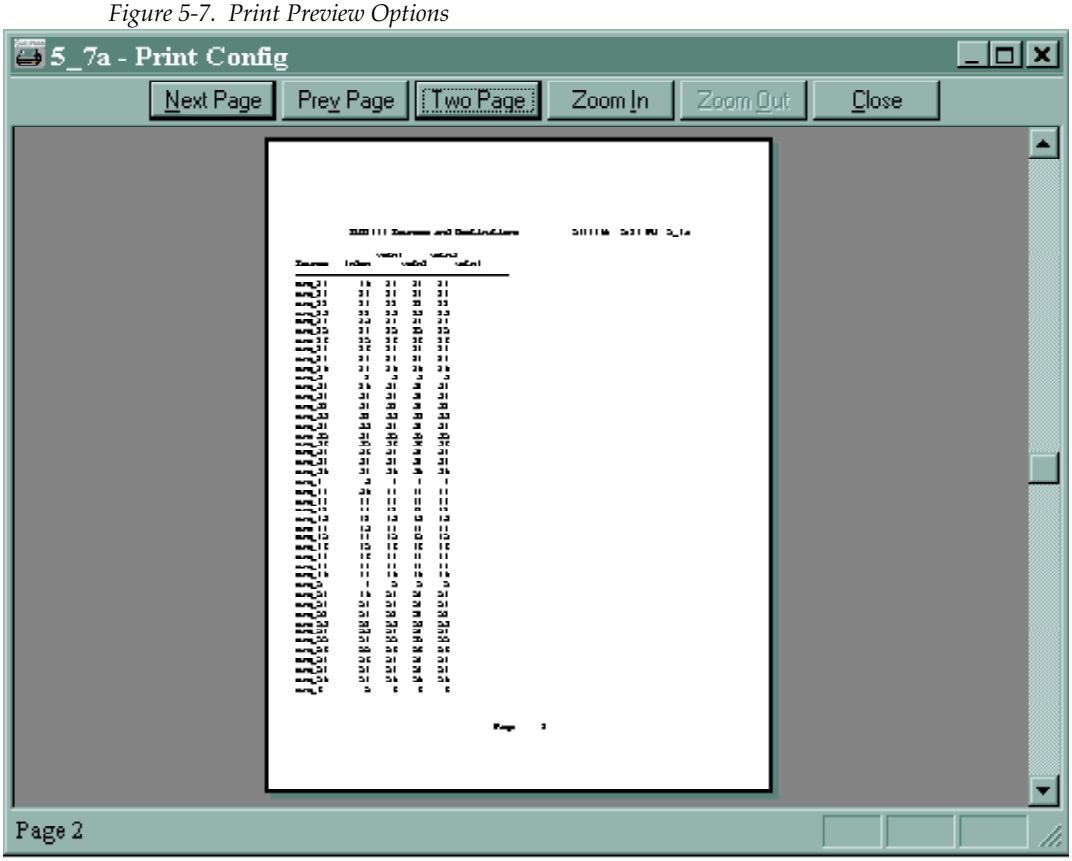
Print Preview

To Preview a Report

Preview the report by selecting the **FILE\PRINT** Preview option.

This option allows you to page through the report as it will be printed. (The format of the printed and displayed reports varies slightly.) This option also allows you to see which data is printed on each page. This is especially useful if you want to print only part of the report.

Figure 5-7. Print Preview Options



Computer displays generally have less resolution than printers, so the displayed print preview pages often do not have the same precise text alignment that the printed page exhibits.

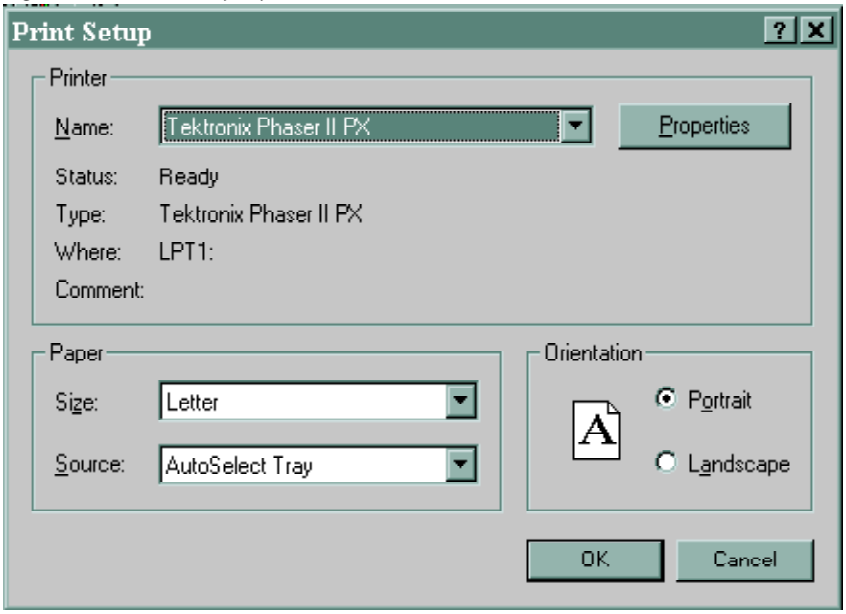
Print Setup

To Setup the Printer

Select the **FILE\PRINT SETUP** option.

The program will display a dialog box that permit you to select various printing options that are specific to your printer and computer setup.

Figure 5-8. Print Setup Options



Export Data

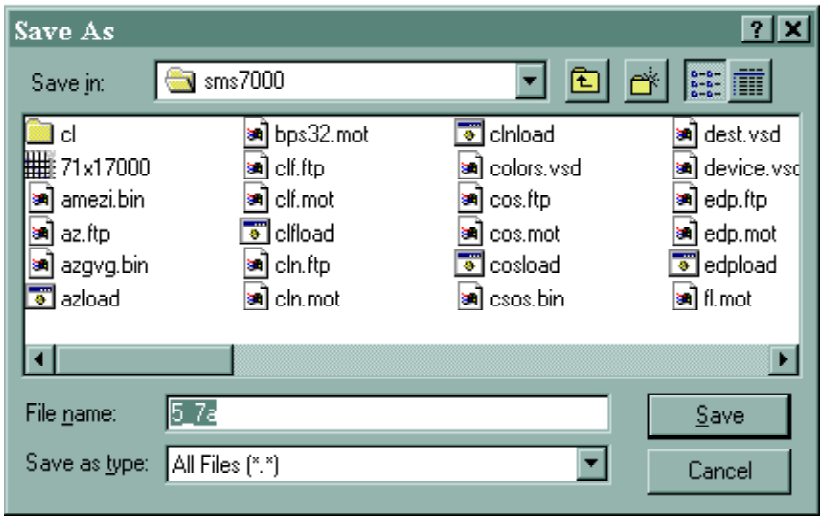
To Export a Report

You can write the report data to a text file suitable for importing into a spreadsheet.

Select the **FILE|EXPORT DATA** option or click on the icon that has a picture of an arrow pointing to a bar chart.

The PRINTCFG program displays a dialog asking for the name of the text file. Enter the filename. PRINTCFG writes the file, which you can later process with a spreadsheet program or examine with a text editor.

Figure 5-9. Save As Window to Export Data



PRINTCFG writes its export files in a standard quote delimited, comma separated format that is suitable for import into many spreadsheet programs. Excel 5.0 recognizes this format and sets up import defaults for reading the file properly, except that Excel 5.0 may translate Source, Destination and Tieline names that appear to be dates into actual dates. For instance, the Source name APR1 may be translated into 1-Apr. This can be prevented during Excel's import by specifying that any column of text information is of type TEXT rather than GENERAL. With the TEXT specification, the names will not be altered by Excel 5.0.

View

You may hide the Status Bar or the Toolbar by selecting options on the **VIEW** menu to toggle the display of these bars. Hiding both bars permits the program to display more of the report on screen at once.

Figure 5-10 shows the Toolbar menu selection and the Toolbar.

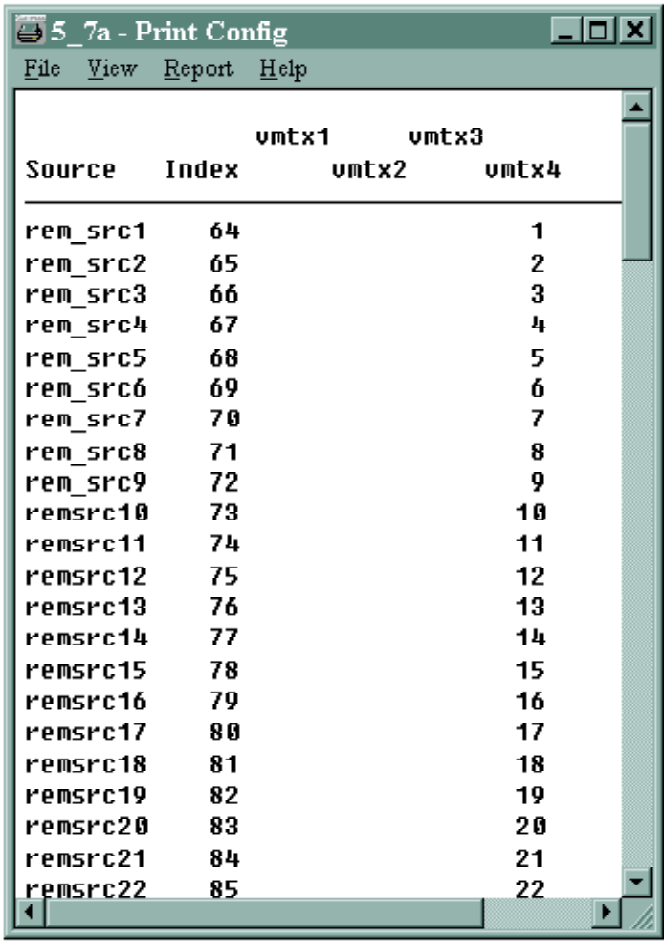
Figure 5-10. Toolbar

Figure 5-11 shows the Status Bar menu selection and the Status Bar.

Figure 5-11. Status Bar

Figure 5-12 shows the Print Config Window without the Toolbar and Status Bar. The window can also be resized.

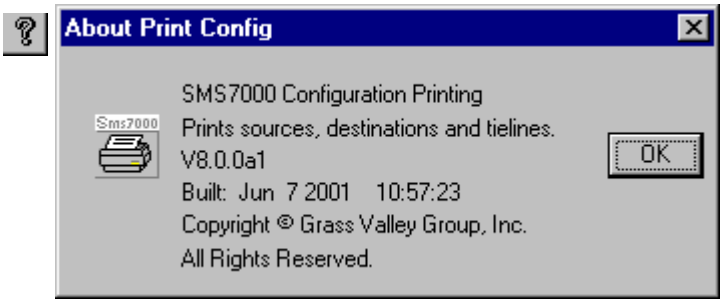
Figure 5-12. View Without Toolbar or Status Bar



Help

Select the **HELP\ABOUT** option or click on the icon that has a picture of a arrow question mark. The About Print Config Window will appear.

Figure 5-13. Help and About Print Config Window



Section 6

Customizing the Visual Status Display

Introduction

The Visual Status Display (VSD) can be customized to personal preference by assigning colors and creating view files. This section covers customizing the VSD, how to use the VSD is covered in the *User Manual*.

Assign Colors

It is possible to customize the colors used to display various states of the Series 7000 in the VSD program. VSD does not allow you to customize the color assignments from within the VSD program itself. To re-assign colors, modify the VSD initialization file. To do this, you need to know how to use a text editor and find files on your disk.

Modify the VSD.INI file in your Windows directory to change the colors displayed by VSD. You may want to make a backup copy of VSD.INI before you make changes to the live copy. Also, do not modify the VSD.INI file while the VSD program is running.

The VSD.INI file, as shipped to you from Grass Valley has the following information in it:

```
[Attributes]
Default=WHITEONBLACK
Blank=NOBOX
Undefined=INVERT+YELLOWBACK+NOBOX
SourceName=BLACK+MAGENTABACK+NOBOX
DestName=BLUE+YELLOWBACK+NOBOX
TielineName=RED+BLUE
LevelName=RED+CYANBACK+NOBOX
DeviceName=GREEN+BLUE+YELLOWBACK+
MAGENTABACK+THICKBOX
```

```
RoomName=BLUE+NOBOX
MultipleRooms=BLUE+THICKBOX
MultipleDests=BLUE+YELLOWBACK+THICKBOX
String=NOBOX
Distant=GREEN+MAGENTABACK
Chop=GREEN+MAGENTABACK+THICKBOX
Protected=GREEN+BLUE+YELLOWBACK+MAGENTABACK
Changing=CYANBACK+THICKBOX
Broken=MAGENTABACK+INVERTED+THICKBOX
[ViewMenu]
&Dest=dest.vsd
De&vice=device.vsd
&Source=source.vsd
&Level=level.vsd
&Tielines=Tielines.vsd
T&ieline Level=tielevel.vsd
Ti&eline Config=tiecfg.vsd
&Names=names.vsd
&Rooms=rooms.vsd
&Color Code=signals.vsd
Color &Wheel=colors.vsd
[Net]
HostName=sms7000
BackupName=sms7000b
AutoConnect=0
[Misc]
ColorWashVal=0
[Settings]
ChangeTime=2
FlashInterval=2
DefaultView=dest.vsd
```

Modify only the lines in the [Attributes] section of the VSD.INI file to change the assigned colors.

The assignable status colors are described in the views under Color Codes. The Color Wheel view of VSD may be used to display the different colors that can be assigned.

As an example, the line:

```
RoomName=BLUE+NOBOX
```

means that room names will be displayed with blue text over the default white background, and will not have any box displayed around the name. The meaning of the colors are:

`BLACKONWHITE` - the text is black, the background is white, a small box is drawn around the name.

RED - Display the text as red.
GREEN - Display the text as green.
BLUE - Display the text as blue.

You may specify a combination of these colors to mix two colors. See the Color Wheel view to examine the effect of mixing colors. Selecting all three colors displays text as white. If you do not specify any of these colors, the text is black.

YELLOWBACK - Display the text background as yellow.
MAGENTABACK - Display the text background as magenta.
CYANBACK - Display the text background as cyan.

You may specify a combination of these colors to mix two colors. See the Color Wheel view to examine the effect of mixing colors. Selecting all three colors displays the background as black. If you do not specify any of these colors, the text background is white.

NOBOX - Do not draw the usual default outer box.
THICKBOX - Draw a box inside the usual default outer box. This results in the appearance of one thick box around the text.

If you specify both of these boxing requests, only the smaller box is drawn. If you specify neither of these, only the default outer box is drawn.

INVERT - Displays the entire cell with all colors reversed.

Note Be careful to spell all of the colors exactly and capitalize them as listed above. Once you have edited the VSD.INI file, run the VSD program and examine the Color Codes view. VSD will display your chosen colors.

Examples:

```
Default=BLUE
```

This specifies that if nothing else is entered for a status type, the item will be displayed with blue text on a white background with a box drawn around the cell.

```
SourceName=MAGENTABACK
```

This specifies that Source names will be displayed with black text on a magenta background with a box drawn around the cell.

```
DestName=
```

This entry intentionally leaves the specification blank. VSD will use the default coloring (blue on black with a box, in this example) to display Destination names.

```
Broken=THICKBOX+INVERT
```

This entry makes the VSD program display a routing that is missing cross-points with a thick box around the name and with the normal black on white lettering inverted. This will result in white text on a black background.

Create/Edit View

This information is intended for use with the Series 7000 system's Visual Status Display (VSD) program. It is an informal description of how to write additional views and add them to the VSD view list. The information contained herein is not formally supported by Grass Valley. The Grass Valley customer support department is not prepared to answer questions about how to write and install additional customer tailored VSD views.

Creating your own views and modifying the existing views requires editing the VSD.INI file in the windows directory. It also involves either editing or creating new *.VSD (files whose suffix is VSD) in the windows directory. A discussion of how to edit text files is beyond the scope of this section.

We strongly recommend that you make backup copies of the VSD.INI file and all *.VSD files in your windows directory before making any changes described in this document. If you find that you dislike the changes you make, copy the saved VSD.INI and *.VSD files back into your windows directory to restore the previous VSD program functionality.

Edit View Menu

The VSD.INI file contains a section titled [ViewMenu]. In this section is a list of all of the views that can be selected during the running of the VSD program. Each item in the list consists of the name that appears in the VSD Views menu followed by an equals sign (=) followed by the name of a text file that describes the view to be displayed.

The name that appears in the VSD Views menu may contain an ampersand character (&). If it does, then the ampersand will not be displayed in the Views menu, but the character that follows the ampersand may be typed when the Views menu is displayed to select that view quickly. Be careful to select a different letter for each view when you use ampersands.

The file name must appear in the windows directory if no explicit directory is specified. However, you may specify the drive and directory of a file if you wish to store the file someplace other than the windows directory.

For instance, your VSD.INI file may include a Views section something like the following:

```
[ViewMenu]
&Dest=dest.vsd
&Protect=device.vsd
&Source=source.vsd
&Level=level.vsd
&Tieline=Tieline.vsd
&Names=names.vsd
&Rooms=rooms.vsd
&Color Code=signals.vsd
Color &Wheel=colors.vsd
```

The last line indicates that the final item in the Views menu of VSD will be Color Wheel and that the user can select this view by typing a **W**. Further, when this view is selected, the VSD program will read the colors.vsd file in the windows directory and display the view specification defined in that file.

Edit the **[ViewMenu]** section of the VSD.INI file to change the order in which views are presented, remove views that are unused at your installation, change the names of the views, use a different letter to select specified views, or add the name of a new view that you create.

Create View File

A view file may be named anything. The custom is to use the suffix VSD for all VSD view files.

A view file must have a [Display] section and may optionally have a [Comments] section. An example of a view file follows:

```
  **********  DEST.VSD view file listing ***********
  [Comments]
; Show the source taken to each destination/level
[Display]
R1C1=String(,,"Dst/Lvl")
R1C2:R1C33=LevelName(C-1,,)
R2C1:R1025C1=DestName(R-1,,)
R2C2:R1025C33=SourceForDestLevel(R-1,C-1)
  ******** end of DEST.VSD view file listing *******
```

Each line in the **[Display]** section of a view file consists of a three part specification of the form.

```
Range=Function(Arguments)
```

For instance, the line **R1C1=String(,,"Dst/Lvl")** indicates that at the range **R1C1** the function **String** should be executed with arguments **(,,"Dst/Lvl")**. This has the effect of displaying the string **Dst/Lvl** in the upper left hand corner of the view display.

Range

The range of a specification consists of one or two cell locations. If two cell locations are listed, they must be separated by a colon (**:**) and the second cell location must be to the bottom right of the first cell. (Technically, the second cell location cannot be to the left of nor above the first cell. It can be directly below or to the right of the first cell.)

Specify a cell location using the expression **RnCm** where **n** is the row number and **m** is the column number. Rows are numbered beginning with row 1 at the top and columns begin with column 1 at the left. For instance, **R3C2** refers to the third row down and the second cell from the left.

If two cell locations are specified, the associated function will be applied to the entire rectangle of cells that has the first cell at the top left and the second cell at the bottom right of the rectangle.

Note When the program decides what function to display in a cell, the VSD program selects the first specification in the list whose range includes the cell.

[Caveat: The rectangles should all lie within a reasonable size. Grass Valley has found no view that requires that any rectangle be specified with a row higher than about 1050 nor a column over 1050.]

Arguments

The arguments consist of zero, one, two or three arguments separated by commas. If an argument is omitted, its absence must still be indicated by a comma. Trailing arguments and commas may be omitted if all of them are missing.

For instance, in the expression **String()** there are no arguments. In the expression, **String(,4)** the first argument and third arguments are missing and the second argument is 4. In the expression, **String(2,4,"George")** all three arguments are present.

The first argument is 2, the second argument is 4 and the third argument is "George". Commas may be included even if the trailing arguments are missing. For instance, **(4,,)** is legal and means the same thing as **(4,)** or just (**4)**.

The third argument must always be a quoted string.

The first two arguments must be in the general form:

```
xR+yC+z
```

Any of the terms may be omitted. A minus sign may replace the plus sign. The x, y and z must be whole numbers, optionally preceded by a minus sign. An optional asterisk(**`*`**) may be placed between the **`x`** and **`R`** or between the **`y`** and **`C`**. For instance, all of the following expressions are valid:

```
2R+3C-5
R-2
3*R
-2C+100
12
```

The following expressions are not valid:

`C+R` the R must precede the C
`K+R` K is not legal
`R/2+C` division (/) is not legal
`2.5R` the numbers must be whole numbers
`RC` the R and C must be separated by a + or - sign

When the function is evaluated, the first two arguments are translated into numbers by the program. The row of the cell is substituted for R and the column of the cell is substituted for C. (See Scroll on page 6-7 for more details.)

For instance, consider the specification:

```
R1C2:R1C33=LevelName(C-1,,)
```

This specifies the formula used to display the contents of cells in the top row in any of the columns from 2 through 33. The particular cell in row one, column two has a value of C equal to 2 (the second column). Therefore, in that cell the first argument to the LevelName function is 1 (C-1 = 2-1 = 1). (This assumes that the view has not been scrolled at all.)

Scroll

The views may be entered in such a way that they are scrollable. If all the specifications of the view have ranges that can be displayed on the one screen, then the view will not scroll. The VSD program simply displays the entire described view.

However, it is quite legal to specify ranges that exceed the size of the computer display screen. In these cases, the VSD program adds scrolling bars as necessary and permits you to scroll through the view. The VSD program computes the smallest rectangle that includes the cell in row one, column one and every other cell that is specified in any range of a view specification line. The VSD program then permits you to scroll the view around inside this containing rectangle.

When the screen is scrolled, the values assigned to the R and C in the arguments of functions changes. Specifically, the R and C of a scrolled screen are adjusted by the number of rows and columns that the view has been scrolled. However, the position on the screen displayed items is not changed. Look again at the specification:

```
R1C2:R1C33=LevelName(C-1,,)
```

This specifies the formula for columns 2 through 33 of the top row of the display. Few, if any, computer monitors display all of these columns. Therefore, the VSD program permits you to scroll the display to the right. Suppose you are viewing this screen and you have scrolled the display to the right by 3 cells (columns). The specification says that the second cell of the top row (row 1, column 2) displays the results of the formula **`LevelName(C-1,,)`**. If the view were not scrolled, C would have a value of 2 in this formula. Since the view is scrolled to the right by three columns, C has a value of 2+3 = 5 in this example. The formula is computed using a value of C=5 so the result of the formula **`LevelName(4) [C-1=5-1=4]`** is displayed in the second cell of the top row.

Color Specifications

You should be familiar with Assigning Colors page 6-1. It describes how to change the default coloring of sources, destinations, etc.

In some cases, the string that is entered as the third argument of a function is used to override the normal coloring for that function result. If so, the string should be a quoted copy of a combination of the color code names separated by plus (**+**) signs.

For instance, the formula **`R1C1=LevelName(1,,"GREEN")`** displays the level name of the first level in green lettering in the top left cell of the display.

One of the first two arguments can be used to override the normal coloring for a function result. In this case, color names may not be used. Instead, examine the following Color Value Table and select the numbers corresponding to the color names you want. Add the numbers together manually, and enter the result as the argument.

For instance, if you want to display the string Danger in red with a thick box around it in the top left of the screen, first check the following table. The number for **`RED`** is 1 and the number for **`THICKBOX`** is 32. These add up to 33. The specification:

```
R1C1=String(33,,"Danger")
```

displays a red Danger in the upper left corner of the view.

When adding color numbers this way, do not add up the same number twice. You cannot get a super red color by doubling the number for RED.

To change the intensity of the VSD colors change the Color Washout value in the **`[Misc]`** section of the VSD.INI file. The default value is 0 which is the brightest. The value range is from 0-127 (0=brightest, 127=most subdued). Values less than 0 will be read as 0 and Values higher than 127 will be read as 127.

Table 6-1 shows the Color Values available with the VSD.*

Table 6-1. Color Value Table

Text phrase	Number	Description
RED	1	Colors text/name red
GREEN	2	Colors text/name green
BLUE	4	Colors text/name blue
FLASH	16	Blink the text box. The speed at which the box will flash can be adjusted using the menu Settings/Flash Speed option
THICKBOX	32	Draws smaller box inside default outer box. This makes the box look thicker.
NOBOX	64	Does not draw usual default outer box
INVERT	128	Inverts colors of whole cell
YELLOWBACK	256	Makes text background yellow
MAGENTABACK	512	Makes text background magenta
CYANBACK	1024	Makes text background cyan

Note Many of the functions will display their results with different colors if there is something special about the entry. The different colors can be user defined by entries in the VSD initialization file. For instance, destinations that are protected and returned by the LevelDest function are displayed with a different color than unprotected destinations. If the color is overridden in the function call, the color override is used instead of showing the colors associated with a special state.

Functions

The following are the functions that VSD handles. These function names are not case sensitive.

Table 6-2. Function Names and Responses

Function Name	Response	Argument		
		1	2	3
Null	displays nothing (empty string)	optional color number override	ignored	ignored
String[a]	displays the third argument, a string of up to 8 characters.	optional color number override	index of user specified color code	string to display
ShowArgs	displays the value of the first and second arguments	value to display	value to display	optional color override
ShowFirstArg	displays the value of the first argument	value to display	ignored	optional color override
SourceName	displays source name	index of source	ignored	optional color override

Table 6-2. Function Names and Responses - (continued)

Function Name	Response	Argument		
		1	2	3
DestName	displays destination name	index of destination	ignored	optional color override
TielineName	displays Tieline name	index of Tieline	ignored	optional color override
LevelName	displays level name	index of level	ignored	optional color override
RoomName	displays room name	index of room	ignored	optional color override
SalvoName	displays salvo name	index of salvo	ignored	optional color override
TielineTypeName	displays name of a Tieline type	index of Tieline type	ignored	optional color override
SourceForDestLevel[b]	displays distant source routed to a given destination/level.	index of destination	index of level	optional color override
RawSourceForDestLevel[c]	displays local source routed to a given destination/level.	index of destination	index of level	optional color override
DeviceForDestLevel	same as SourceForDestLevel but shows the name of the device protecting that destination if the destination is protected.	index of destination	index of level	optional color override
ChopForDestLevel	displays alternate chop source for a destination / level that is chopping between two sources.	index of destination	index of level	optional color override
TielineSource[d]	shows the source routed to a Tieline.	index of Tieline	ignored	optional color override
TielineRawSource[e]	shows the source routed to a Tieline.	index of Tieline	ignored	optional color override
TielineDest[f]	shows the Nth destination using the Tieline to get a signal on the current default level.	index of the Tieline	N	optional color override
LevelDest	shows the Nth destination receiving a signal from the default source on a specified level.	index of the level	N	optional color override
SourceDest	shows the Nth destination receiving a signal from a specified source on the current default level.	index of the source	N	optional color override
NthDestForSource	shows the Nth destination receiving a signal from a given source on any level.	N	index of the source	optional color override
NthSourceForDest	displays the Nth source taken to a destination, where a source taken to any level of the destination is included in the list.	N	index of the destination	optional color override
NthDestForRoom	shows the Nth destination configured to belong to the room.	N	index of the room	optional color override
NthRoomForDest[g]	displays the name of the Nth room in which a destination is located.	N	index of the destination	optional color override
SelectSource[h]	asks user to select the default source.	ignored	ignored	optional color override
SelectLevel[i]	asks user to select the default level.	ignored	ignored	optional color override
TielineAssignment	returns name of room or destination to which a reserved Tieline is assigned.	index of the Tieline	ignored	optional color override
NthTielineDest	returns the name of the Nth destination which is using the Tieline.	N	index of the Tieline	optional color override

Table 6-2. Function Names and Responses - (continued)

Function Name	Response	Argument		
		1	2	3
NtheTielineSource	returns the name of the Nth source which is being routed to any level of a specific Tieline	N	index of the Tieline	optional color override
TielineBegin	returns the name of the destination which is the beginning of the Tieline.	index of the Tieline	ignored	optional color override
TielineEnd	returns the name of the source which is the end of the Tieline.	index of the Tieline	ignored	optional color override
TielineTypeForTieline	name of the Tieline type of the Tieline.	index of the Tieline	ignored	optional color override
Tieline FCFS	FCFS if the Tieline is First Come First Served, otherwise empty string.	index of the Tieline	ignored	optional color override

[a] The first argument, if not zero or blank, specifies the color of the display. If the first argument is missing and the second argument is not, the string will be displayed in the default display color scheme corresponding to the value of the second argument. The value is the position of the display color as listed in the Series 7000 VSD Assign Colors list of user selectable color assignments.

[b] If the second argument is left blank, the default level will be used. This call returns the distant source, tracing the signal path through any Tielines that may be involved.

[c] If the second argument is left blank, the default level will be used. This call returns the local source, connected to the destination on the virtual matrix that has the specified destination/level.

[d] The source is the one routed to the current default level. This call returns the distant source, tracing the signal path through any additional Tielines that may be involved.

[e] The source is the one routed to the current default level. This call returns the local source, on the virtual matrix to which the beginning of the Tieline is connected.

[f] The calculation is based on the routing of the current default level.

[g] Although it is technically possible to specify that a destination exists in more than one room, this is not normally a useful configuration. This function can be used to display all rooms in which the destination is located.

[h] Displays the source name and selects that source as the current default source. Only one current default source may exist for a view.

[i] Displays that level name and selects that level as the current default level. Only one current default level may exist for a view.

Specification Examples

```
R1C1:R1C5=SourceName(C,,RED+NOBOX)
```

Places the names of sources 1-5 in the first 5 boxes across the top row of the display, each source name will be in red text with no box drawn around the name. If the display is scrolled, five other consecutive sources will be displayed.

```
R1C2=String(34,,"KILROY")
```

Places the string KILROY in green with a thick box (2 + 32 = 34) in the cell just below the top left cell of the display.

```
R2C2=String(,1,"Default")
```

Show the word Default using the defined default color scheme in the box to the lower right of the top left cell.

Putting It All Together for George

The following is an example view for George. George is interested only in one particular monitor. This monitor appears in the Series 7000 configuration as destination GRG1. It receives input on two levels, **VIDEO** and **AUDMIX**. George wants to always see quickly what the sources are that feed into his monitor and whether or not his monitor input is protected by any devices. He also wants his name on the top of the screen in his favorite color, blue. He'd like the device names to be displayed in blue as well because he doesn't like the system defaults for devices and protects.

The display should look like Table 6-3 when it is complete:

Table 6-3. Custom View for George

George's Display			
Monitor	Level	Source	Protect
GRG1	VIDEO	Src1	Device1
	AUDMIX	Cam3	Panel5

To design this display, we have to find out the indices of a few things. Looking at the **NAMES** view in the VSD, we have discovered that **GRG1** is destination 10, **VIDEO** is level 1 and **AUDMIX** is level 6.

Note If the Configuration file is modified, then George's View file may be looking for items that have been moved or deleted. In this case, George's display will be affected.

Checking the color table, we can also see that the value for blue is 4.

The following view offers George what he wants:

```
[Comments]
; This view is for George's special display
[Display]
R1C2=String(4,,"George's")
R1C3=String(4,,"display")
R3C1=String(,,"Monitor")
R3C2=String(,,"Level")
R3C3=String(,,"Source")
R3C4=String(,,"Protect")
R4C1=DestName(10)
R4C2=LevelName(1)
R4C3=SourceForDestLevel(10,1)
R4C4=DeviceForDestLevel(10,1,"BLUE")
R5C2=LevelName(6)
R5C3=SourceForDestLevel(10,6)
R5C4=DeviceForDestLevel(10,6,"BLUE")
```

After you enter this file, add it to the VSD.INI initialization file so that George can select his view when he runs the VSD. Let's assume you name the file GEORGE.VSD and don't want to put it in your windows directory. Instead, the file is stored on the C: drive in the \STAFF\GEORGE directory. Add the following line to the **[ViewMenu]** section of the VSD.INI file:

```
&George=C:\Staff\George\george.vsd
```

The ampersand is not required, but lets George select his view by typing a **G** when the view menu is displayed.

Topics for Further Study

It is strongly suggested that you print out and examine the *.VSD files in your windows directory. These are all examples of views, and illustrate the use of many of the points made above.

Appendix — Networking Series 7000 Systems

Introduction

Networking allows an operator of one Series 7000 router to perform limited takes on a different Series 7000 router. In a networked system, using tielines, an operator at one router, can gain access to sources available only at another router in the network.

Networking beyond the parameters in this section can cause less than satisfactory routing system performance. Large networks require skilled system administration by qualified personnel.

Note Series 7000 Networking is not recommended with SMS-V64x64 matrices running SLIP. See *Serial Line Internet Protocol (SLIP)* *on page A-13*.

Networked Series 7000 systems should be planned and set up by someone who fully understands the concepts contained in the Network Addressing portion of this document.

When connecting two or more Series 7000 router systems in a network you must carefully plan the addresses and names that will be given to various network components including: the system MCPU modules, GUI and VSDs, local and remote level names, source names, and destination names.

Network Planning and Management

To guarantee proper performance, make this network a closed system exclusively connecting Series 7000 Controllers (MCPUs), GUIs, and Visual Status Displays (VSDs). Placing other devices on the network could cause performance degradation.

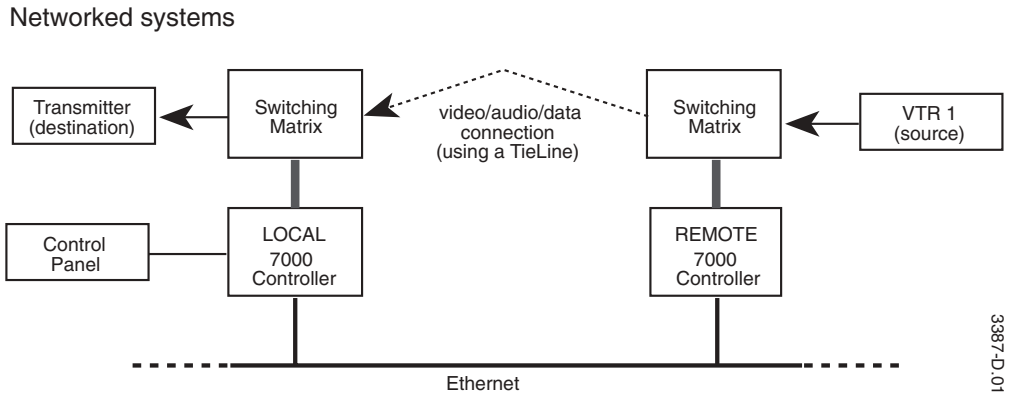
Note This document assumes the use of common thin-wire Ethernet cable and hardware. Refer to Ethernet documentation and the Networking Addressing at the end of this document for network hardware possibilities and limitations.

Terminology

This section defines some of the terms that must be clearly understood when discussing networked Series 7000 systems.

Figure A-1 illustrates a typical networked configuration in which a control device at one site is used to make a crosspoint selection in another system.

Figure A-1. Basic Networked Series 7000 Configuration



Local System

The control system from which a source selection is initiated. Each local system must have a remote level configured for every control system with which it networks (see Figure A-2).

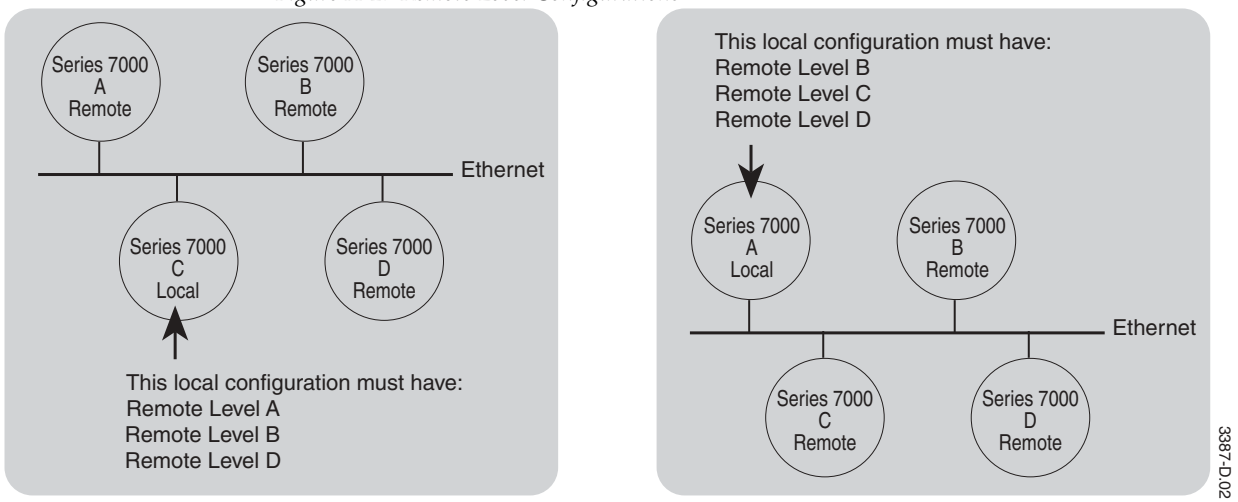
Remote System

The control system responding to a source selection requested over the Ethernet network.

Remote Level

A configured Series 7000 level that resides in the LOCAL system configuration. Local access to crosspoints in a remote system is made through locally defined Sources, Destinations, and Levels, which refer to remote Sources, Destinations, and Levels.

Figure A-2. Remote Level Configurations

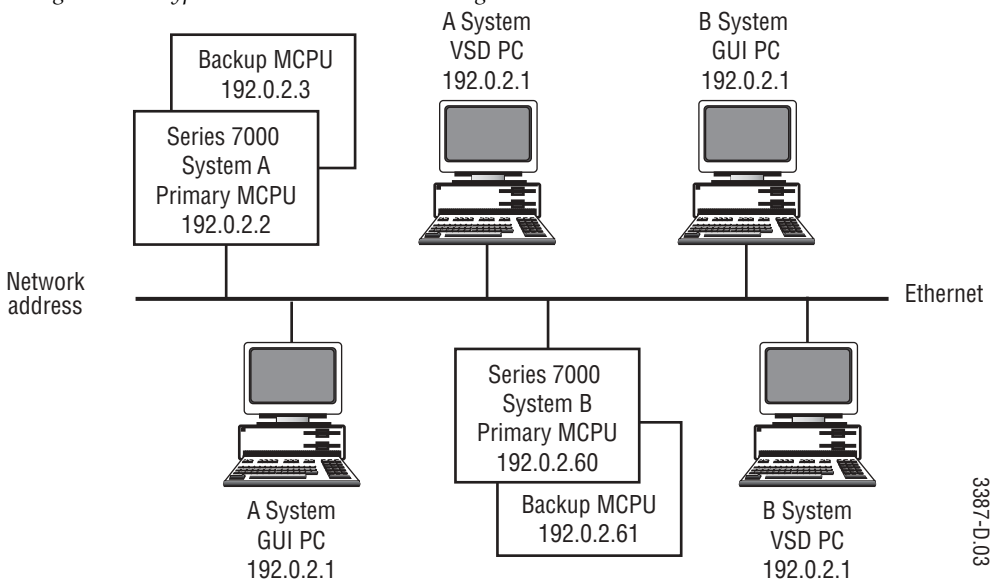


Network Addresses

Each device on the Ethernet is given an Internet Protocol (IP) address as illustrated in Figure A-3.

Refer to Network Addressing; *Multiple PCs* (page A-14) and *Multiple 7000s* (page A-15) for IP address guidelines.

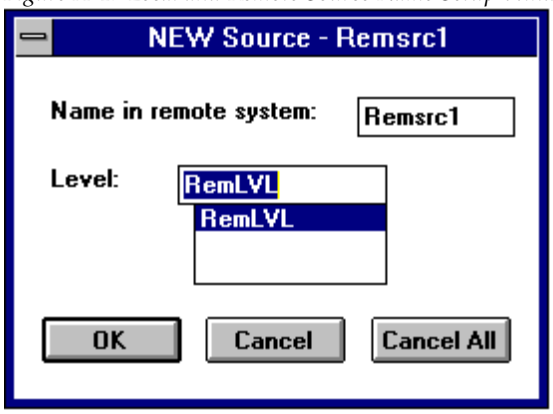
Figure A-3. Typical Network Host Addressing



Remote System Names

Each Source and Destination name that is created in a Remote Level (in the local system) has a related name in the remote system. Figure A-4 illustrates the window that is used to define this relationship. A New Source window is shown. Destinations are configured in the same way.

Figure A-4. Local and Remote Source Name Setup Window



Operational Considerations

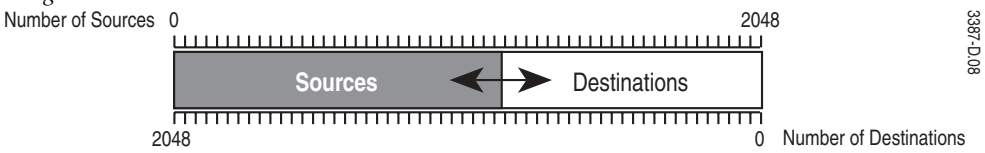
When accessing Sources from a remote system, there are important operational, or system performance, issues to consider. The following is a list of these.

System Limits

The maximum number for both Sources and Destinations is 2047, but the total number of Sources plus Destinations may not exceed 2048. In maximum conditions, an increase in Sources requires a decrease in the number of Destinations. This relationship is illustrated in Figure A-5.

Note PXY Family control panels do NOT work on systems with more than 1024 Destinations. Limit the number of Destinations to 1024 or fewer when using PXS, PXD, and PXYE panels.

Figure A-5. Maximum Sources and Destinations



Incorrect Signal

Communication delays between a local and remote system will likely result in incorrect video appearing briefly at the local system output, when that output is being fed by an inter-system TieLine. Networked systems should be employed for acquisition switching not live feed switching.

All-Level Source Takes

The local system sends Source and Destination take information that is not level-specific. The take requests received by a remote system are all-level takes. If any level configured in the target Destination is missing from the selected Source (not configured, crosspoint missing, or excluded Source) then error messages will result in the local system.

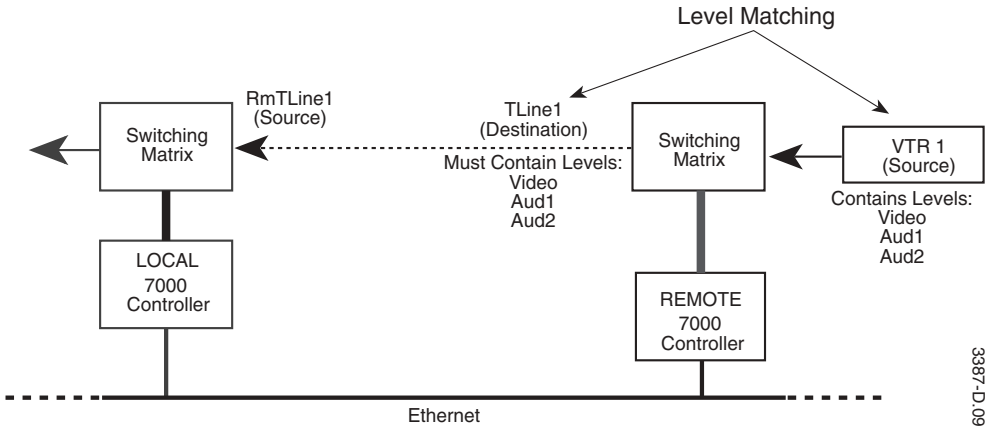
Remote Sources Not Configured Locally

A remote system can have Sources and/or Destinations that are unknown to a local system. For example, the remote system may have 128 Sources and 128 Destinations but the local system only wants to access 64 of the Sources and 64 of the Destinations. If an unknown Source is switched at the remote site to one of the known Destinations the tally will not reflect the status and will probably return a **NO XPT** message. To prevent this a Destination that is being used for a networked remote feed should be excluded from control devices in its local level.

Remote Source/Destination Level Matching

In planning the remote end of the network, be certain that all Destinations and Sources in the remote system (those that will be controlled remotely) match on every level. Refer to Figure A-6.

Figure A-6. Matching Levels



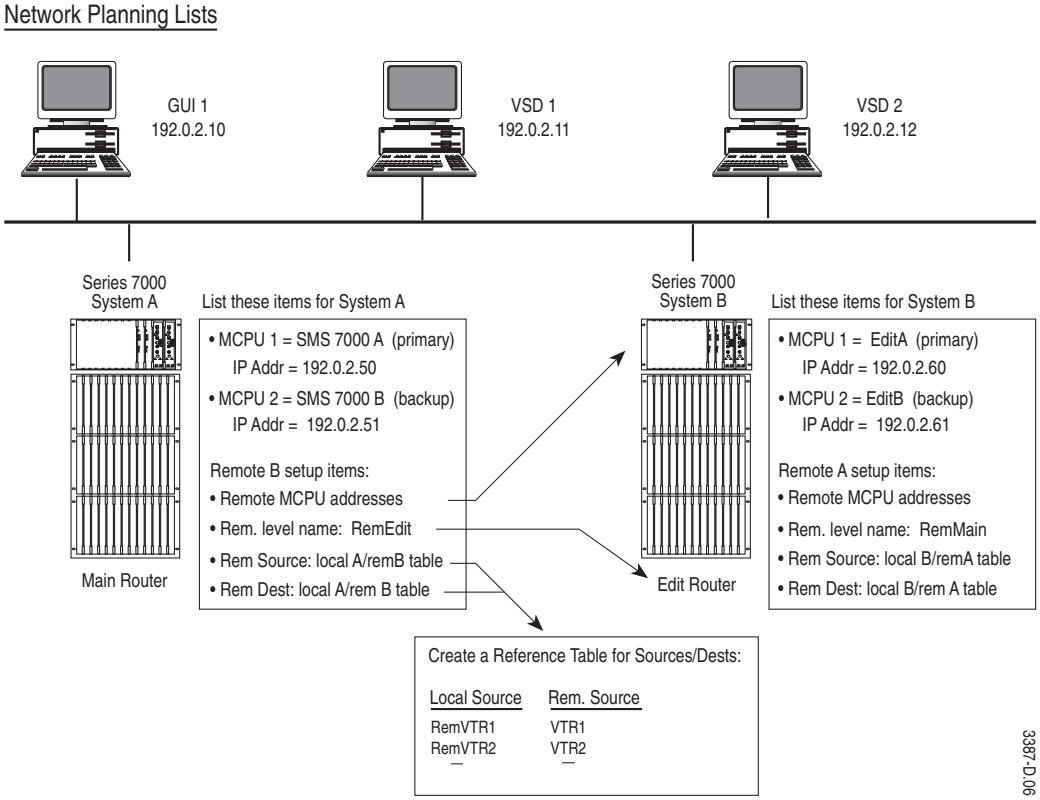
Planning the Network Configuration

To plan the Series 7000 Network, make a list of the items shown in Figure A-7, for each Series 7000 control system in the network. The names and addresses shown are typical; the actual names and addresses you list should reflect the functional names and host numbers in your network. Assign each PC and MCPU (Controller module) on the network a unique IP address and name. Create a list for each system in the network.

Each list should have:

- The local system MCPU IP address(es)
- MCPU IP address(es) for each Remote system that the local will be accessing
- A remote level name for each remote system that the local will be accessing
- A Source and a Destination table for each remote system that the local will be accessing

Figure A-7. Listing the Items of Configuration



Setting Up the Ethernet Network

After planning the network addressing and nomenclature (sources, destinations, levels, etc.) you will use your planning lists and the System Diagnostic Interface (maintenance terminal) to change the default names and addresses of the MCPUs for each system in the network. If you are unfamiliar with this procedure, refer to *Networking Addressing* *on page A-11*.

Configuring for the Network Remote End

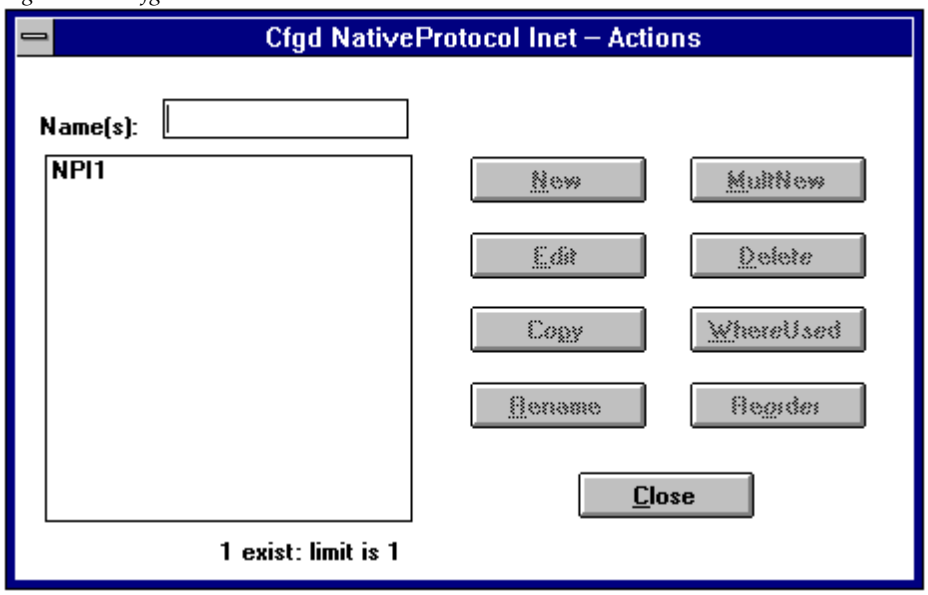
After setting up the Ethernet network, use the Series 7000 GUI to configure for native protocol over the Internet for the Controller modules (MCPUs) in the remote system.

To Configure for Native Protocol over the Internet

This procedure must be done offline.

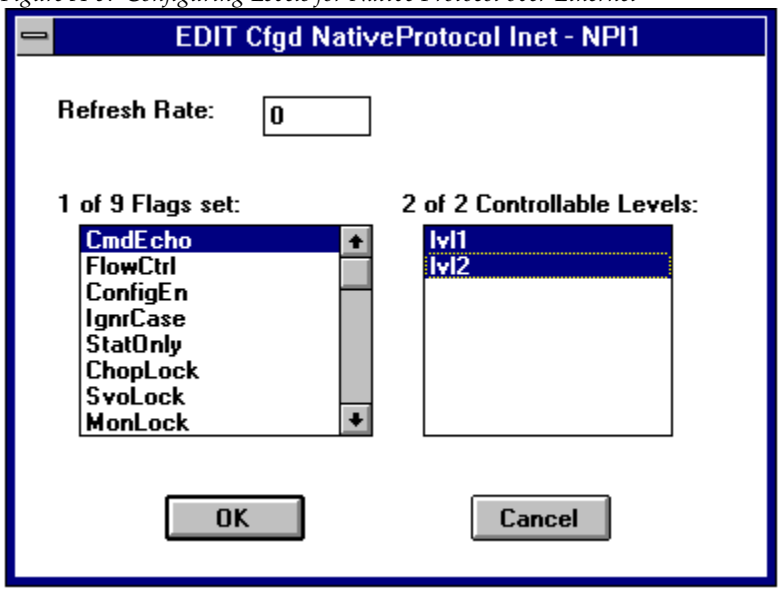
1. Under the **SETUP** menu, select **CFGD NP INTERNET** to access the Cfgd Native Protocol Inet Actions window.

Figure A-8. Cfgd NP Internet Menu and Actions Window



2. Highlight NPI1 and click on **EDIT**.

Figure A-9. Configuring Levels for Native Protocol over Ethernet



3. **REFRESH RATE:** Number of seconds to elapse without data traffic before the SMS 7000 reports communication loss.
   For most Native Protocol uses set to 15.
   Set to 0 if Background crosspoint tally is OFF.
   Set from 1 to 15 for number of crosspoints tallied per second.

4. **FLAGS:** Select appropriate flags, see Table A-1. Native Protocol Specific – may not apply to all protocols.

5. **CONTROLLABLE LEVELS:** Select Level(s) controllable through this interface. Native Protocol Specific - may not apply to all protocols.

6. Click on **OK** to accept currently displayed entries.

Table A-1. Native Protocol Flags

Flag	Definition
CmdEcho:	When set, the 7000 will wait to receive an echo of a command before sending the next. Protocol Specific – may not apply to all protocols.
FlowCtrl:	Select to enable Flow Control.
ConfigEn:	When set, the Amezi may be configured by a connected, capable, external device.
IgnrCase:	When set, the case of the transmitted and received data is ignored.
StatOnly:	When set, the Amezi will provide router status only through this port. No commands will be accepted.
ChopLock:	When set, the connected device is restricted from initiating chop activity.
SvoLock:	When set, the connected device is restricted from initiating salvos.
MonLock:	When set, the connected device is restricted from controlling system monitor crosspoints.
ProtOvrd:	When set, the connected device will be allowed to override protects placed by other system control panels.

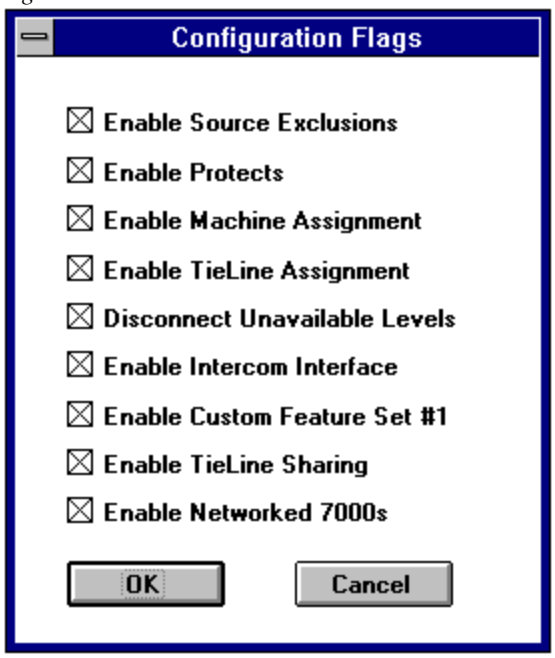
Configuring for the Network Local End

After setting up the Ethernet network, use the network GUI to configure the local image of each system in the network. Each system must have a remote image (Node Controller, Physical Matrix, Virtual Matrix, Level, Sources and Destinations) for each remote system that it will access. All configuration items are configured in the remote system as they are in any other SMS 7000 routing system. Unique properties of a network configuration are shown here.

The local end configuration procedure consists of these steps:

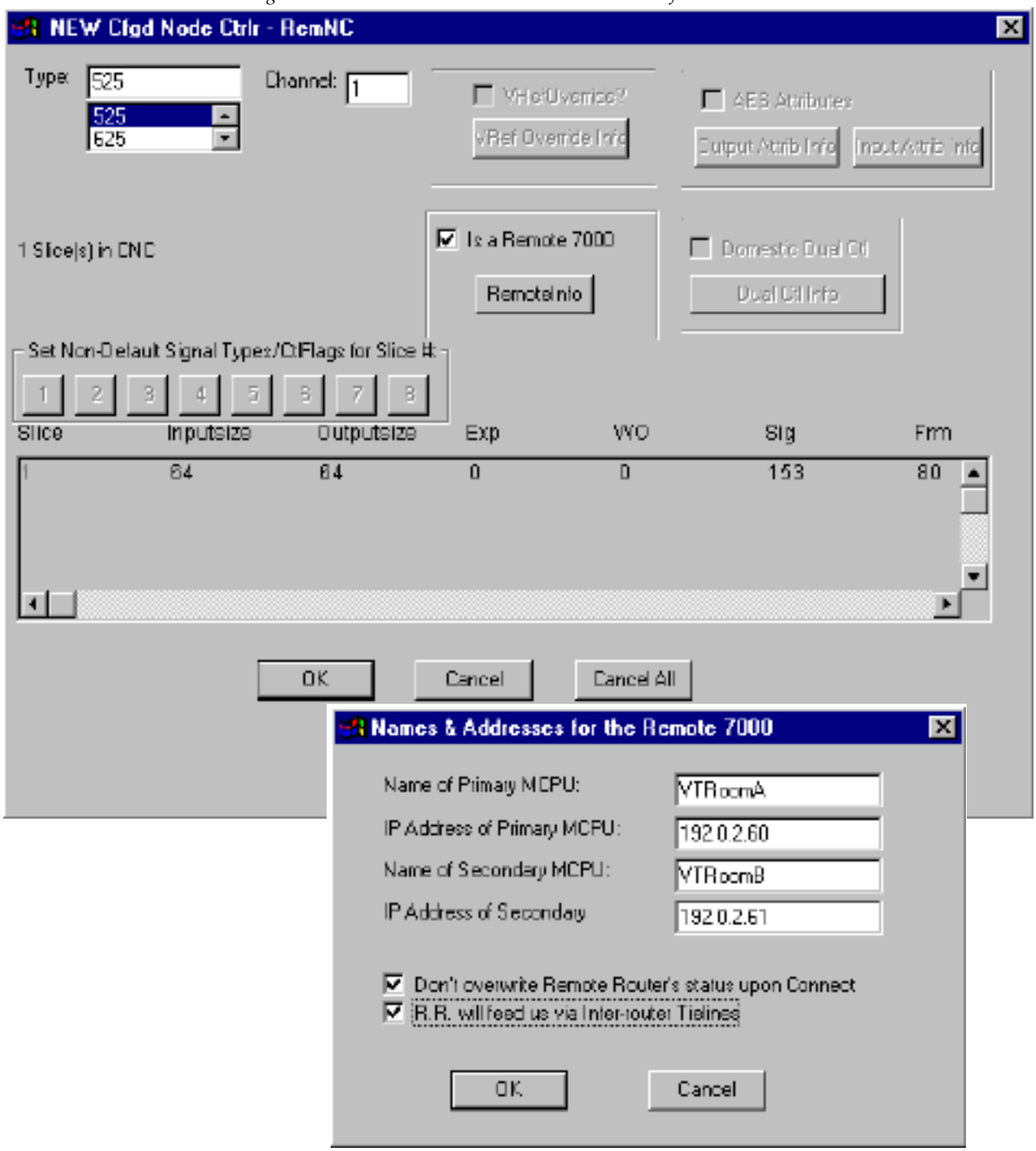
1. Check the system Enables and Limits, see *Enables* *on page 2-6*.

Figure A-10. Enable Networked 7000s Window



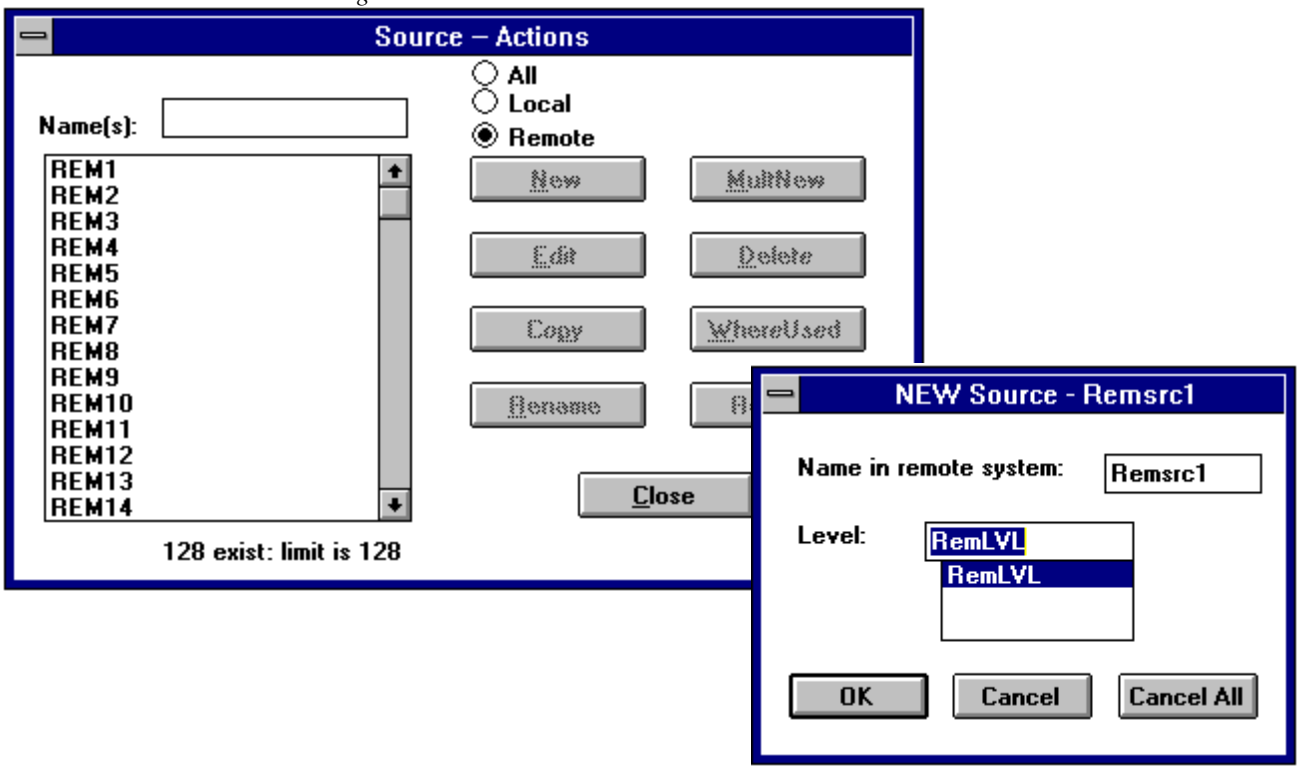
2. Configure a Configured Node Controller (CNC) record see *Node Controller Configuration* *on page 2-15*.

Figure A-11. Remote Node Controller and Remote Info Windows



3. Configure a Physical Matrix, see *Physical Matrix* *on page 2-26*.
4. Configure a Virtual Matrix, see *Virtual Matrix* *on page 2-31*.
5. Configure a Level, see *Levels* *on page 2-33*.
6. Configure Sources, see *Sources* *on page 2-38*.

Figure A-12. Remote Source Actions and New Remote Source Windows



7. Configure Destinations, see *Destinations* *on page 2-43*.

Networking Addressing

This is a guide for users with Series 7000 router control systems, who wish to connect together multiple router control systems or additional devices on the Ethernet network. It discusses many of the issues involved, and will provide some suggestions and guidelines on system configuration.

CAUTION In all cases, this document assumes that the network connecting the Series 7000 router control system and associated devices is a dedicated, local network, with no interconnection to other unrelated devices or networks. The issues involved with connection to a wider area or global network are beyond the scope of this document, and require a skilled system administrator to properly assign network and host addresses to the components of the Series 7000. Connecting Series 7000 devices to a larger network without regard to networking standards is likely to cause interference with the other devices on the network, and prevent proper operation of the Series 7000.

Ethernet Essentials

Networking using Ethernet is a very complex subject.This is a very simplistic description of Ethernet communications which should help you understand the rest of this document. If you are building a system which goes beyond the standard system described in the Series 7000 Installation Guide, It is recommended that you read additional material on Ethernet and networking.

Ethernet is a bussed communications network which permits information to be exchanged between devices connected to a common network. Each device has equal access to the network; there is no master bus controller. Further, the Series 7000 uses the Internet Protocol suite for the interchange of information; this is also referred to as TCP/IP, and is the protocol commonly used over the internet.

Physically, Ethernet can exist in several different configurations. The standard configuration for the Series 7000 uses 10base2 Thinnet as defined by IEEE 802.3. Interconnecting cable is RG-58 (or equivalent) 50-ohm coaxial cable, with BNC connectors. The maximum length of any single Thinnet bus is 185 meters, with a maximum of 30 nodes. No one coax segment may be shorter than 0.5 meters. BNC Tee connectors are used at each node, and each end of the bus is terminated with a 50-ohm termination. Large local area networks typically include multiple smaller networks and network segments connected by repeaters, gateways (network routers), and Ethernet bridges.

Each device attached to the network must be assigned a unique Internet address; this is also referred to as the IP address. An IP address is a 32-bit value, which is usually represented as four 8-bit decimal numbers separated by periods, such as 192.0.2.3. The address contains a network component and a host component; the number of bits assigned to each component is variable. There are limitations and conventions which must be followed when assigning an IP address to a device; these are beyond the scope of this document.

Each device may also be given a host name. The name is used to refer to a device in place of its IP address, to avoid having to remember and enter the IP address. The name is resolved into the corresponding IP address by the network software by looking in the HOSTS file, which resides either on the local host or on a network information server. Host names are not case sensitive.

Note If the HOSTS file is modified manually, the text editor (Notepad, for example) will usually add the txt extension to the file name. If the file has an extension it must be renamed to HOSTS.

Each Ethernet interface attached to the bus also has a unique Ethernet address, which is a 48-bit value assigned by the manufacturer of the interface hardware. When one device sends information to another, the destination Ethernet address is resolved by the interface software, and is generally hidden from the user.

Standard Configuration

For the purposes of this document, the standard Series 7000 router control system consists of a single or redundant pair of MCPUs in a control frame, and an PC-compatible computer. Interconnection between the PC and the router control system is either by SLIP (serial RS-232) for compact routers, or by Ethernet for a stand-alone control frame.

As configured by the factory, each of these components are assigned the following default parameters:

Table A-2. Default Parameters

DEVICE	IP ADDRESS	NAME
PC (GUI)	192.0.2.1	pc
Primary MCPU	192.0.2.2	sms7000
Secondary MCPU	192.0.2.3	sms7000b

The default IP addresses are class C Internet addresses which have been designated by the Network Information Center as test addresses; they are not suitable for use in anything but a dedicated local area network specific to the equipment involved.

An un-configured MCPU board defaults to the name and IP address of the Primary MCPU. If an MCPU board configured as either Primary or Secondary is used to replace the other, the parameters must be changed by editing the boot parameters (using the control system diagnostic terminal command **`booted`**).

Refer to *Default Boot Parameters* *on page A-17* for a listing and description of the MCPU boot parameters. The MCPU IP address is called the **INET** on Ethernet and MCPU name is **TARGET NAME** in the boot parameters. **HOST NAME** and **HOST INET** refer to the host PC name and IP address.

Serial Line Internet Protocol (SLIP)

Series 7000 compact routers use SLIP to communicate with the PC. This is a single point-to-point interconnection that does not allow connecting either multiple routers or multiple PCs. Because of the slower data rate of

the SLIP serial link, performance of either the GUI (Graphic User Interface) or the VSD (Visual Status Display) will be slower than in systems which use Ethernet.

While it is possible to run both the GUI and the VSD at the same time on the PC, this is not recommended because of the further reduction of performance when both use the same communications link.

Multiple PCs

This is the most common example of a requirement for networking, with multiple PC-compatibles each running either the GUI or the VSD. There can be up to eight VSDs connected to a router control system. You should not connect more than one GUI to any control system simultaneously. Performance is likely to be degraded if more than one instance of the VSD and/or GUI is executed at the same time on any one computer; you may not start more than one GUI on any one computer.

When connecting more than one PC-compatible to the network, each computer must be configured with a different and unique IP address and name. One computer may use the standard default name and IP address. As an example, the following IP addresses could be assigned to the additional computers:

Table A-3. PC IP Address

Computer #	IP Address	Name
1	192.0.2.1	PC
2	192.0.2.10	(user's choice)
3	192.0.2.11	(user's choice)
4	192.0.2.12	(user's choice)
5	192.0.2.13	(user's choice)
6	192.0.2.14	(user's choice)
7	192.0.2.15	(user's choice)
8	192.0.2.16	(user's choice)

Although networking conventions allow longer host names, the names you assign to Series 7000 devices should be 8 characters or less.

Additional computers may be assigned addresses by continuing the above sequence, keeping the first three numbers of the address (192.0.2.) the same (this is the network part of the class C IP address). However, if the host part of any IP address (the last number on the right) exceeds 15, it will be necessary to change the subnet mask in each MCPU; this is explained in the *SUBNET Mask & IP Address* *on page A-20*. You must not assign a host address part (right-most number) of 0 or 255, which are reserved.

One computer should always be designated as the main host computer for performing software upgrades and other maintenance, as required. This would generally be the host computer at IP address 192.0.2.1. If the name or IP address is changed, the corresponding fields in the MCPU boot parameters must also be changed. Be aware, however, that the new name and/or IP address will no longer match the examples and procedures given in the Series 7000 instruction manuals and documentation.

Multiple 7000s

As of software release 6, multiple Series 7000 router control systems may be connected together via Ethernet to allow one router to have limited control of crosspoints in another.

You must assign unique names and IP addresses for each MCPU in the system. It is then necessary to program the boot parameters of each MCPU using the system diagnostic console command **`booted`** with its assigned name and IP address.

In a network which is dedicated only to the Series 7000 routers and computers, you may use Table 4 for your assignments. You should assign pairs of addresses for the redundant MCPUs in each control frame, even if you have not purchased or installed the backup MCPU.

You should develop a consistent naming convention for the MCPUs in your system. As an example, the names in Table 4 append a suffix of A for primary MCPUs, and B for secondary MCPUs. MCPU names, including any suffix, must be no longer than 8 characters.

Table A-4. MCPU Names

IP Address	MCPU	Name
192.0.2.2	primary	SMS7000 (default primary MCPU)
192.0.2.3	backup	SMS7000B (default backup MCPU)
192.0.2.50	primary	VTR_A
192.0.2.51	backup	VTR_B
192.0.2.60	primary	Master_A
192.0.2.61	backup	Master_B
192.0.2.70	primary	Edit_A
192.0.2.71	backup	Edit_B

This example assumes that the network portion of the IP address (192.0.2.) will be the same for the standard configuration. This allows a maximum of 254 addresses (PCs and individual MCPUs) to be assigned to the network (host addresses 0 and 255 are not allowed). There is a limit of 30 nodes per un-repeated Thinnet segment. To use IP addresses ending in numbers higher than 15, see *SUBNET Mask & IP Address* *on page A-20*

Note You must make sure that the subnet mask field of each MCPU's boot parameters is set correctly for the class of IP address and subnet. In the example above, the default subnet mask will not work and must be changed.

While it is possible to assign network addresses other than the standard configuration (a "Class C" network address), the issues involved are beyond the scope of this document; consult a qualified network administrator. Make sure the subnet mask is set correctly.

Be aware that if the name or IP address of any MCPU is changed from the default (SMS7000 and 192.0.2.2), it will not be interchangeable with any other MCPU unless the boot parameters are again changed to match those of the MCPU being replaced. This also applies to any replacement board obtained from the factory, or any spare kept locally.

Multiple Networks and LANs

Interconnecting computers and Series 7000 control systems which reside on different networks, and/or connecting Series 7000 control systems to larger local area networks or wide area networks is not supported. However, it is possible, as long as network rules and conventions are followed.

Host names and IP addresses must be properly assigned for each individual MCPU and computer by a qualified network administrator. In addition, it may be necessary to configure boot gateways for each MCPU, as well as reserve and assign addresses for the MCPU backplane interface. The boot parameters of each MCPU must then be configured with the assigned parameters. Provisions are included in the MCPU software to support all classes of IP addresses, as well as multiple networks and subnets.

The following parameters will need to be configured for each MCPU:

1. IP address. This is configured as the **`INET ON ETHERNET`** in the boot parameters. It is convenient to assign sequential addresses to redundant MCPU pairs; they both must reside on the same network.

2. Target name. Each MCPU must be assigned a unique name, with 8 or fewer characters. You should use a naming convention which uses the same base name for each MCPU pair, with a different prefix or suffix. All names must also be added to the HOST file in each computer (in the Windows directory on Windows95/98 or /Winnt/System 32/drivers/etc. on WindowsNT), or to the Network Information Service database. They do not need to be added to the MCPU HOSTS file, although they can be added.

3. Backplane inet address. Refer to *Backplane IP Address* (page A-21) for a more complete discussion.

4. Gateway inet. One computer should be designated as the host which will be used for maintenance and software upgrades. This computer may be used for one or more Series 7000 routers. If this computer is not on the same network as the MCPU (pair), it will be necessary to configure the IP address of the gateway through which the computer can be reached.

5. Subnet mask. This should be the subnet mask assigned to the MCPU's network by the system administrator. If subnetting is not used, the value should be correct for the class of IP address chosen. Refer to *SUBNET Mask & IP Address* ()page A-20 for more details.

6. MCPU HOSTS file. This is not absolutely necessary, but may be desirable to assist in identifying remote routers in a networked system. Refer to *MCPU Hosts File* (page A-19)for more information.

7. MCPU GATEWAYS file. A gateways file must be created if you need to access the MCPU from a device on another network. Refer to *MCPU Gateways File* (page A-19) for information on how to do this.

Supporting Information

Default Boot Parameters

The following list shows the default boot parameters for an otherwise unconfigured primary MCPU. The column to the right contains references to the following notes, and is not part of the boot parameters. The boot parameters may be modified by using the **`booted`** command from the MCPU system diagnostic terminal.

Table A-5. Boot Parameters

Field	Setting	Notes
Boot device:	fi	1
Processor number:	0	2
Host name:	PC	3
File name:	SMS	4
Inet on Ethernet (e):	192.0.2.2:ffffff0	5, 6
Inet on backplane (b):	blank	7
Host inet (h):	192.0.2.1	8
Gateway inet (g):	blank	9
User (u):	smsuser	10

Table A-5. Boot Parameters - (continued)

Field	Setting	Notes
FTP password (pw):	smsuser	11
Flags (f):	0x8	
Target name (tn):	sms7000	12
Startup script (s):	blank	
Other (o):	ei or sl	13

Notes

1. Boot device: must be **`fi`** for normal operation. It is changed to **`ei`** to download the sms application into the flash program image from Ethernet, or **`sl`** to download via slip. It must be changed back to **`fi`** after downloading.

2. Processor number: always **`0`**.

3. Host name: The name of the main host computer which will be used to download software. FTPD must be run on the computer to perform downloads. This feature is only used for software upgrades to the MCPU sms application. (FTP may be used from any computer or other host on the network).

4. File name: always **`sms`**.

5. Inet on Ethernet: the IP address assigned to this target MCPU. The network component of this address must be the same as the network to which it is connected.

6. The subnet mask follows the target IP address, separated by a colon. Refer to *SUBNET Mask & IP Address* (page A-20) for details.

7. Inet on backplane: use the default except where noted in the *Backplane IP Address* (page A-21).

8. Host inet: the IP address of the host computer which is designated as the maintenance host.

9. Gateway inet: IP address of the gateway device, if the host computer is located on a different network than this MCPU. Blank if none.

10. User: This is the name which will be given by the MCPU when establishing an FTP session with the host computer to download the sms application image. FTPD must be running on the computer, and the user name must be in the file PorgramFiles\Xitami\ftpusers.sms. It should not be necessary to change this parameter.

11. Ftp password: used for the FTP session described above. It should not be necessary to change this parameter.

12. Target name: this should be configured with the name assigned to this MCPU.

13. In compact systems, the **`other`** parameter will be **`sl`** (for slip) instead of **`ei`** (for Ethernet).

MCPU Hosts File

The MCPU HOSTS file contains entries which allow network names to be resolved into network addresses, and vice versa. Valid entries in the file are read at MCPU boot and added to the internal host table.

This file is generally not needed for normal operation of the system; it is only needed when network names are entered as part of a file name from the sysdiag command line, or if a host name is used in the gateways file. It is also used in networked control systems to identify the name of connected systems. The name of the download host in the boot parameters is automatically entered into the host table at boot up.

Entries in the hosts file must be ASCII text formatted in the UNIX convention: Internet address, followed by the host name, followed by host name aliases. Items are separated by spaces and/or tabs. A **#** character begins a comment; all characters up to the end of line are ignored. Blank lines are also ignored. Lines cannot be longer than 256 characters. Internet address are in standard decimal dot format, starting with a decimal digit.

For example, the following file could be used to refer to other hosts on the network:

Table A-6. Hosts File Names

# MCPU hosts file example	Name	Usage
192.0.2.9	configPC	# pc in maintenance area
192.0.2.60	Master_A	# master control primary MCPU
192.0.2.61	Master_B	# master control backup MCPU

Use the sysdiag command "**`hostShow`**" to display the contents of the internal host table. This command may be used to see if your host file was read correctly.

The HOSTS file must reside in the MCPU's FM0: flash file system. The easiest way to create the file is to use an ASCII text editor on the host PC, and then use FTP on the PC to transfer the file to the MCPU.

MCPU Gateways File

The MCPU GATEWAYS file contains entries which allow network routes to be added to the internal route table. The file is read at MCPU boot and added to the table. This file is needed only if you access the MCPU from a

device which is on a different network than the MCPU. A gateway is a network message router which has a connection to the other network as well as the same network as the MCPU.

Entries in the gateways file must be ASCII text formatted with one gateway per line: The first entry on a line must be either a network address (host part = 0) or a specific host address; the second entry must be a gateway address. Either may be a name in the hosts table, or an IP address in the standard format. A network address of 0.0.0.0 (first address) designates the default gateway. It may be best to use IP addresses instead of names, to avoid dependence on the HOSTS file.

Items are separated by spaces and/or tabs. A **#** character begins a comment; all characters up to the end of line are ignored. Blank lines are also ignored. Lines cannot be longer than 256 characters. For example, the following entries tells the MCPU that it can access network 200.1.1.0 via a gateway located at IP address 192.0.2.205:

Table A-7. MCPU Gateways

# MCPU Gateways File Example	IP Address	Usage
200.1.1.0	192.0.2.205	# network 200.1.1.0
192.0.1.50	192.0.2.205	# specific host

A route will not be added to the table if the gateway is unreachable; this will be the case if the gateway does not have the same network address of the MCPU, or if the subnet mask is set incorrectly. The gateway, if any, specified in the boot parameters is not automatically added to the route table. Use the sysdiag command **"routeshow"** to see if your gateways file was read correctly.

The GATEWAYS file must reside in the MCPU's FM0: flash file system. The easiest way to create the file is to use an ASCII text editor on the host PC, and then use FTP on the PC to transfer the file to the MCPU. If a gateways file does not already exist, it will be necessary to use a PC or host which is on the same network as the MCPU in order for FTP to be able to communicate with the MCPU.

SUBNET Mask & IP Address

The subnet mask is an optional parameter that is specified in the boot parameters of the MCPU, and during configuration in PC-NFS. Its purpose is to allow the use of subnets where necessary, but in a more general sense, it specifies which bits of the Internet address comprise the network component of the address.

Unless you know that a different subnet mask is required, you should use a subnet mask which matches the standard network mask for the class of Internet address you are using. For the default Class-C addresses chosen for the Series 7000 on a closed network, the subnet mask should be

FFFFFF00. The default subnet mask in the boot parameters, FFFFFFF0, will need to be changed if you assign any new addresses with a host component greater than 15.

Internet (IP) addresses contain two components, a network address and a host address. The network address is always a specific contiguous number of the most significant bits of the 32-bit IP address, and the host address is always in the remaining bits. Internet addresses are grouped into three classes: A, B, and C, in which the first 8, 16, and 24 bits (respectively) are used for the network address component, as follows:

Table A-8. Network Addresses

Internet address	IP Address Starts with	Standard network mask
Class A	1 to 126	FF000000
Class B	128 to 191	FFFF0000
Class C	192 to 223	FFFFFF00

Other network addresses not in the ranges above are reserved and must not be used.

Backplane IP Address

The backplane IP address is used for communications between the primary MCPU and the secondary MCPU. The default address is 192.0.3.4 for both the primary and secondary; the secondary dynamically modifies the configured address by adding one.

You should not have to change the backplane inet address for most system installations. However, if you change the default network number (network component of the IP address), or if you connect the Series 7000 to a local area network containing more than one network number, you may have to assign a unique network number and modify the backplane inet address of all MCPUs.

The requirements for the backplane inet address are that the network component of the address must be different than the network number of the MCPU, and must also be different than any other network number reachable by the MCPU.

Be aware that if the backplane inet address field in the boot parameters is blank, the MCPU will use an address constructed by adding one to its own network number. If this would result in a network number which matches any other network reachable by the MCPU, you must assign a new IP address with a unique network number, and configure that into the MCPU boot parameters.

Glossary

AES

Audio Engineering Society. AES represents any of the digital audio standards established by the Audio Engineering Society.

AES/EBU

Name for a digital audio standards established jointly by the Audio Engineering Society and European Broadcasting Union. The sampling frequencies for this standard vary depending on the format being used.

Alarm

A signal indicating major or minor alarm conditions.

Alien Matrices

Any matrix which is not a part of the Series 7000 router product line.

All-level Takes

Switch the same input number on all Levels, to the controlled Destination.

Amezi

Asynchronous Mezzanine board. An RS-422/RS-232 communications board which mounts on the 7000 MCPU or a 7000 Communications Interface (CIF) module and provides RS-422 and RS-232 ports. The Asynchronous Mezzanine board is one of several mezzanine boards of differing functionality.

ANC

Active Node Controller. An ANC is communicating with the MCPU and will appear in a list of Active Node Controllers when polled by the GUI. The Enhanced Node Controller and the Matrix Controller modules also appear in the list. ANCs include both the primary and backup Controller modules.

ANSI

American National Standards Institute.

Assignment

Assignment is an action that grants permission for exclusive control of a resource. Multiple devices may be assigned permission for exclusive control of a single device, however only one may exercise control at a specific point in time.

Control of particular sources and TieLines can be Assigned to destinations on a case-by-case basis. The Assignment system is enabled (Machine and TieLine Assignment) through the GUI Enables menu. Active Assignments are controlled through the GUI (on-line, OnLine menu, Assignments submenu) or may be handled by an external automation or scheduling system.

Backplane (Rear connector channel, Motherboard)

The circuit board at the back of an electronics frame where modules (from the front) and cables (from the rear) are plugged-in.

BNC

Bayonet Neill-Concelman (BNC) connector. (Named for its inventors). A type of coaxial cable connector.

BPI

Backplane Interface. This is required for a Communications Interface module to communicate with a MCPU module.

BPS

Button Per Source. Name given to a panel feature that performs a source take with the single push of a button.

Breakaway

A Take operation which is performed by accessing the control Levels of a Destination individually and selecting a different Source on at least one Level than that selected on the others. Breakaways allow a Destination to selectively utilize video and audio from different Sources.

BSY

Busy. This is commonly found on the modules to identify the yellow busy LED.

Bus

A signal path to which a number of inputs may be connected to feed one or more outputs. Also, a signal path used to communicate between devices such as the node bus or the Control Panel bus. the node bus is used to communicate between the MCPU and the Controller modules. The Control Panel bus is used to communicate between the MCPU and Control Panels.

Chop

A variation of a Take command that alternately connects each of two different Sources to a single Destination (flip-flopping) at a designated switching rate (the chop rate).

CIF

Communication Interface. A Series 7000 optional CIF module is a general purpose communications interface module used to augment the capability of the Series 7000 MCPU when the MCPU is housed in a standalone Control Frame. Each CIF module will support four mezzanine submodules; mezzanine submodules in turn provide a particular communications capability.

CLN

Client Control Panel. A companion panel used with the Server panel to expand Source and Destination selection. Each Client controls three Destinations.

Coaxial Cable (coax)

A cable which has a metallic noise shield surrounding a signal-carrying conductor. In video, the cable impedance is typically 75 ohms. Ethernet coax is typically 50Ω impedance.

Cold Start

A boot from power off.

Component Video

The un-encoded output of a camera, videotape recorder, etc., consisting of 3 primary color signals: Red, Green, and Blue (RGB) that together convey all necessary picture information. In some component video formats, these three components have been translated into a luminance signal and two color difference signals, e.g. Y, R-Y, B-Y.

Composite Video

An encoded video signal, such as NTSC or PAL video, that includes horizontal and vertical synchronizing information.

Control Device

Panel, computer, or other device that controls router crosspoint selections.

Control Panel Bus (CP bus)

Communications path between control panels or devices and the MCPU which controls the routing matrices.

Controllers

Part of the control system, Controllers are circuit modules which interface between the MCPU and signal processing modules.

COS

Cubicle or Studio. A custom configuration set.

CPO

Clear Protected Output.

Crosspoint (XPT)

An electronic switch that allows a signal to pass from an input to an output when the switch is closed.

DA

Distribution Amplifier. The Series 7000 uses DAs to expand outputs.

Data Matrix

A signal processing matrix containing modules that route RS-422 or RS-485 data.

Default

The setup condition existing when a device is first powered-up or after a system restart.

Destination (DEST or DST)

The point to which Source signals are routed. In Series 7000, a Destination may include one or more outputs, across multiple Levels, with any connector number offset (user-defined in system configuration). (See Multi-level Switching in Section 1.)

Destination Exclusion Set (DXS)

User-determined set of Destinations excluded from control by a particular panel. If used, Destination Exclusion Sets are included in a Panel Template before the template is downloaded to a particular control panel. A specific Destination Exclusion Set may be shared by more than one panel template.

DGND

Digital Ground.

DST

See *Destination (DEST or DST)*.

DSVOM

Dual Sync Video Output Monitor. Part of the DV Series.

Dumb Terminal

A conversational slave to a host computer.

EC I/F

External Control Interface.

EDP

Eight Destination Paging control panel.

EMI

Electromagnetic interference.

ENC

Enhanced Node Controller. Designed to replace the Node Controller it can be used in all Classic and DV Series matrices. The ENC is required for Dual Control of a matrix by the Series 7000 Control System and an external device such as a PC. The ENC does not support the Kscope Interface Mezzanine.

EPROM

Erasable Programmable Read Only Memory. EPROMs are non-volatile memory chips. They are commonly called Flash memory chips.

ERR

Error. This is commonly found on the modules to identify the red error LED.

Ethernet

A local area network (LAN) technology capable of transmitting information between computers at speeds of 10 and 100 Mbps.

Exclusion

User-determined Sources excluded from routing to a particular Destination.

FC

Frame Controller.

FET

Field Effect Transistor.

First Come First Served (FCFS)

Tieline status where it is not necessary to create a reservation to use the specified Tieline.

Flag

A parameter that can be set in a control panel template to control how the panel operates.

Flash Memory

See: *EPROM*.

Flip-Flopping

Alternately connecting each of two different Sources to a single Destination (at a designated switching rate (See: *Chop*).

GBR (Green, Blue & Red)

The three primary colors used in video processing, often referring to the three un-encoded outputs of a color camera. The sequence of GBR indicates the mechanical sequence of the connectors in the SMPTE standard. *Also see: RGB.*

GPI

General Purpose Interface. Refers to the HX-GPI or Horizon General Purpose Interface used to connect a Horizon Routing Switcher to a Series 7000 System.

GSC

Global Serial Channel. Refers to the GSC Mezzanine which provides additional BNC, serial communications ports for the Series 7000 MCPU. The four additional BNCs provided per mezzanine can be used as additional control panel bus or Tally System ports. The GSC can also be used to provide Node Control Bus expansion. In this capacity, only one of the four BNCs can be used because traffic density is too great for all four BNCs to be serviced by a single communications controller.

GUI

Graphical User Interface. Refers to the Configuration Editor software program used to configure the Series 7000 System.

Hardware

1. Electrical devices connected through physical wiring. 2. Electronic programming technique using physical connections and therefore essentially unalterable.

HDTV

Television with a resolution approximately four times that of Conventional Definition Television and a 16:9 (H x V) picture aspect ratio.

Heartbeat

A health status message provided by networked frames that are polled by MCPUs.

Horizon

A Grass Valley line of routing switchers.

HX

Grass Valley Horizon Series Crosspoint Routing System.

IBOP

Interconnect /Break Out Panel. An option panel used to add BNC connectors to an audio matrix using 50-pin D connectors.

ID or IDENT

A software routine that identifies a device (e.g. a control panel). Includes such information as:

- controlled Destination
- active tally level
- panel name
- software version
- system name

I/O

Abbreviation for input/output. Typically refers to sending information or data signals to and from devices.

Input

A single physical, numerically designated connection point of an in-coming signal to a matrix. One or more Series 7000 inputs can be assigned to a Source name during System Configuration.

Input Offset

Unlike traditional multi-level systems, Series 7000 Sources do not have to use the same input connector number on each matrix Level (i.e. RGB inputs for one Source can use input #1 in one matrix for R, input #4 in another matrix for G, etc.) The offset of the input numbers used is logged in the System Configuration.

J Number

Jack Number.

Jumper

A short conductor used to manually bridge two contact points. Used in Series 7000 Alarm system. Also called a strap.

Kadenza

A Grass Valley Group digital video effects system that can be used in an integrated environment with the Series 7000.

Kaleidoscope

A Grass Valley Group digital video effects system that can be used in an integrated environment with the Series 7000.

KISS

Key Input Source Select. Used in configuring the Kscope Key Sources.

KScope

The collective name for Kadenza and Kaleidoscope.

Krystal

A Grass Valley Group digital video effects system.

LED

Light emitting Diode. In Grass Valley products, LEDs illuminate to indicate a specific state (such as normal, error, on-line, and so on).

Level

Level is a name given to a group of signals that have something in common such as video, audio right, audio left, R, G, or B. This grouping becomes an independently controllable stratum of signals or crosspoints within a Physical Matrix or routing system. A Level may include more than one Virtual matrix as a slaved set. All elements in a Level respond to commands addressed to that Level.

Local

Local is used during configuration to identify local Sources and Destinations. Local Sources and Destinations are inputs and outputs physically connected to the Series 7000 System using the related configuration file.

Master

A module that controls a subordinate (slave) module.

Matrices

Plural of matrix.

Matrix

A configuration of potentially intersecting inputs and outputs. In routing switchers, signal switching hardware configured such that any input may be switched to any output.

MB4

Programmable Multibus 4 Control Panel.

MB8

Programmable Multibus 8 Control Panel.

MC

Matrix Controller. Controller module used in 7500 Series matrices.

MCO

Machine Control Only Control Panel.

MCPU

Master Control Processing Unit. This module provides:

- Overall system control
- Node manager interface to Series 7000 matrices
- Direct control panel support for up to 64 control panels
- Programmable real-time clock, date and time stamping for logged events
- Redundant controller interface (allows primary and backup MCPU pairs)
- Static RAM sizes (ranging from 128k bytes to 4M bytes) are supported
- Flash ROM sizes (ranging from 128k bytes to 4M bytes) are supported

MEC

Matrix Element Control. The MEC bus connects the control circuits of the various matrix modules in a frame section to the Node Controller. In some cases, when the MCPU and Node Controller reside in the same frame, these connections are all internal to the frame. More often, there are multiple Node Controllers in a system and a coaxial cable is run between Node Bus ports of each frame in the system. Only secondary systems and a particular compact configuration run external MEC buses.

MEDIC

Matrix Element Decode Integrated Circuit. Used as a communications bus between the MCPU and Controllers.

Mezzanine

A secondary printed circuit module consisting of a flat circuit board of insulating material with conductive circuits etched on and/or components mounted on its surface. These submodules generally plug into a primary module. Sometimes referred to as a submodule or daughter board.

Module

A single circuit board or assembly of circuit boards that can be readily removed from an electronics frame without first having to remove screws or other mounting hardware.

Multiformat

Ability to pass multiple signal types, such as serial digital, analog component, and analog composite.

Name(s)

Sources, Destinations, Levels, Salvos, Control Panels, Node Controllers, MCPUs, Mezzanine Boards, Tally Modules, and other components of the Series 7000 system all have names. When system software sets out to perform a function, a Take for instance, it looks for the source name, determines the inputs involved, and Takes the Source to the Destination specified (by name). Naming conventions are discussed in Section 1 of the *Configuration* manual. Names are important to operation and equally so to configuration.

NB (Node Bus)

Node Bus. A name for the communications bus between the MCPU and Controllers.

NB (Narrow Band)

Identifies the 7500 Series AES Audio Matrices.

NC

Node Controller. Controller used by Classic and DV Series matrices. The controller collects information from the modules in a matrix, sends the information to the system MCPU, and receives instructions from the MCPU.

Node Controller

See *NC*.

NTSC

Standard for scanning television signals. Used in the U.S., Canada, and Japan.

Output

A single physical, numerically designated connection point of an out-going signal from a matrix. One or more Series 7000 outputs can be assigned to a Destination name during System Configuration.

P32

32 Button-per-source Control Panel.

P48

48 Button-per-source Control Panel.

PAL

Standard for scanning television signals. Used in most European countries.

Panel Prefixes

A set of 1-to-8 printable ASCII character strings assigned to the 16-button or 24-button keypads on control panels. Used with suffixes to comprise a complete Source or Destination name. (Prefixes and 1-character suffixes are assigned to panel Keypad sets.)

Panel Suffix Set

A set of single printable ASCII characters usually the numbers 0-9 assigned to 10 buttons of a control panel 16-button or 24-button keypad. Pre-configured defaults exist for Telephone and Calculator style suffix sets.

Panel Template

Configuration data specifying control panel configuration; which includes items such as Tally Level, Destination, button assignments, and Flags restricting or allowing certain actions. Completed templates are downloaded to specific control panels.

Physical Matrix

Defines the total Input/Output size of a like signal type matrix. A Physical Matrix may be sized from 16x16 to 1,024x1,024 in increments of 16. Physical Matrices may be used to unite discrete frames in a large matrix or to fragment a single frame into smaller matrices. Every system must have at least one Physical Matrix and one Controller slice.

PLD

Programmable Logic Device.

Port

A connector, usually bidirectional, through which one device communicates with others.

Preset

Selecting a Source in preparation to taking it to air; a tentative change to one or more crosspoints which has not yet been executed.

Protect (PROT)

A control function which prevents control panels or devices from changing the current Source selection for the specified Destination.

PROTOVRD

Protect Override.

PWR

Power. This is commonly found on the modules to identify the green power LED.

PXD

X-Y Destination Control Panel.

PXS

Programmable X-Y Source Control Panel.

PXY

Programmable X-Y. Used to identify a group of control panels consisting of a PXS, and one or more PXYE and PXD panels.

PXYE

Programmable X-Y Expansion Control Panel.

Rack

An equipment rack. A standard EIA equipment rack is 19 inches (48.26 am) wide.

Rack Unit (RU)

Unit of measure of vertical space in an equipment rack. One rack unit is equal to 1.75 inches (445 mm). The height of a GVG electronics frame is typically specified in rack units.

RAM

Random access memory.

RAS

Remote Access Service.

Rear Connector Channel

See *Backplane (Rear connector channel, Motherboard)*.

Reboot (Reset)

To restart a computer, reloading the software.

Redundant Power Supply

Backup power supply which takes over immediately if the primary power supply fails.

Remote

Remote is used during configuration to identify remote Sources and Destinations. Remote Sources and Destinations are inputs and outputs not physically connected to the Series 7000 System using the related configuration file. These remote Sources and Destinations are controlled over a network.

Reserved

Tieline status where a reservation is required to use a specified Tieline. See *First Come First Served (FCFS)*.

Reset

See reboot.

Resource Group

A resource group is an association of machine control devices all within a single work area.

RGB (Red, Green & Blue)

The three primary colors used in video processing, often referring to the three un-encoded outputs of a color camera. *See GBR (Green, Blue & Red)*.

ROM

Read Only Memory.

Room

A group of Destinations (usually a physical studio or control room within a facility) to which machine control and tally assignments can be made by an automated facility control system or the GUI Assignments menu. An assignment made to one Destination in a room allows control by any of the Destinations in that room.

RP

Rear Panel. RPs are special connector channels that support the various mezzanine boards. They are attached to the back of the stand-alone Control Frame according to which mezzanines are on the associated CIF module.

RS-232 or RS-232C

A serial data communications standard. RS-232C is a low-speed serial interface which uses a single-ended (unbalanced) interconnection scheme. Commonly used in telecommunications to connect computers and terminals to modems and other devices. The C suffix refers to the version of the RS-232 standard.

RS-485

A high-speed serial interface connection between data communications equipment. RS-485 specifies the characteristics of a balanced (differential) multipoint transceiver/receiver interface.

RU

Rack Unit. See *Rack Unit (RU)*.

Salvo (SVO)

A named, system-wide Preset which, when executed, may change crosspoints on one or more Destinations at the same time.

Salvo Elements

The individual take commands (Source to Destination connections) which comprise a Salvo.

Salvo Permission Set

User-determined set of Salvos permitted to be controlled by a specific panel. If used, Salvo Permission Sets are included in a Panel Template before the template is downloaded to a particular control panel. A single Salvo Permission Set may be used by more than one panel template.

SCP

Simple Control Panel.

SDP

Single Destination Paging control panel.

SDV

Serial Digital Video.

SERIM

Serial Interface Module.

SID

Source Identification panel.

Slave

Component in a system that does not act independently, but only under the control of another component.

Slice

A group of inputs and outputs assigned to a Controller.

SLIP

Serial Line Internet Protocol. Used only in SMS-V64x64 Systems to communicate with the GUI.

SMS

Signal Management System.

Source

Software defined, can be made up of one or more inputs on one or more Levels (i.e., a Source may consist of one input on the video Level and two inputs [left and right] on the audio Level). Two different Sources may share one or more inputs on one or more Levels. For example, if the Source **BARSTONE** (Bars, Tone) consists of a video and an audio input connected to a Color bar generator, BarsSil (Bars, Silent) can use the same video input.

Source Exclusion

This provides a means for limiting system access to specified sources on a Destination by Destination basis. Also, it prevents the inadvertent transmission of material that might be inappropriate for a specified Destination. Source Exclusion is applicable to all Levels on which a specified Source appears. Multiple Sources shall be excluded for single or multiple Destinations.

SMPTE

Society of Motion Picture and Television Engineers.

SRC

Source. See *Source*.

SS

Secondary Switch. The Series 7000 uses SSs to expand inputs.

Status

The current Source connected to a given Destination on a specific Level (usually the Tally level); sometimes referred to as the on air signal.

STB

Strobe.

Strap

A short conductor used to manually bridge two contact points. Used in Series 7000 Alarm system. Also called a jumper.

STROPCHS

Store Operator Changes.

Submodule

A small circuit board designed to mount on a larger module. Also known as a mezzanine board.

SVO

See *Salvo (SVO)*.

SVR

Server.

System Controller

Another term for the MCPU.

Take

Direct, immediate switching from one Source to another, occurring during the vertical interval for clean transition. The control operation which switches a Source or Sources to a Destination.

Tally

An acknowledgment returned to a control panel or terminal that an operation has been executed.

Tally Level, Active

Initially set to the default tally level, the active tally level will tally if the default tally level is not defined for the Destination assigned to a bus. In the UCP,MB8, and Client panels, the name(s) of this/these Level(s) appear(s) in the status display(s) at the start of the IDENT function.

Tally Level, Default

Set during Configuration, this level is the default Level that will tally in panel displays if no other Level tally is activated by control panel operation. In the UCP, MB8, and Server panels, the name of this Level appears in the Preset display at the start of the IDENT function.

Tally Modules

Circuit modules, housed in Grass Valley MAX Series frames, which use opto-isolated inputs and relay closure outputs to facilitate visual or aural tally indicators within a facility. For example, when a Source machine is selected on a Destination, the returned tally could light a lamp to let the machine operator know that a machine was in use.

TCI

Terminal Computer Interface.

Terminate, Termination

To complete a circuit by connecting a resistive load to it. A video termination is typically a male BNC connector which contains a 75-ohm resistive load.

TieLine

A physical connection used to give a Destination connected to the output of one matrix access to Source equipment connected to the input of another matrix. A signal which passes through 2 or more matrices; more specifically the path (consisting of 1 or more Tie Wires) which links a Destination of one matrix to a Source of another matrix. Tielines are established during system configuration.

TieLine Type

Is the Level created to be assigned to one end of a TieLine. Each TieLine must have two TieLine Types, one for each end.

Tie Wire

A physical cable which links the output of one matrix to the input of another matrix. One or more tie wires comprise a tie line.

Time Code

Timing code laid down on video tape to give each frame a unique number to ensure exact transitions during editing.

Timing Scatter

The temporal range of the different electrical lengths of router paths.

TLYLVL

Tally Level.

TM

Tally Module.

Toggle

To switch back and forth between two settings.

Twisted Pair

A cable composed of two small insulated conductors twisted together without a common covering.

UART

Universal Asynchronous Receiver Transmitter.

UCP

Universal Control Panel.

UMD

Under Monitor Display.

VI

Vertical Interval.

Virtual Matrix

Virtual Matrices can be used to fragment a Physical Matrix. Inputs and Outputs within a Virtual Matrix need not be contiguous. Only Destinations with Outputs in a given Virtual Matrix will be able to directly, without using a TieLine, access the Sources within that Virtual Matrix. As an example of their functionality, Virtual Matrices, working with control Levels, allow you set up selected Inputs and Outputs to handle R, G, B video signals by assigning each component to its own Virtual Matrix. Extending this example, if you assign the R, G, and B Virtual Matrices to the same control Level, they will always switch together as a married block; if you assign the R component Virtual Matrix to one Level, and the G and B Virtual Matrices to a second Level, you would then be able to break the R component away from the other two by selecting to control only the R Virtual Matrix associated Level at the control panel.

VISS

Video Input Source Select.

VITC

Vertical Interval Time Code.

VOM

Video Output Monitor

VSD

Visual Status Display.

VT100

A standard protocol for dumb terminals. VT100 terminals may be used for router diagnostics.

Warm Start

A boot from power on, where the CPU and peripherals are already powered up (warm).

A warm boot might be performed after a software crash or a hardware reset.‘

WO

Which block of Outputs.

XPT

See Crosspoint.

YUV

A type of video which employs luminance (Y) and two color components (U [B-Y] and V [R-Y]).

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