

Scaleable Intelligent Video Server System

<i>Title</i>	Fabric Management Services and Utilities – SES GUI Functional Specification
<i>Revision</i>	Version 3
<i>Deliverable #</i>	D9.4
<i>Author</i>	Tim Pearce
<i>Company</i>	Xyratex
<i>Date</i>	February 23, 2006
<i>Filename</i>	
<i>Dissemination¹</i>	PU

REVISION	DATE	DESCRIPTION
Version 1	2006-01-12	1 st draft
Version 2	2006-02-23	Release
Version 3	2007-04-17	Update to PU version

¹ **CO** = Confidential (only for members of the consortium + EC); **RE** = Restricted to a stated circulation list (+ EC) [replace this footnote with the list]; **PP** = Restricted to other FP6 participants (+ EC); **PU** = Public

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Introduction

The SES GUI is a plug in to StorView that allows JBOD, EBOD, MBOD and SBOD systems to be managed when not hidden behind a RAID chassis and connected directly via FC, SATA or SAS.

The application will be fully embedded and integrated into StorView, including with installers, such that it is a seamless integration from the users perspective.

The GUI must be able to support and display multiple chassis simultaneous in a non heterogeneous set up where a mix of different chassis' is possible.

Caveat: It should be noted that the application supports a wide range of chassis' and controller cards and that not every card supports every feature or even reports them the same way (or even correctly in some cases). This means that certain items might change or be removed depending upon the hardware involved.

The application uses a basic palette to determine colours. This palette determines things such as background colours, button colours, some text colours, tab colours and other things. The colours used in this document do not necessarily reflect the palette a user has or is shipped.

Different operating systems can change the appearance of some window based controls so a users experience is partly dependent upon this as is the way the system works.

Chassis support list

The System is intended to support the following Chassis':

- 1) RA-4835
- 2) RS-1603
- 3) RS-1602
- 4) RS-1600
- 5) RS-1402
- 6) RS-1400
- 7) RS-5xxx
- 8) RS-1220

Controller support list

Each controller is supported in any valid chassis above. The controller list is as follows:

- 1) Jake
- 2) Jake-2
- 3) ESH-2
- 4) Phoenix-2
- 5) Firebird
- 6) Thunderbird
- 7) Goshawk
- 8) 5000 series JBOD controllers
- 9) RS-1220X
- 10) RS-1603X

It is imperative that the GUI integrate within StorView however it may also be run standalone. The application will be a Java Applet which can be built as a java executable if desired, but only if requested.

OS support list

The application has to work on the follow operating systems:

- Windows XP
- Windows 2003 Advanced Server SP1 or latest
- Red Hat Linux AS4 Update 2 or latest
- Red Hat Linux AS3 Update 6 or latest
- Red Hat Linux ES4 latest
- Red Hat Linux ES3 latest
- SUSE Linux ES 8
- SUSE Linux ES 9
- Future releases will support Windows Vista

These operating systems have to be supported by the installation program which should look the same on each platform. Each platform is only supported on 32 bit processors although 64 bit processors should work (but are not guaranteed).

HBAs supported

- Qlogic 234x
- Emulex LP9000
- Emulex LP1050
- LSI SAS HBA

It should be noted that a mix of HBAs is also supported in one PC. Just because an HBA is not in the support list does not mean it will not work and get accessed. The device discovery process will access all HBAs it can and attempt to find SES enclosures attached to all of them. The support list above simply shows the tested HBAs.

It is worth noting that the GUI will only show devices that are found during the discovery process. The system will have a robust multiplatform device discovery mechanism however it is limited by the list of devices found by the operating system. This in turn reflects the device driver and the HBA firmware.

It is not the job of the GUI to try and second guess the driver and it is also not the job of the GUI to try and solve driver and related issues. The rule of thumb is that if the OS cannot see the SES target or Drive LUN then the GUI will not detect it.

Supported configuration matrix

	Jake v1	Firebird	Thunderbird	5020 JBOD	Manhattan	Esh-2	Phoenix-2	1220 Exp.	Jake v2
RA-4835			X						
RS-1603					X				
RS-1602	X								X
RS-1600		X				X	X		
RS-5000				X					
RS-1400						X	X		
RS-1402	X								X
RS-1220								X	

Figure 1 – Supported configuration matrix

Remote access

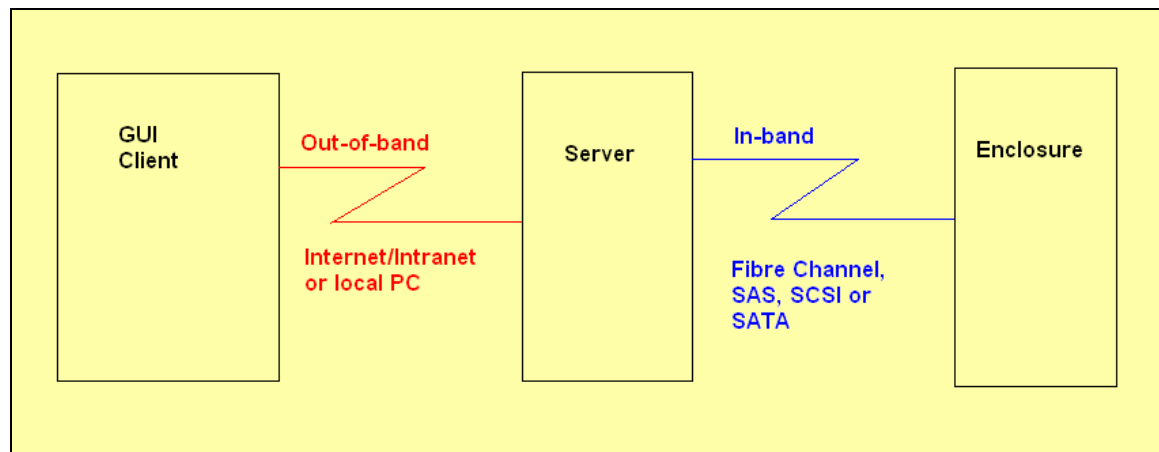
The GUI is split into two halves – client and server. The two halves can be run on separate machines and one client can access multiple servers (each on a different machine).

One machine can run just one server and just one client together. Multiple servers per machine are not allowed and neither are multiple clients. Equally one server cannot have multiple clients accessing it.

The installation process should allow for the separate installation of these components. StorView should also allow a user to switch servers at anytime – displaying a list of all the servers in the left hand pane when this option is licensed and enabled.

Only one server can be accessed by a client at one time however the user can switch seamlessly between servers.

The configuration allows for the following communications setup:

**Figure 2 - Remote communication top level block diagram**

Main window

The main window will be selectable in StorView by choosing the JBOD tab in the main StorView window as below:

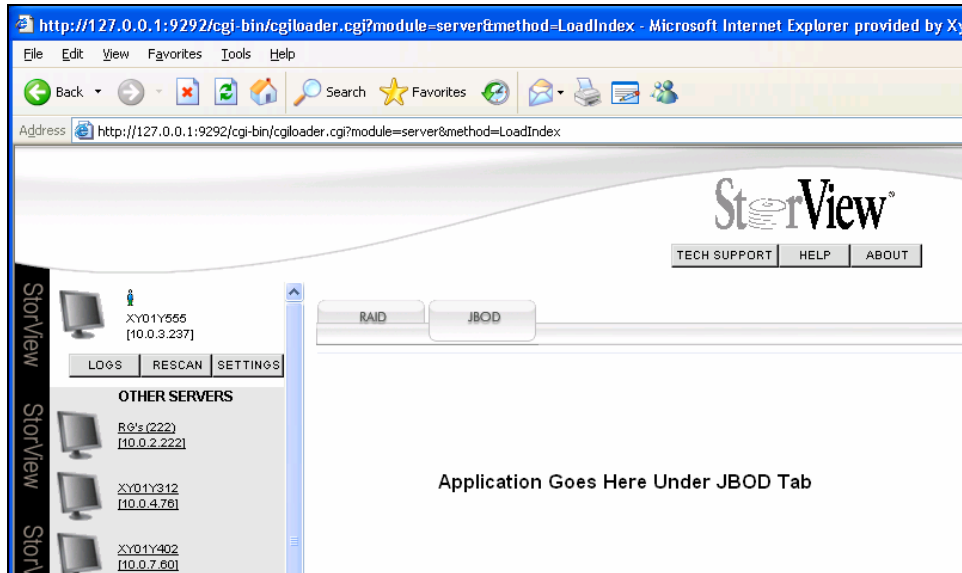


Figure 3 - Main application position

Unless the JBOD tab is selected the SES GUI will not be loaded. Once selected there may be a short pause while the Java Applet is started.

It should be noted that the list down the left hand side is a list of StorView servers. It is important to select the JBOD server else you will still see nothing under the tab.

It should be noted that StorView RAID and JBOD servers may be on separate machines or on the same machine. As can be noted from above multiple servers can be detected and used. The use of servers allows the GUI to be run from a remote location over the internet however the client will either need to be installed locally, or a web server will have to be added by the user to launch it.

The user should be able to switch between the JBOD and RAID tabs at any time. As described above depending upon the setup of the server they may see no enclosures if the servers do not support it.

The application framework is described in the StorView documentation.

Events

The StorView Logs button will provide access to the server's event log which will be a merge of all RAID (StorView) and JBOD (SES GUI) events received by the server. The event Window, when selected, will look as follows:

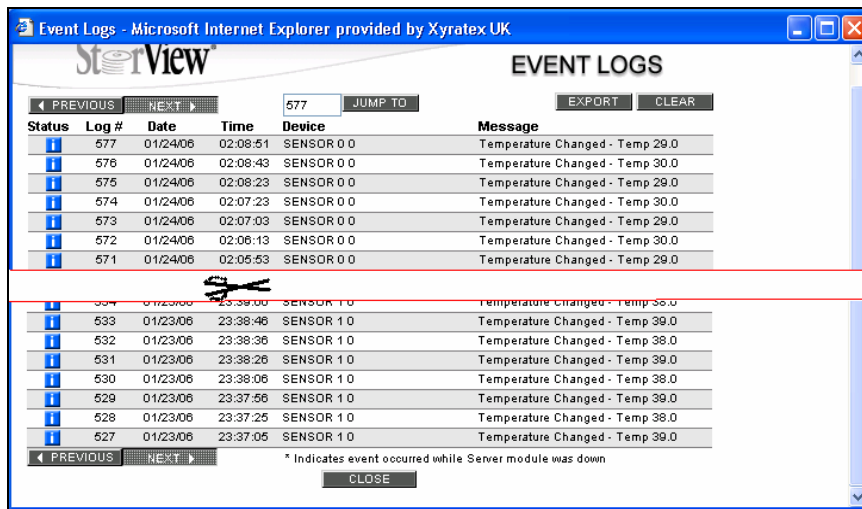


Figure 4 - Event log view

The list of events support by the SES GUI is as follows:

Event	Usual Severity
DRIVE_ADDED	Info (3)
DRIVE_REMOVED	Critical (1)
SES_INTERFACE_ADDED	Info (3)
SES_INTERFACE_REMOVED	Critical (1)
SES_INTERFACE_OFFLINE	Critical (1)
CONTROLLER_ADDED	Info (3)
CONTROLLER_REMOVED	Critical (1)
FAN_ADDED	Info (3)
FAN_REMOVED	Warning (2)
PSU_ADDED	Info (3)
PSU_REMOVED	Warning (2)
PSU_STATUS_CHANGE	Warning (2)
FAN_STATUS_CHANGE	Warning (2)
ALARM_STATUS_OFF	Info (3)
ALARM_STATUS_CHANGE	Warning (2)
ALARM_STATUS_CHANGE_CRITICAL	Critical (1)
FAN_SPEED_CHANGE	Info (3)
TEMP_READ_CHANGE	Info (3)
TEMP_CHANGE_HIGH	Critical (1)
TEMP_CHANGE_LOW	Critical (1)

Figure 5 - List of SES events

It is worth noting that SES itself does not generate events. These are pseudo events generated by the client and server and both need to be running to keep getting events.

Also note that sometimes event severity may change, such as when removing the second fan or when status changes to a critical state which is why they are listed as "Usual Severity".

An event pane is also available at the bottom of the SES GUI. By default the event pane is visible however it can be hidden by moving a vertical splitter bar downwards. Once moved the position is stored on the local PC and is remembered for the next time the system is started.

The event window looks as follows and is available under all sub-panes of the SES GUI:

The screenshot shows a window titled 'SES GUI' with a sidebar on the left containing server information (XY01Y402, as3824, es0, es0, esd1, esr1) and a main area displaying a table of events. The table has columns for Time, Source, Item ID, Severity, and Status. The events listed are 'Temperature Changed' for 'SENSOR 1 0' at various times on Jan 23, 2006, with status values like 'Temp : 38.0' and 'Temp : 39.0'. The taskbar at the bottom shows the application path 'j:\yratex\ses\SESApplet started' and 'Local intranet'.

Time	Source	Item ID	Severity	Status
Mon Jan 23 16:27:07 GMT 2006	Temperature Changed	SENSOR 1 0	INFO	Temp : 38.0
Mon Jan 23 16:27:17 GMT 2006	Temperature Changed	SENSOR 1 0	INFO	Temp : 39.0
Mon Jan 23 16:27:27 GMT 2006	Temperature Changed	SENSOR 1 0	INFO	Temp : 38.0
Mon Jan 23 16:27:37 GMT 2006	Temperature Changed	SENSOR 1 0	INFO	Temp : 39.0
Mon Jan 23 16:27:47 GMT 2006	Temperature Changed	SENSOR 1 0	INFO	Temp : 38.0
Mon Jan 23 16:27:57 GMT 2006	Temperature Changed	SENSOR 1 0	INFO	Temp : 39.0

Figure 6 - Event sub-pane

Each column header in the event pane can be left or right clicked. This will result in the column being used as sort criteria for these events. When a column is being used as sort criteria a downwards triangle will be drawn in the header of the column concerned. The default sort is by Time in ascending order of timestamp going down the table. If the header is clicked a second time a reverse order sort is performed on the column and an upwards triangle is shown.

The times shown in the event pane are the times of the receiving client so will be in the time zone of the client.

Right clicking on the event table (under the heading) will produce a popup menu. The user should click on a line containing data not on the blank area underneath if there is any. This menu has a single entry in it "Clear Table". This is always available providing there is event data to click on. When clicked, it will permanently delete the stored events. A message box should popup first to explain what will happen and to ask if this is required. The message box title is as follows:

Title: StorView JBOD View

Text: Are you sure you wish to permanently and irreversibly delete all stored events for all enclosures attached to the current server?

Buttons: Yes – This is not default – causes all events to be removed

No – default – cause the dialog to end with no further action

Whenever an event is received the table will automatically update and the new data will be shown. This may result in the screen currently being sorted and viewed to be changed as new events are inserted.

It is possible to get email notification on receipt of an event. This requires using the main StorView settings button to customize email recipient and level of notification required

Server selected indication

When a server is selected the window will indicate this by showing a title to the sub pane for the SES GUI stating what the connected server ID is as below:

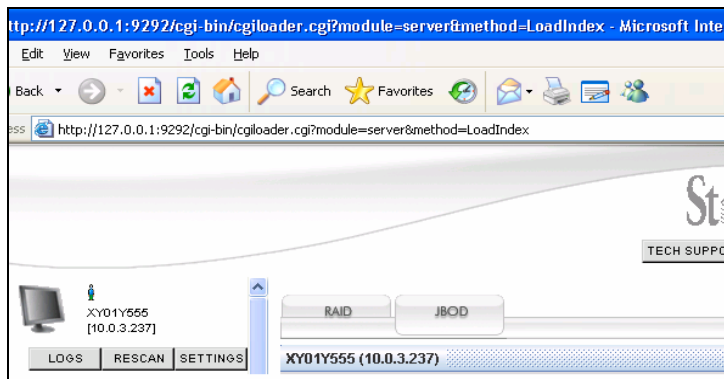


Figure 7 - Title of main window showing server ID shown at bottom right of image

This will change to reflect the currently selected server if a new server is selected. It will show the known network name as well as the IP address of the system. The communication between server and client is always out of band so an IP is required.

Help

Help is available from most popup windows. Generally it takes you to the top of the help topics. From here you can search or use the index to find the details you need. Also, some screens have links to specific parts of the help to provide a more context sensitive level of help.

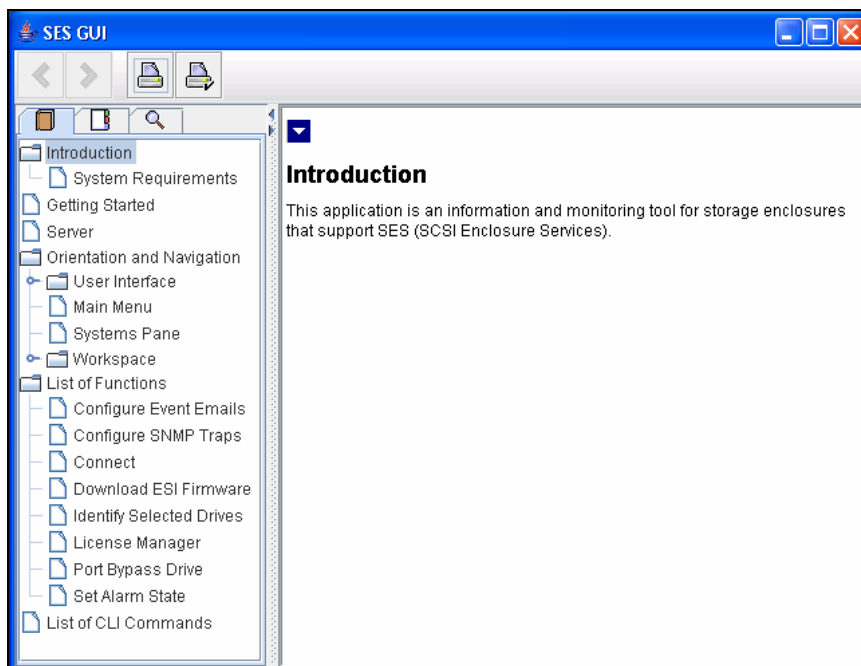


Figure 8 - Help topics default non-modal window

The < and > buttons provide backwards and forwards navigation respectively and are grey unless you have navigated from pane page to another much like any internet browser.

The left hand tab pane is set to show the contents of the help expanded out.

The two printer buttons allow a printer to be selected to print to (and then print the topic) or just print the page to the default printer respectively. You must have a printer installed to use these buttons which do not grey out.

Within this you can search for items. Select the magnifying glass in the left hand tab pane. The example below shows how a search would look for the phrase “System Pane”.

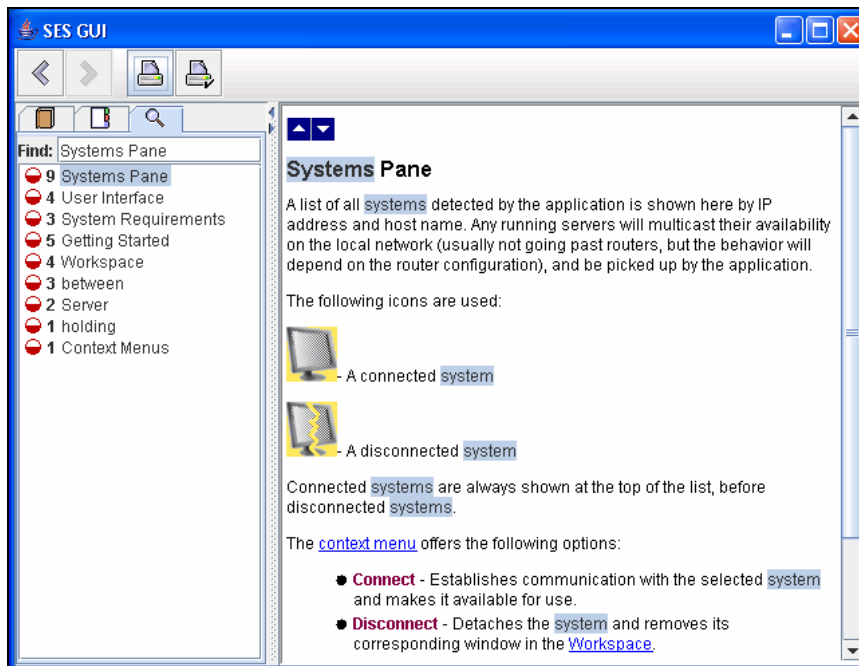


Figure 9 - Help window showing search results

Likewise a list of pages can be viewed succinctly using the centre tab which lists the pages only as follows:

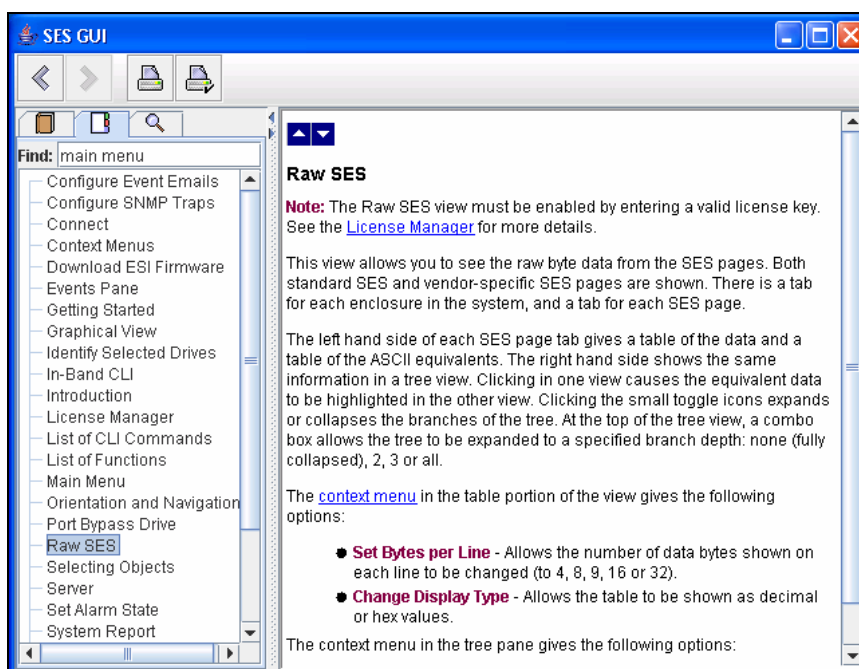


Figure 10 - Help window showing page list and selection

The help cannot be started twice. Should it be asked for again while it is already open it will simply come to the foreground.

The size and position of the help screen is remembered between opens and closes to avoid having to keep resizing the window.

Main tabbed sub-pane

Within the JBOD tab view is a main window pane headed with the server title as shown previously.

Underneath the title is a further series of tabs separating the functionality into separate panes.

It should be noted that the various tabs that are shown might reduce if product licensing has been used to turn them off.

The tabs that will be shown are as follows:

- 1) Graphical View – a photo realistic real world view of the front and back of the enclosures attached to the server showing connection status along with temperatures and other monitoring information
- 2) Tree View – a tree break down of the physical connection which provides an alternative view to the graphical view
- 3) System Report – A textual view that summaries all the components in each system, and their state which can be copied or emailed
- 4) Raw SES - A grid view that shows each byte of received SES data off every page that each enclosure supports. A side pane shows a breakdown on what each field means and it includes links to SES specifications for more explanation. It is also possible to edit some pages and select specific fields
- 5) In-Band CLI – A special tab for those enclosures that support extended SES pages 0x84/0x85 that allows CLI commands for the enclosure to be typed in and the results to be viewed hence removing the need for CLI cables.

The header for the tabs looks as follows:

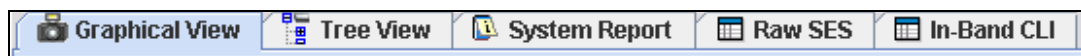


Figure 11 - Main application tabs

As each tab is independent they will be covered individually.

Graphical view

This tab is intended to show the enclosures as they look in the real world as if a photograph has been taken. A little artistic license is allowed however a very close approximation is desired. Certain customers have bespoke plastics and it is possible (after the images are provided) to customize the views to show these customized plastics.

The view will show each enclosure that the server can see drawn going downwards one on top of the other. The view has two modes – front view and rear view. By default the front view is shown however a button is provided in the control pane at the top of the window to change this.

The control pane looks as follows:

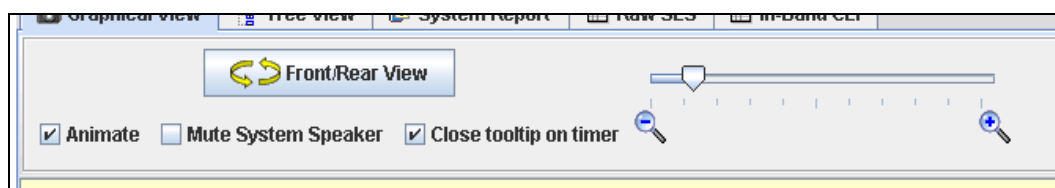


Figure 12 - Graphical view control and options pane

As can be seen there is a large button to change the view. It is not absolutely necessary to monitor the system from the rear as a side panel provides this information when the front view is shown however the rear view is useful for dividing which each unit is failing or where a connection has been lost.

The front and rear view button can be pressed as often as desired and simply changes the view style.

There are also 3 check boxes. In turn these are:

- 1) Animate: The default is enabled. When enabled fans are shown in the side pane as spinning (when appropriate) and drive identification lights will flash when the enclosure really is flashing them. When not enabled these are shown static. When not enabled the fan icon is modified slightly to have a status drawn over the top as the status can no longer be determined by simply watching the fan spin.
- 2) Mute System Speaker: This is disabled by default. When enabled any alarms that the enclosure sounds are not heard at the client PC. When disabled if the enclosure alarm sounds then the PC will also sound an alarm to match.
- 3) Close tooltip on timer: This is enabled by default. Each component has flyby information which when this is enabled disappears after a short timer expires (or the user moves away). When this is disabled the tooltip will not be dismissed at the timer expiry but only when the user moves the mouse away.

All these options can be selected together or in any combination regardless of the front/rear view or the zoom or any other settings.

The zoom slider is provided to allow enclosures to be drawn larger or smaller. The side panel does not change size per se however it may change aspect ratio to try and match the enclosure sizes. The zoom can reduce the enclosure size such that it is only a few 10s of pixels high, or increase the size such that only half the enclosure would fit on a screen. The user can choose the zoom to aid their view.

In normal use the supported screen resolution minimum is 1152x864 with 32 bit colour. Smaller resolutions will be displayed but may require much more scrolling.

The zoom selected is stored on the local PC so the client will always return to the view zoom selected.

As stated, depending upon the zoom level (the default is a notch and a half) the side panel can change aspect ratio. It can change from 4x1 to 2x2 as shown below:

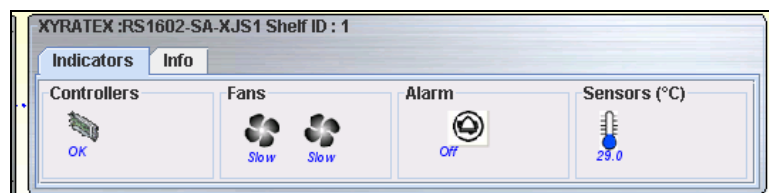


Figure 13 - Side panel shown in 4x1 aspect ratio

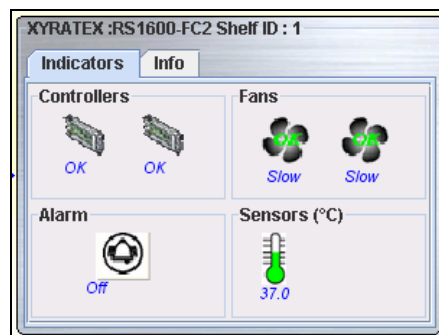


Figure 14 - Side panel shown in 2x2 aspect ratio – note the fans are also shown in unanimated mode

The following images show the front and then the rear view of a couple of 16 bay enclosures. You can see how the side panel is seated beside it (this time in 4x1 aspect ratio) and the zoom used is about 1.5 slider bar notches.

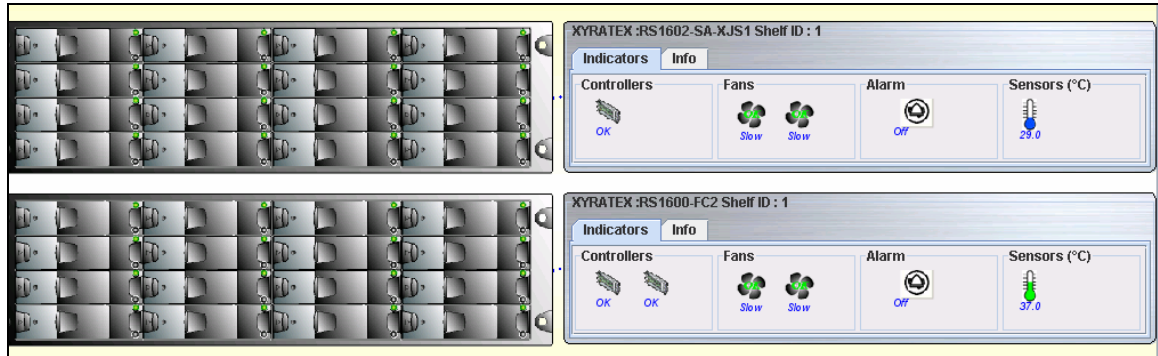


Figure 15 - Front physical view showing 2x16 bay enclosures fully populated

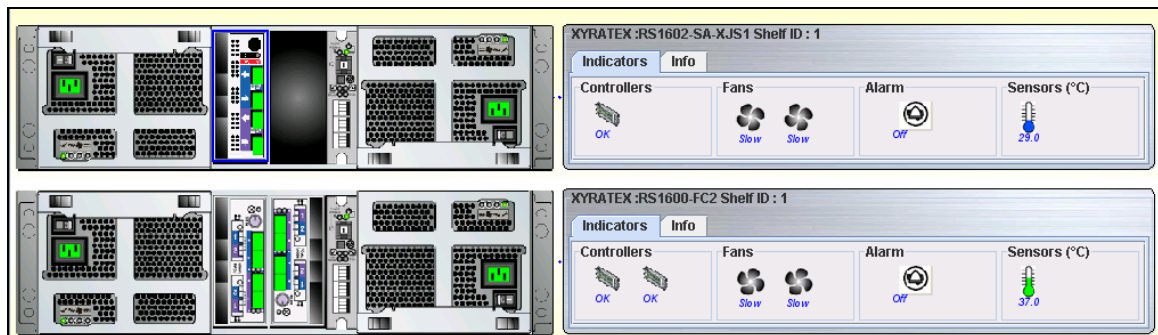


Figure 16 - Rear physical view showing 2x16 bay enclosures with different controller mixes

It should be noted that Sumo enclosures are the one exception to the above in that the front view shows a view from the top of the enclosure.

Sizes of images will depend upon the chassis type as Sumo enclosures for example are larger. When disks, PSUs or controllers are missing a shaded black rectangle will be shown in their place similar to the missing controller shown above.

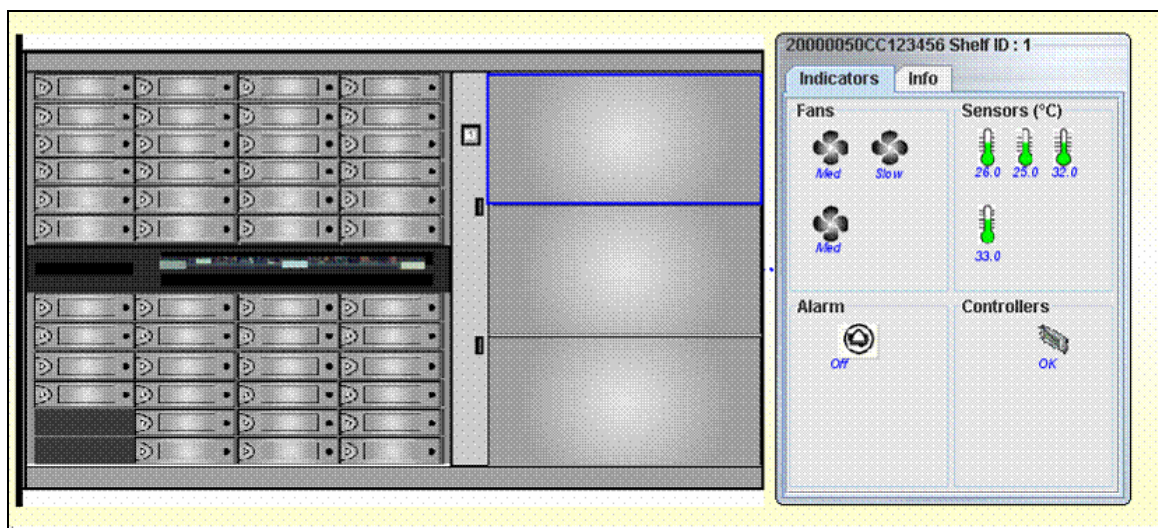


Figure 17 - Sumo Graphical view from the top replaces a front view

A faulty drive will be shown by a flashing amber identification light on the front view in the position where the light is physically in the enclosure. This is subject to animation being allowed and the enclosure actually detecting the issue and flashing the identification light itself.

On the rear view (or any view with connections) each power and data connection is shown by coloured rectangle. The colours have the following meanings:

- 1) Bright green: The socket has a valid connection and data or power is flowing correctly
- 2) Black: The socket has not connection or is unplugged. Note that it may be that the other end of a data cable is unplugged or turned off
- 3) Bright Red: A socket as a connection that is experiencing problems or the socket itself is experiencing problems.

On the ops panel (which may be on the front or back) the thumb wheel should correctly reflect the actual thumbwheel setting of the enclosure (subject to it being reported).

The LED indicators on the PSU also reflect the SES status reported. Not every possible LED state can be reported under SES however those that are supported are reflected by illuminating the appropriate LED on the back of the PSU in the colour they display in real life.

Object based interface

The graphical view is an object based interface. This means that chassis', drives, PSUs, controllers and Ops panels are each separate objects.

Each object may display flyby help (only if there is any), and may also support a popup menu if the object is right clicked. Not every object supports a popup menu by all objects which can take user actions such as drives and controllers generally do.

For some controllers the ports are also objects and have their own flyby too. Note that the background and foreground colours can change however the default text colour is to have a blue title to each tooltip with black text underneath. Each element is shown as a bold black description followed by un-bold black data.

Each object can also be selected using a mouse left click. At this point a blue border is shown around it and it becomes the current selection as shown below:

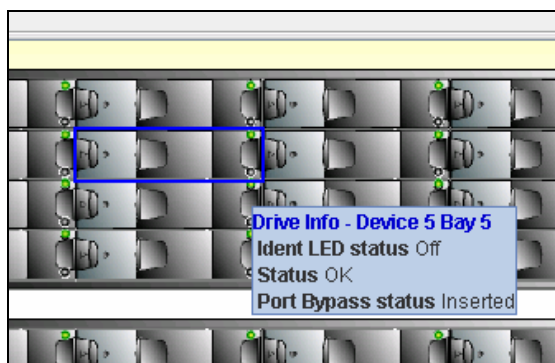


Figure 18 - Example of a selected drive also showing flyby for the drive

Selecting a different object deselects the current object first. It is possible to select more than one item using the standard Windows technique based on holding Ctrl and Shift keys while clicking and the result should match that expected according to Windows rules.

The current selection controls the detail that is seen in the info tab of the side panel which is always for the current selection. Sometimes, such as start at day, the current selection is not displayed for aesthetic reasons however the chassis is always the defacto selection in these cases.

Object popup menu

Before taking each object in turn it is necessary to define the common object popup menu. The menu is available by right clicking (which may also cause a left click style selection change) on any object. Items are greyed depending upon if they are relevant.

<u>Menu Item</u>	<u>Meaning</u>
<u>I</u> dentify Selected Drives...	Will cause a dialog to popup asking how the identification light is to be flashed (permanent vs off vs timed) and then flashes the drive identification lights as requested. See 'Identify drives' on page 27 .
<u>P</u> ort Bypass Drive...	A dialog asking of the port is to be bypassed or enabled is presented. The desired port bypass is then actioned which for most enclosures will also result in the drive fault/identification light flashing because the drives are bypassed. See 'Drive port bypass' on page 28.
Set <u>A</u> larm State...	This will cause the enclosure alarm state to change. A dialog is displayed asking what the state should be and this ranges from muted to critical beeping. Setting this may cause the client PC to beep if the system is set to play enclosure beeps. See 'Set alarm state' on page 29.
<u>D</u> ownload ESI Firmware...	This will cause a dialog to be displayed asking for the file path of the firmware (CEMI) file to download to a controller. Once actioned the firmware is downloaded which might take several minutes. See 'Download ESI firmware' on page 29.
<u>C</u> hange Enclosure Name...	Each enclosure can be given a short friendly name to aid identification. This menu pops up a dialog to give the user a chance to edit it after which it will be displayed in tabs and other places. The default name is based upon the vendor ID, chassis type and product ID of the system. See 'Change enclosure name' on page 30.
<u>S</u> ave Configuration To File...	This will save the current system configuration to a file. A dialog is show that states where the configuration is to be saved to and lets you change the location. The configuration file is useful for tech support to view the issue you are seeing. See 'Save configuration file' on page 31.
<u>H</u> elp Topics Ctrl-H	This displays the SES GUI help in a separate window. The window opens up at the start of the help with an index on the left hand side. The application can continue to be used while the help is up. If help is selected while already up it is simply moved to the foreground rather than starting a second help window. See 'Help on page 12'. Note that F1 also accesses help.

To take each object in turn: (note that items in Quotes (‘’) below show literal text, and italics show commentary about the item that does not appear on screen)

Drives

Images



Figure 19 - Drive (unselected) for a 16 bay system



Figure 20 - Drive (selected) for a 16 bay system

Properties

Property	Value
Selectable	Yes
Multi Selectable	Yes within one enclosure
Popup Menu	Yes
Flyby	Yes
Customisable Image to suit customer	Yes
Runtime removable – Dynamic update	Yes
Animation	Yes – flashing Identification Light
Available In View	Front/Top

FlyBy

Item	Colour	Contents
Title	Blue	'Drive Info Device 'n' Bay 'y n is the device number where as y is the slot number
Ident LED Status	Black & Bold	'Off' or 'On'. This is always off except if the identification light on the drive is flashing (and can be detected in SES as flashing)
Status	Black & Bold	'OK' or 'Error' This shows if the drive is working or not
Port Bypass Status	Black & Bold	'Inserted' or 'Bypassed' This matches the real bypass status of the drive

Popup Menu

Menu Item	When Enabled/Visible
<u>I</u> dentify Selected Drives...	Enabled whenever one or more drives is selected, else grey. This is Grey if the enclosure does not support this feature
<u>P</u> ort Bypass Drive...	This is always grey unless the enclosure supports drive port bypass either through ANSI SES or extended SES pages. One or more drives need to be selected to be enabled
S <u>e</u> t <u>A</u> larm State...	This is always grey when selecting a drive
<u>D</u> ownload ESI Firmware...	This is always grey when selecting a drive
C <u>h</u> ange Enclosure <u>N</u> ame...	This is always grey when selecting a drive
<u>S</u> ave Configuration To File...	This is always grey when selecting a drive
<u>H</u> elp Topics Ctrl-H	This is always enabled

Chassis'

Images



Figure 21 - Chassis front bezel (unselected) for 16 bay. Green area is drive space.

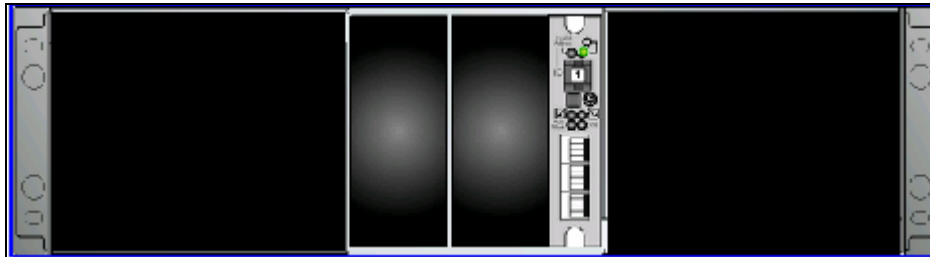


Figure 22 - Chassis rear end showing ops panel and empty spaces for PSUs and controller cards

Obviously the chassis will look very different for Sumo

Properties

<u>Property</u>	<u>Value</u>
Selectable	Yes
Multi Selectable	No
Popup Menu	Yes
Flyby	Yes
Customisable image to suit customer	Yes
Runtime removable – Dynamic update	No – but thumbwheel setting is dynamic if changed
Animation	No
Available In View	Rear

FlyBy

<u>Item</u>	<u>Colour</u>	<u>Contents</u>
Title	Blue	‘Enclosure Information’
WWN	Black & Bold	The enclosure WWN which is sometimes based on the ops panel and sometimes on the master controller
Name	Black & Bold	This is the enclosure which can be set by the user however the default is the vendor ID plus the shelf type and product id
Vendor	Black & Bold	Vendor name taken from VPD which for Xyratex shelves is of course ‘XYRATEX’
Model	Black & Bold	This is the shelf type and product ID e.g. RS1602-SA-XJS1
Status	Black & Bold	The overall chassis status
Temperature	Black & Bold	The chassis overall temperature usually measured in degrees celcius
Shelf ID	Black & Bold	The thumbwheel setting of the chassis

Popup Menu

<u>Menu Item</u>	<u>When Enabled/Visible</u>
<u>I</u> dentify Selected Drives...	This is always grey when selecting a bezel or chassis
<u>P</u> ort Bypass Drive...	This is always grey when selecting a bezel or chassis
<u>S</u> et <u>A</u> larm State...	This is always enabled for a chassis or bezel
<u>D</u> ownload ESI Firmware...	This is always grey when selecting a bezel or chassis
<u>C</u> hange Enclosure <u>N</u> ame...	This is always enabled for a chassis or bezel
<u>S</u> ave Configuration To File...	This is always enabled for a chassis or bezel
<u>H</u> elp Topics Ctrl-H	This is always enabled

Controllers

Images

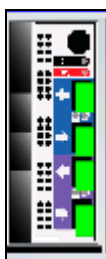


Figure 23 - Controller card

Again, each controller card type has its own image.

Properties

<u>Property</u>	<u>Value</u>
Selectable	Yes
Multi Selectable	No
Popup Menu	Yes
Flyby	Yes
Customisable image to suit customer	No not normally (but can be done)
Runtime removable – Dynamic update	Port statuses change
Animation	No
Available In View	Rear (Some are in the top of Sumo)

FlyBy

Note that each port (shown in green above) has its own flyby that is different from the cards and applies just to that port.

<u>Item</u>	<u>Colour</u>	<u>Contents</u>
Title	Blue	'Expansion Controller Information'
Slot	Black & Bold	The slot of the card either 'Slot A' or 'Slot B' (or 'Slot C' for a Sumo)
Vendor	Black & Bold	Card vendor name taken from VPD which for Xyratex shelves is of course 'XYRATEX'
Serial Number	Black & Bold	Card serial number in whichever format it is presented to the user
Status	Black & Bold	'Ok' or....

Popup Menu

<u>Menu Item</u>	<u>When Enabled/Visible</u>
<u>I</u> dentify Selected Drives...	This is always grey when selecting a controller card
<u>P</u> ort Bypass Drive...	This is always grey when selecting a controller card
<u>S</u> et Alarm State...	This is always grey when selecting a controller card
<u>D</u> ownload ESI Firmware...	This is always enabled for a controller card
<u>C</u> hange Enclosure <u>N</u> ame...	This is always grey when selecting a controller card
<u>S</u> ave Configuration To File...	This is always enabled for a controller card
<u>H</u> elp Topics Ctrl-H	This is always enabled

PSUs/Fans

Images

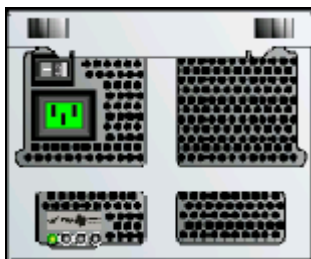


Figure 24 - PSU/Fan showing green working power connection (unselected)

Most Xyratex Chassis have the same power supply/fan image however some boxes (such as the NStor ones) have different PSU images.

Properties

<u>Property</u>	<u>Value</u>
Selectable	Yes
Multi Selectable	No
Popup Menu	Yes
Flyby	Yes
Customisable image to suit customer	No not normally (but can be done)
Runtime removable – Dynamic update	Power code colour changes dynamically as does PSU light set.
Animation	No
Available In View	Rear

FlyBy

<u>Item</u>	<u>Colour</u>	<u>Contents</u>
Title	Blue	'PSU Information'
ID	Black & Bold	The PSU identification based on slot position e.g. 'PSU 0 1' means chassis 0 PSU 1
Serial Number	Black & Bold	PSU serial number in whichever format it is presented to the user
Status	Black & Bold	'Ok' or....
Fan Speed	Black & Bold	One of 'Stopped' 'Failed' 'Slow' 'Normal' 'Fast'

Popup Menu

<u>Menu Item</u>	<u>When Enabled/Visible</u>
<u>I</u> dentify Selected Drives...	This is always grey when selecting a PSU
<u>P</u> ort Bypass Drive...	This is always grey when selecting a PSU
<u>S</u> et <u>A</u> larm State...	This is always grey when selecting a PSU
<u>D</u> ownload ESI Firmware...	This is always grey when selecting a PSU
<u>C</u> hange Enclosure <u>N</u> ame...	This is always grey when selecting a PSU
<u>S</u> ave Configuration To File...	This is always enabled for a PSU
<u>H</u> elp Topics Ctrl-H	This is always enabled

Ops Panels

Images



Figure 25 - Ops Panel for 16 bay chassis



Figure 26 - Ops Panel for 14 bay on front of chassis

Not all Xyratex chassis (such as Sumo and NStor) have an ops panel.

Properties

<u>Property</u>	<u>Value</u>
Selectable	Yes – (no on 14 bay)
Multi Selectable	No
Popup Menu	Yes
Flyby	Yes
Customisable image to suit customer	No not normally (but can be done)
Runtime removable – Dynamic update	Only the thumbwheel changes – lights are static
Animation	No (Yes for LEDs on 14 bay)
Available In View	Rear for 16 bay and front for 14 bay

FlyBy

<u>Item</u>	<u>Colour</u>	<u>Contents</u>
Title	Blue	'Ops Panel'
Chassis WWN	Black & Bold	The WWN of the chassis (which may be based on a controller WWN)
Shelf ID	Black & Bold	The shelf thumbwheel setting
Alarm State	Black & Bold	The shelf Alarm state – this has a number of possible settings: 'Off' 'Muted' 'Remind' 'Info' 'Non Critical' 'Critical' 'Unrecoverable'

Popup Menu

<u>Menu Item</u>	<u>When Enabled/Visible</u>
<u>I</u> dentify Selected Drives...	This is always grey when selecting an Ops Panel
<u>P</u> ort Bypass Drive...	This is always grey when selecting an Ops Panel
S <u>e</u> t <u>A</u> larm State...	This is always enabled for an Ops Panel
<u>D</u> ownload ESI Firmware...	This is always grey when selecting an Ops Panel
C <u>h</u> ange Enclosure <u>N</u> ame...	This is always enabled for an Ops Panel
<u>S</u> ave Configuration To File...	This is always enabled for an Ops Panel
<u>H</u> elp Topics Ctrl-H	This is always enabled

Normally there is a single ops panel. On the 14 bay there is effectively 2, one for the front and a mini one for the rear. The rear one just shows the thumbwheel setting and the mute switch. The 14 bay front ops panel has a series of LEDs plus a 7 segment display showing the chassisID/thumbwheel setting.

The 14 bay LEDs on the front of the Ops panel are all active and reflect the lights actually shown on the chassis. This includes the loop status lights and any colour changes or flashing that are required.

Data Ports

Images

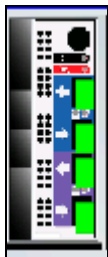


Figure 27 - A controller card showing 4 data ports

Some chassis report an overall port status so note that the port status for ports may be duplicated across those ports affected. Where port status cannot be determined it is shown as green to prevent inadvertent error reporting.

Properties

<u>Property</u>	<u>Value</u>
Selectable	No, selects controller instead
Multi Selectable	No
Popup Menu	Yes
Flyby	Yes
Customisable image to suit customer	No
Runtime removable – Dynamic update	Colour changes to Green (good connection), Red (Bad Connection) and Black (No Connection) depending upon port status and queriability of the data (default is green).
Animation	No
Available In View	Rear – on controller card

FlyBy

<u>Item</u>	<u>Colour</u>	<u>Contents</u>
Title	Blue	'Port Information'
Port ID/WWN	Black & Bold	The WWN or port ID if WWN is not available (ID is basically a count)
Status	Black & Bold	'OK', 'Disconnected' or 'Bad Connection'

Popup Menu

<u>Menu Item</u>	<u>When Enabled/Visible</u>
<u>I</u> dentify Selected Drives...	This is always grey when selecting a Port
<u>P</u> ort Bypass Drive...	This is always grey when selecting a Port
S <u>e</u> t <u>A</u> larm State...	This is always grey when selecting a Port
<u>D</u> ownload ESI Firmware...	This is always grey when selecting a Port
C <u>h</u> ange Enclosure <u>N</u> ame...	This is always grey when selecting a Port
<u>S</u> ave Configuration To File...	This is always enabled for a port
<u>H</u> elp Topics Ctrl-H	This is always enabled

Side panel

Each chassis is shown with a side panel to provide a quick visual reference to the user for things such as system temperature or fan speed.

The panel has a title which is the enclosure name (including user edited enclosure name) for easy reference as shown below:



Figure 28 - Title part of the side panel. This can be used edited.

The window is a tabbed pane with two panes. The first (default to display) is the indicators tab which shows a graphical representation of fan speed etc. The second (Info) is used to display information

about the currently selected (or last selected) object. This usually matches the flyby information but can be more detailed.



Figure 29 - Side panel tabs

The Info tab is the simplest as it simply shows textual information about the selected object. If multiple objects are selected then this shows the last selected object. This information often matches the contents and formatting of the flyby but is not cleared and can be copy and pasted elsewhere.

Titles are always blue. The rest of the text is black (headings in bold). The background matches the overall colour palette for the program.

The info tab window contains a scroll bar (vertical) where there is more data than will fit the visible window.

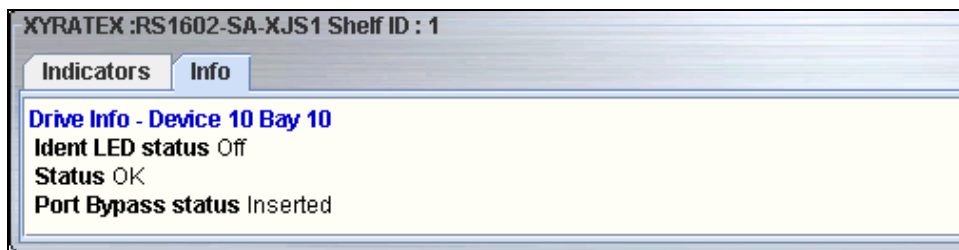


Figure 30 - The 'Info' tab in the side panel with drive data

The Indicator tab is made up of four sets of elements

- 1) Controllers
- 2) Fans
- 3) Alarm
- 4) Sensors

These blocks of information can be arranged in one of two aspect ratios. This is because despite the zoom selected the side panel does not zoom however it adjusts its aspect ration to help.

The first aspect ratio (used when smaller zooms are required) is 4x1



Figure 31 - 4x1 Aspect ratio side panel with single controller

The second aspect ration is 2x2 and is used on bigger zooms (or chassis) where there is room.

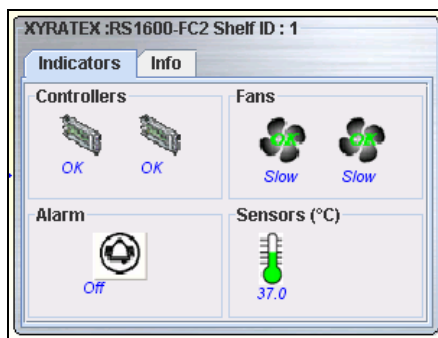


Figure 32 - 4x1 aspect ratio showing unanimated fans

Whatever the aspect ratio displayed the data shown is the same. Each block shows as many of the relevant items as there are, such as 2 fans, 1 controller, 1 alarm and 5 temperature sensors.

Fans animate and spin to reflect the fan speed however as already stated animation can be halted in which case the fans display as in 'Figure 32 - 4x1 aspect ratio showing unanimated fans'.

The side panel is "attached" to the relevant chassis via a short dashed line. This means that in very small zooms it is still easy to determine what side panel goes with which enclosure.

There is only ever one element in the Alarm field. The icon changes to have a red line through it if the alarm is muted. The alarm state shown reflects the alarm state shown in flyby information above.

Temperatures are shown in degrees Celcius but the thermometer shown does not rise and fall in a fine grained way. It has three colour settings/positions. Blue/low shows cold. Green/Middle shows normal. Red/High shows high temperature.

The number of temperature gauges is very dependent not only on how many are fitted to an chassis and controller card set but also how many are reported and sometimes temperature sensors are aggregated into just one or two. The maximum displayable (for Sumo) is 5 sensors.

The number of controllers can rise to 3 (for some Sumos) however 1 or 2 is normal. The same icon is shown regardless of the card type. The status is shown below it and matches that in flyby above.

The position of the controller (left or right) matches the position you would see it in should you look from the rear of the chassis. In chassis where the cards are stacked vertically card A is shown on the right in this block.

The side panel does not have flyby information or popup menus. All text within blocks is blue. The background colour depends upon the program palette which can be customized for different customers.

Popup sub windows

Within the Graphical view are a number of windows that come up as a result of menu selections.

Identify drives

The first of these is the Identify Drive dialog. This requires one or more disk drives to have been selected and the popup menu clicked as described previously.

The resulting dialog presents 3 choices to the user

- 1) Flash the identification light indefinitely (until turned off)
- 2) Turn off flashing the identification light

- 3) Flash the identification light for a time period (the default is 3 minutes)

The dialog does not concern itself with what is currently happening to the light so you can turn off a previously turned off light. In addition you can turn a indefinite flash into a timed flash or turn it off.

All selected drives will be asked to flash their lights and on pressing OK the graphical view will animate to show those drives which are reporting lights as flashing. All radio buttons are mutually exclusive.

Not all systems currently implement this function so it is subject to the enclosure and controller involved.

The dialog looks as follows:

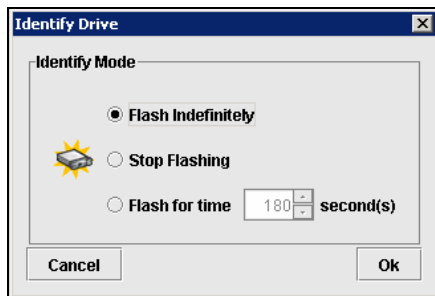


Figure 33 - Identify drive dialog

By default the user may press enter and activate the request. The spin edit is only enabled to select the number of seconds when the “flash for time” radio button is selected. The maximum flash time is 500 seconds and the minimum is 10.

Pressing cancel (or the close X icon) simply prevents any change to the current light status (as opposed to canceling all light flashing).

Drive port bypass

Another dialog concerning drives is the port bypass dialog. Again, this requires one or more drives to be selected and will apply its setting to all selected drives that support the request.

The dialog looks as follows:

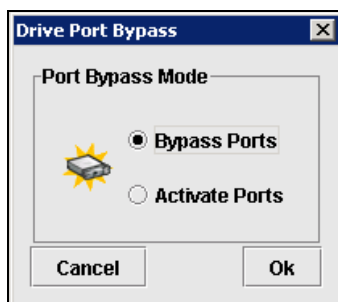


Figure 34 - Drive port bypass dialog

Pressing cancel (or the close X icon) simply closes the dialog while pressing OK attempts the selected action subject to the controller supporting it.

A variety of bypass techniques are supported including both ANSI and non-ANSI SES bypass techniques if the controller supports it.

The dialog contains two mutually exclusive radio buttons to bypass and activate the ports. They do not check previous port status.

Set alarm state

This dialog is used when an enclosure or ops panel is selected and is used to change the alarm status of the controller – i.e. whether it is beeping or not.

The dialog has two buttons. Cancel (or the close X icon) simply closes the dialog and takes no action. The OK button attempts the action with the caveat that the enclosure can support it. It is worth noting the NStor boxes, for instance, do not support all alarm states and will not change the alarm state if the front cover is removed.

The dialog simply sets the state for the selected enclosure and then the system reports the state. It does not check if it is possible or if it succeeded as this can only be worked out by later SES reports.

If the PC is set to sound the PC alarm to match the enclosure alarm and it is not muted then this may now sound too.

The dialog looks as follows:



Figure 35 - Set alarm state shown muting an enclosure

The radio buttons are mutually exclusive and represent all SES possible values regardless of whether the controller supports it.

Once OK is pressed the alarm status should change once SES is refreshed and any alarm state animation applied.

Download ESI firmware

This dialog requires a controller or controllers to be selected.

It displays the following type of dialog:

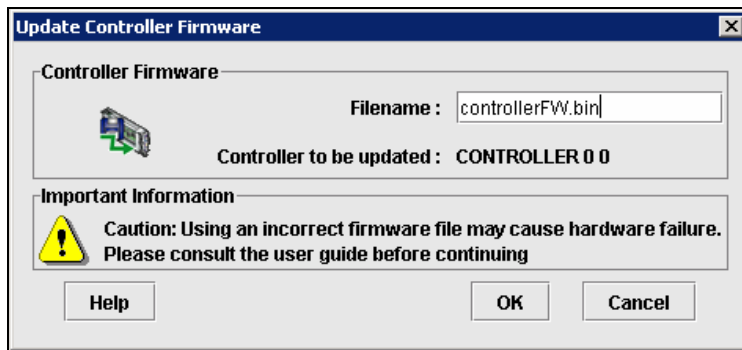


Figure 36 - Download ESI firmware file selection dialog

The filename is a default and can be edited and changed by the user. A browse button [...] on the right hand side of the filename allows for a standard file open dialog to be displayed so the user can select the firmware file.

File dialog displays the dialogs currently being uploaded to.

Note that the file really needs to reside on the server so part of the download process includes transmitting the file to the server before downloading.

Pressing cancel (or the close X icon) simply closes the dialog with no further interaction.

Pressing Help launches specific help as described in 'Help' on page 12. Help is always launched in a separate model-less window.

The OK button will cause the action to be started.

Once started a window will inform the user what is happening and will prevent further user actions until download is complete.

A message box will display any errors.

Change enclosure name

This displays a dialog as follows when a selected enclosure or ops panel is called to launch it.

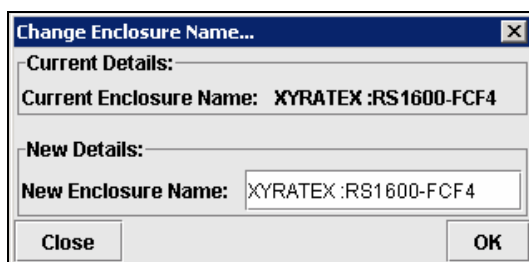


Figure 37 - Change enclosure name dialog

The current name is displayed in a non scrollable field. The width of the window is determined by the width of the name text and is made to fit.

A blank name is not acceptable however the name can be up to 128 characters long at least. There is no check made of the actual characters used. By default the new enclosure name is the old enclosure name which again by default is based upon the vendor id and product id.

Pressing close makes no change however pressing Ok sets the name for the selected enclosure which is then used in all tabs and lists where the name is presented.

Save configuration file

This presents a simple dialog showing a default file name to save the configuration file to. There is a browse button to allow a standard file select dialog to be displayed plus Save and Close buttons. It is done for the selected enclosure or Ops panel.

The close button (or the close X icon) simply close the dialog without further ado.

The default file name is SystemConfiguration.xml.

Pressing Save causes data to be written to file. Once done a message box confirms success or failure.

The dialog looks similar to the following:

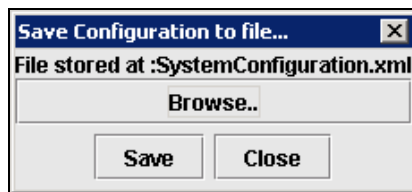


Figure 38 - Save configuration file dialog show default settings

Tree view

The tree view (the second major tab) is intended as a repeater of information shown in the graphical view and displays physical information.

The difference, and the raison d'être for this window, is to allow information that would otherwise be available in flybys to be all collected in one window.

Unlike the system report the tree view is mouse sensitive and will allow context menu popups.

By default the expand option on the tree view is to expand everything – showing all data as a cascaded tree from the SES viewer.

The first level of items shown in the tree are the enclosures. Within this are contained all the various components and sub components nested appropriately.

For a single enclosure the main pane looks simply as follows:

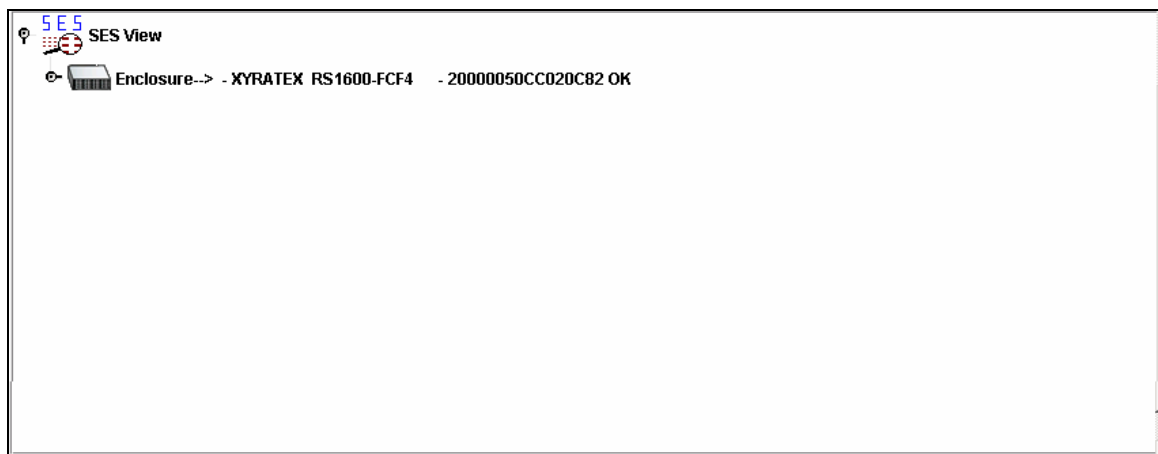


Figure 39 - Tree view pan showing top level enclosure with no expansion

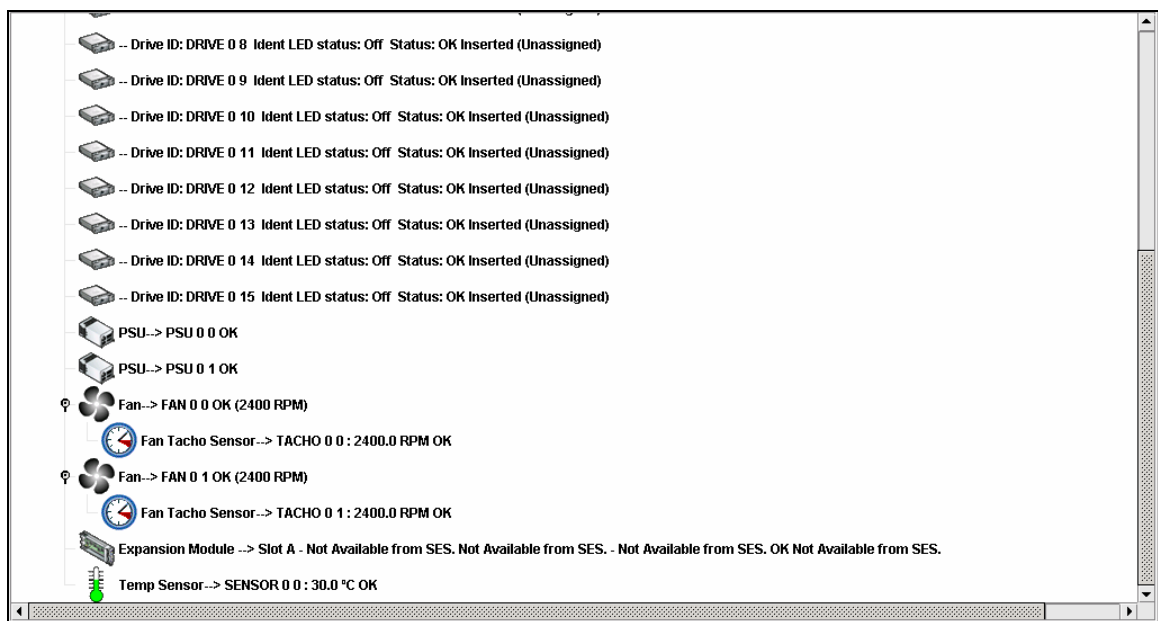


Figure 40 - Tree view showing expanded items and scroll bars

Each element in the tree has the same flyby and popup menus as the main graphical view and they contain the same data.

In this view the data is more readily available without having to rely on fly by information.

None of the items animate but otherwise are the same as those items shown in the main graphical view and the rules for which popup menus are allowed, and what these menus do is identical so please see 'Object popup menu' on page 18 for more details.

The view can be scrolled as necessary and updates dynamically with each SES poll. The user can expand or collapse as many enclosures or fields as required and the setting is remembered and used between program execution on the same client PC.

Other than the details noted above the information presented is identical to the graphical view.

System report

The concept of the system report is straightforward in that it gives a textual and concise dump of information about the entire set of enclosures attached to the current server.

The data could be copy and pasted into an editor (using standard Windows copy and paste key strokes) in which case it formats as text however it can also be handled as html as will be described. The system report screen looks as follows.

System Report

User Comment :
 Document Created at : 24 January 2006 23:24:51

Enclosures

Enclosure Information
 WWN : 20000050CC020C84
 Vendor : XYRATEX
 Model : RS1600-FC2
 Serial No. : OPS45593C020C84
 Name : XYRATEX.RS1600-FC2
 Shelf Type : 16 bay enclosure
 Vendor/Model : XYRATEX / RS1600-FC2
 No. of Drives : 16
 No. of Controllers : 0
 No. of Expansion Controllers : 1
 No. of PSUs : 2
 Status : OK
 Temperature : 33.0 °C
 CEMI Major revision (Slot A) : 38
 Shelf ID : 1
 Redundancy Status : Not Set

Enter User Comment:

Figure 41 - System report pane showing all sub elements and data and some text selected

The data can have a user comment inserted at the top. This enables a user that is sending this data away to label it so it can be recognized later.

The user comment can be at least 255 characters but is restricted to one line. The user comment can be entered by typing it into the comment box at the bottom of the screen and pressing Insert. If there is no text and Insert is pressed the text is removed.

The date in the report is always the local date on the client PC and is tied to the time zone of the PC.

All buttons in the pane are always enabled.

System Report	
User Comment : Failed card in chassis 1	
Document Created at : 24 January 2006 23:32:50	
Status : OK	
Temperature : 33.0 °C	
CEMI Major revision (Slot A) : 38	
Shelf ID : 1	
Redundancy Status : Not Set	
Enter User Comment:	Failed card in chassis 1

Figure 42 - System report showing user comment entered (middle cut out)

A sample report is shown below. Note that it has been edited to remove some of the data to make it simpler to read and fonts have been squashed:

System Report	
User Comment : Failed card in chassis 1	
Document Created at : 24 January 2006 23:32:50	
<i>Enclosures</i>	
<i>Enclosure Information</i>	
WWN : 20000050CC020C84	
Vendor : XYRATEX	
Model : RS1600-FC2	
Serial No. : OPS45593C020C84	
Name : XYRATEX :RS1600-FC2	
Shelf Type : 16 bay enclosure	
Vendor/Model : XYRATEX / RS1600-FC2	
No. of Drives : 16	
No. of Controllers : 0	
No. of Expansion Controllers : 1	
No. of PSUs : 2	
Status : OK	
Temperature : 33.0 °C	
CEMI Major revision (Slot A) : 38	
Shelf ID : 1	
Redundancy Status : Not Set	
<i>Controllers</i>	
<i>Expansion Controller Info--Slot :</i> Slot A	
Serial No. : TP=1A;SN=IMS35007000724A;	
Status : OK	
<i>Expansion Controller Info--Slot :</i> Slot B	
Serial No. : T	
Status : OK	
<i>Drives</i>	
<i>Drive Info - Device 16 Bay 16</i>	
Physical Size : 0.0 KB	

Protocol : Not Available from SES.
Firmware ver : Not Available from SES.
Operational status : OK
Ident LED status : Off
Enclosure Drive Column : 4
Enclosure Drive Row : 4
Enclosure Drive Location : Slot 16

Drive Info - Device 11 Bay 11

Physical Size : 0.0 KB
Protocol : Not Available from SES.
Firmware ver : Not Available from SES.
Operational status : OK
Ident LED status : Off
Enclosure Drive Column : 3
Enclosure Drive Row : 3
Enclosure Drive Location : Slot 11

Fans

Fan Information FAN 1 1

Status : OK
Speed : 2400 RPM

Fan Information FAN 0 0

Status : OK
Speed : 2400 RPM

Sensors

Sensor Information

Temp Sensor--> SENSOR 1 0 : 33.0 °C OK
Status : OK

Sensor Information

Fan Tacho Sensor--> TACHO 1 0 : 2400.0 RPM OK
Status : OK

PSUs

PSU Information PSU 1 1

Vendor/Model : Not Available from SES. null
Serial Number : TP=3C;SN=PMA441910004580;
Powered On : true
Status : OK
Hotswappable : true
Replaceable : true
Removable : true

PSU Information PSU 0 0

Vendor/Model : Not Available from SES. null
Serial Number : TP=3c;SN=PMA441910027486;
Powered On : true
Status : OK
Hotswappable : true
Replaceable : true
Removable : true

System Information

```
package.restrict.access.org.mozilla.jss : true
java.version.applet : true
http.auth.serializeRequests : true
os.version.applet : true
file.separator.applet : true
sun.net.http.errorstream.enableBuffering : true
package.restrict.definition.netscape : true
os.name.applet : true
package.restrict.access.netscape : false
acl.read.default :
package.restrict.definition.sun : true
browser.version : 1.1
line.separator.applet : true
java.class.version.applet : true
java.vendor.url.applet : true
package.restrict.access.com.sun.deploy : true
javaplugin.proxy.config.type : direct
http.agent : Mozilla/4.0 (Windows XP 5.1)
package.restrict.definition.java : true
acl.write.default :
os.arch.applet : true
package.restrict.definition.com.sun.deploy : true
package.restrict.definition.org.mozilla.jss : true
browser.vendor : Sun Microsystems, Inc.
sun.net.client.defaultConnectTimeout : 120000
https.protocols : SSLv3,SSLv2Hello
java.vendor.applet : true
acl.write : +
user.timezone : Europe/London
java.protocol.handler.pkgs : sun.plugin.net.protocol|sun.plugin.net.protocol|com.sun.deploy.net.protocol
package.restrict.access.sun : true
acl.read : +
path.separator.applet : true
```

End of report

The report is quite long as it contains the whole server dump but is meant to contain everything needed to understand the system status by field support engineers.

The report can be saved to a file. If the 'Save' button is pressed then a standard file select dialog is shown which works as you would normally expect. There are 3 possible file types that can be selected.

The default file type is html. This causes the output to be web browsable and to have all formatting included.

The second type is TXT (text) and gives the same type of thing as html but without the formatting and the file will hence be much smaller.

The final type is CSV (Comma Separated Variable) which allows data to be imported into a spreadsheet such as Microsoft Excel. Headings are separated by a comma but all formatting is lost except for new lines.

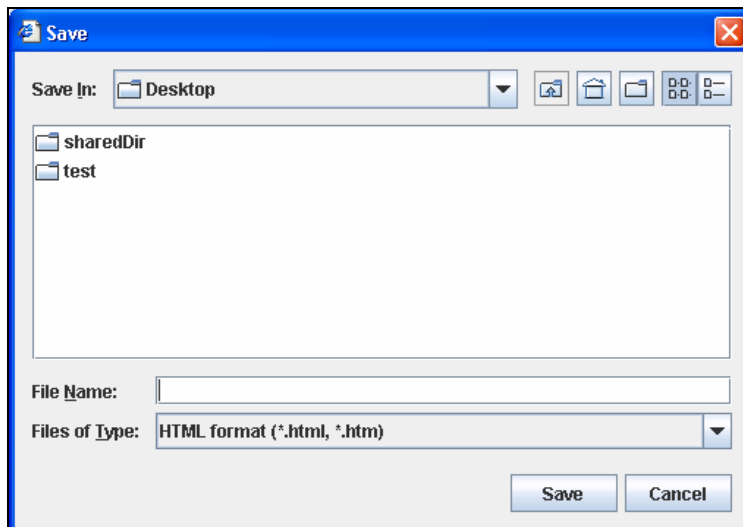


Figure 43 - System report file save dialog

It is also possible to print the report directly to a printer by (surprisingly) pressing the 'Print' button. This does not show a dialog but sends the output the users default assigned printer. After printing, a message box will confirm if the file was successfully sent to the default printer or not.

Finally, it is also possible to email the results by pressing the 'Email' button. This shows the following dialog:

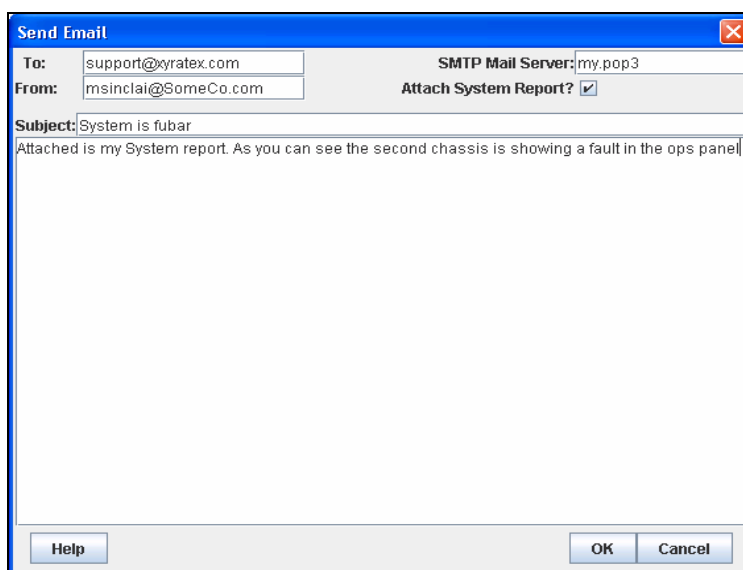


Figure 44 - Email send dialog for system report

The user has to specify the email server they are using however once specified once it is remembered on the client PC as is From and To. Attach System Report is always to default to ON.

Pressing cancel will abort the email being send whereas OK will send the email. If there is an error a message box will popup saying the send failed. Help takes you to the help topics section for this dialog. Help is launched in a separate non modal window.

Raw SES

This tab is particularly useful to engineers that wish to view what SES pages are being sent back from the systems and help debug their systems.

It is aimed at the experienced engineer or field support person who has a reasonable knowledge of JBODs and of SES.

The idea in this window is to allow the individual bytes to be viewed (and sometimes edited). In addition a Helper pane on the right hand side gives a wordier description of each field. Finally, a field can be right clicked to get a menu to link to the SES spec.

This combination of features allows detailed drill down into problem investigation.

Raw SES is available on all enclosures however the SES pages displayed will be governed by what is supported by the enclosure. All supported pages are always displayed except CLI pages which are displayed in a separate tab window.

After the tab is selected you need to decide which enclosure you wish to view raw SES for. This is decided by the first set of tabs as follows:

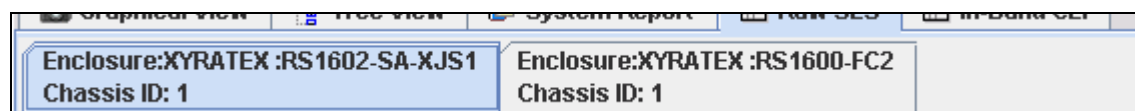


Figure 45 - Raw SES Enclosure selection tabs using enclosure name

The tabs are listed horizontally in the same order that chassis are drawn vertically in the graphical view. Each tab shows the enclosure name which can be user edited to make for friendlier selection. The example above uses default names.

Underneath this tab set a further tab set for each page supported by the enclosure selected as follows:

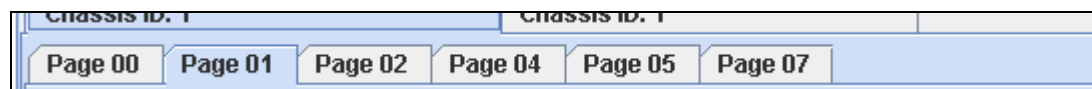


Figure 46 - Raw SES page select tabs showing page 01 selected

Once an enclosure and a page has been selected then the remainder of the pane is used. This is shown below. Note that the window divides vertically into two halves separated by a non moveable splitter bar.

The left hand side is the raw data pane. The right hand side is the analyzer side. The two halves are different representations of the same information. The right hand pane attempts to give an explanation of what each field is.

As you click bytes in the raw SES the appropriate part of the analyzer side is highlighted (yellow bordered test box with red text). Equally as you click on values in the analyzer section the appropriate byte(s) are highlighted in bold red text in the raw view pane (more than one byte may be used for a field).

As some fields form only part of a byte (i.e. a few bits) selecting a field on the raw pane will select the first (topmost) appropriate field in the analyzer pane. Equally, if selecting an analyzer field that is in the middle of a byte the whole byte is illuminated in the raw view.

This connection provides a powerful way to understand what the SES data really means.

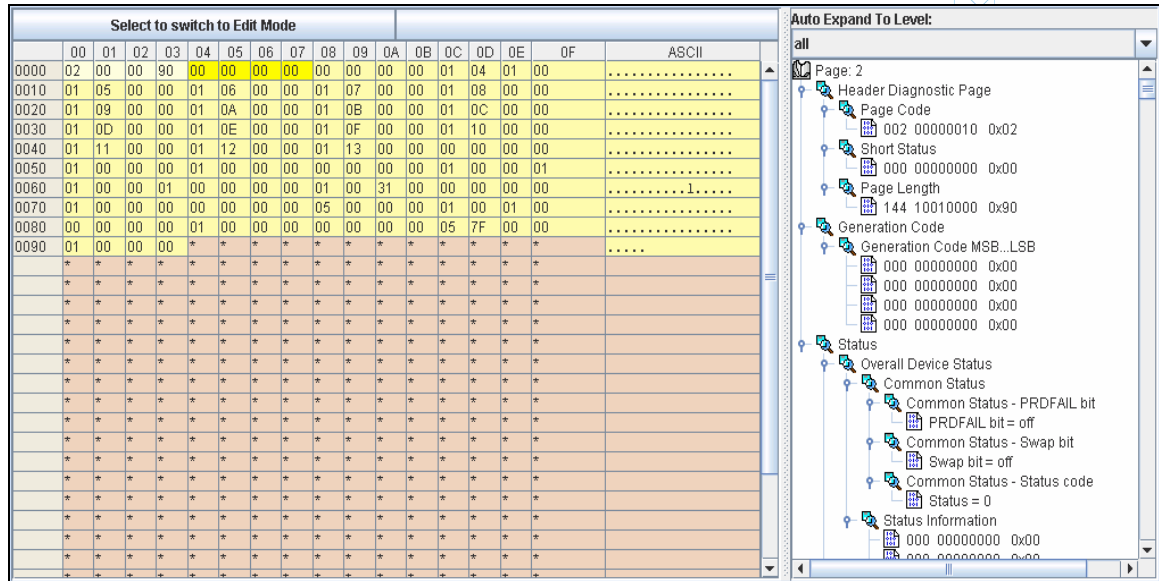


Figure 47 - The main part of the raw SES view

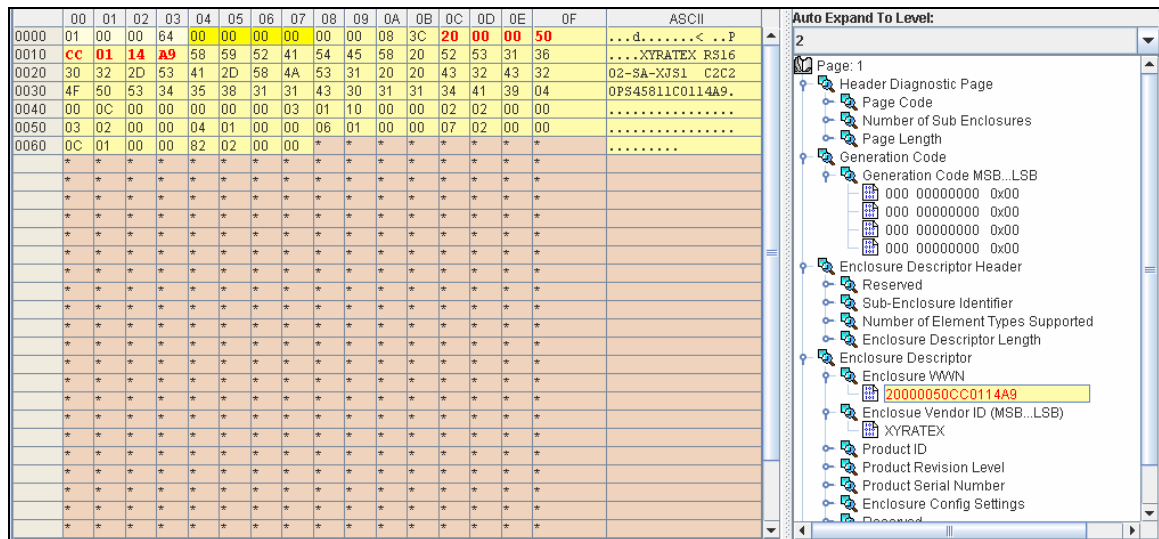


Figure 48 - Page 01 raw SES showing selection link between raw and analyzer panes

The pinkish area at the bottom of the raw pane shows where the screen has already printed all the data out and has no more to show.

The bright yellow set of bytes always shows the generation code while the white backgrounded bytes at the beginning of the data show the SES header. Note that colours may change.

In the default mode displayed bytes are shown 16 across with an interpretation of ASCII values (where a byte is a printable character) in the right hand ASCII column. It is possible to change this mode. The raw pane has a popup menu which can be accessed by right clicking anywhere in the raw pane.

Menuitem	Action
Set Bytes Per Line	Displays a dialog to let you adjust the number of bytes that are displayed horizontally per line. The default is 16. See 'Set bytes per line' on page 41 below.
Change Display Type	This presents a dialog to let you change between Hex and Decimal displays. See 'Change display type' on page 41 below.
Help Topics Ctrl+H	This brings up a separate non modal window with the help topics displayed at the first topic and a help index down the right hand side. See 'Help on page 12'.
Open Specification	This command opens a separate help style window containing the SES specification. Where possible it is opened at the field relevant to the mouse position where you right clicked to get the popup menu (it starts at the top of the doc and then switches to the appropriate position if it can). See 'Open specification' on page 42 below.

Sub dialogs

Set bytes per line

This is a simple dialog to allow the number of displayed bytes per line to be altered, This is most useful on lower resolution screens. The default is 16 bytes per line but can be 4,8,9,16 or 32 bytes per line.

The dialog has a close button which when pressed (or the close X icon) simply closes the dialog with no change.

The default button is the Ok button which actions the request to change with no further messages.

The dialog will look similar to the following:

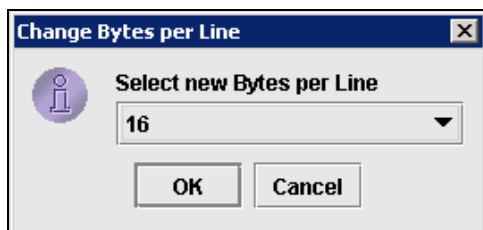


Figure 49 - Raw SES Set bytes per line dialog

Change display type

This is almost identical in form and function to the dialog above however the combo presents two choices of Hex or Decimal.

The dialog looks as follows:

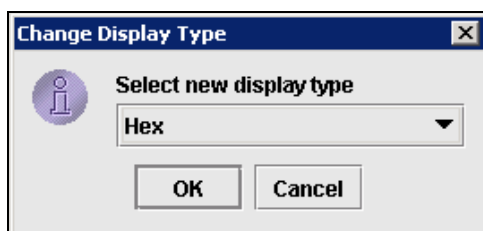


Figure 50 - Raw SES change display type dialog

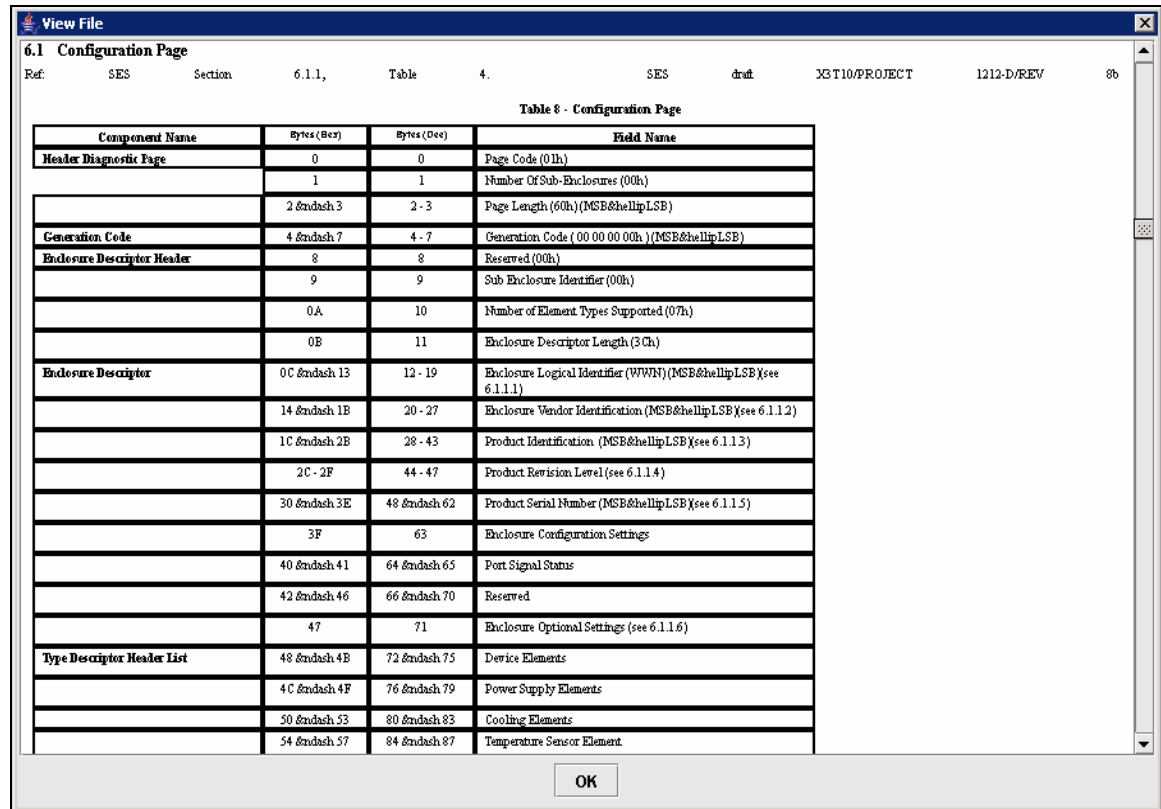
Open specification

This dialog attempts to produce context sensitive assistance for SES. The popup menu looks at the click position to determine context in both panes of the raw SES view.

The window is a simple dump of the SES documentation with an OK button which simply closes the window.

If context cannot be determined then the document goes to the start of the document not to a specified point. There is always a pause while the document jumps to its context position.

The window looks as follows:



6.1 Configuration Page
 Ref: SES Section: 6.1.1, Table: 4. SES draft X3T10/PROJECT 1212-D/REV 8b

Table 8 - Configuration Page

Component Name	Bytes (Hex)	Bytes (Dec)	Field Name
Header Diagnostic Page	0	0	Page Code (01h)
	1	1	Number Of Sub-Enclosures (00h)
	2 – 3	2 - 3	Page Length (60h)(MSB…LSB)
Generation Code	4 – 7	4 - 7	Generation Code (00 00 00 00h)(MSB…LSB)
Enclosure Descriptor Header	8	8	Reserved (00h)
	9	9	Sub Enclosure Identifier (00h)
	0A	10	Number of Element Types Supported (07h)
	0B	11	Enclosure Descriptor Length (3 Ch)
Enclosure Descriptor	0C – 13	12 - 19	Enclosure Logical Identifier (WWIN)(MSB…LSB)(see 6.1.1.1)
	14 – 1B	20 - 27	Enclosure Vendor Identification (MSB…LSB)(see 6.1.1.2)
	1C – 2B	28 - 43	Product Identification (MSB…LSB)(see 6.1.1.3)
	2C - 2F	44 - 47	Product Revision Level (see 6.1.1.4)
	30 – 3E	48 – 62	Product Serial Number (MSB…LSB)(see 6.1.1.5)
	3F	63	Enclosure Configuration Settings
	40 – 41	64 – 65	Port Signal Status
	42 – 46	66 – 70	Reserved
	47	71	Enclosure Optional Settings (see 6.1.1.6)
Type Descriptor Header List	48 – 4B	72 – 75	Device Elements
	4C – 4F	76 – 79	Power Supply Elements
	50 – 53	80 – 83	Cooling Elements
	54 – 57	84 – 87	Temperature Sensor Element

OK

Figure 51 - Raw SES open specification window showing context of request

In-band CLI

The In-band CLI is a feature that is only supported on some controllers – basically those with extended SES support for pages 0x84/5.

These pages are never shown in the raw SES field as they do not contain data that can be interpreted that way. Instead the pages are used to pass CLI commands (RS232 command set) to the enclosure and receive the output as a way of avoiding the use of special CLI cables – especially in the field.

The applications 5th tab is for the in-band CLI. The tab is always there however you may not have controller cards that support it.

At the top of the in-band CLI pane is a tab selector which has the enclosure name in it. This is the user editable enclosure name and should always reflect the users entered value. By default it is vendor ID and product ID plus chassis ID.

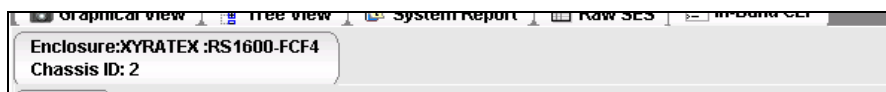


Figure 52 – In-band CLI enclosure selection tab

Underneath this will be one, two or three tabs – depending upon how many controller cards are in the enclosure. There is one tab for each enclosure labeled Card x where x is A, B or C.



Figure 53 – In-band CLI showing card A and B selection in a 2 card enclosure

If the system you select does not support In-band CLI you will simply get text below the tab in the main CLI pane saying so. If it does support it you will see a window like this



Figure 54 – In-band CLI window at start before use

```

managerTask 00119d18 00119d20/1024 6 00000000 (8004) Event Wait & Timing 62899 500
esp_ses 001197dc 00119130/2048 13418 00000000 (8004) Event Wait & Timing 1000 800
esp_legacy 00118d64 00118af4/1024 11 00000000 (8004) Event Wait & Timing 62929 500
mpSyncRX 001187a4 00118314/1776 5 00000000 (8004) Event Wait & Timing 60939 500
mpSyncTX 001181b8 00117d8c/1264 19697 000000fa (8004) Event Wait & Timing 60 890
cli 00117ad4 001174cc/2048 8 feedbeef (8004) Event Wait & Timing 60939 500
Inband_cli * 0011739c 00116c64/2048 14 feedbeef (0008) Deferred 962149 500
fmTask 001165a0 00116268/1024 48919 00000064 (8000) Timing 80 49
hydraExec 00114e30 00114328/3048 236624 00000000 (8000) Timing 11 500
BypassTimer 001141c0 00113cc0/1536 9857 00000000 (8000) Timing 480 500
ds75 00111fe4 00111c9c/1024 1976 00000000 (8000) Timing 3210 50
thermal 00111b58 00111834/1024 991 00000000 (8000) Timing 3160 50
ipc 00111698 00110fa0/2048 9867 00000000 (8004) Event Wait & Timing 480 900
8067 0010e9d8 0010e6a8/1024 24617 feedbeef (0008) Deferred 900 500
emp 0010d030 0010c984/2048 60186 00000000 (8000) Timing 10 890
Idle 0010c674 0010c318/1024 318289 00000000 (0008) Deferred 0 0

Switches To Idle Task: 91634618
Switches To Different Task: 744985
Switches To Same Task: 7
-----
Total Task Switches: 92379610 (18662 per second)

CPU Usage: 6.50%

```

esp 2.0 Send Clear

Figure 55 – In-band CLI window showing CLI output data sent back and a new command being typed in

Colours are always taken from the internal palette however the ones shown are the current default.

The user can type each command into the command box at the bottom the screen.

The CLI also has a button called “save” which takes all the data on screen and sends it to a file using a standard file save dialog.

Command validation

The GUI makes no attempt to check the validity of the command and leaves it up to the controller to do this.

There are a couple of commands that cannot be supported via in-band CLI due to the fact that the controller does not support them. These commands are the menu type commands that scan for key presses – something which can’t be done over SES. The most notable of these is “hydra menu” which will display an error stating the command cannot be supported in-band. The In-band user interface tries to trap these and prevent them being sent and adds an error message. The in-band CLI must handle white space within commands to detect if they are illegal.

On detection some commands are complex and certain varieties of the command are safe and others are not. The GUI will ask the user if they know what they are doing via a message box before submitting the command. Hydra Menu can be handled this way for parameters such as hydra menu 2 3.

```

< hydra menu

! > Command not supported via In-Band CLI

hydra menu

```

Figure 56 - Some In-Band commands cannot be supported because they are interactive such as Hydra Menu

Pop up sub-windows

The clear button on the right hand side of the CLI window will allow the CLI window history to be cleared. A message box such as the one below is shown to see if the user really wants to do it.

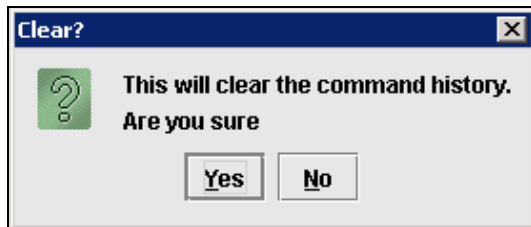


Figure 57 - Clear CLI question

Pressing No will close the message and do nothing else. Yes will cause the CLI main window to be cleared removing permanently all the command history.

Each command the user wishes to execute has to be typed into the box at the bottom which does not validate any characters and allows at least 128 characters to be entered. Once the text has been entered the user can either press Enter on the keyboard to execute the command or press the Send button to the right of the CLI command entry field.

Neither button on the panel are every greyed out (they will be invisible if CLI is not supported on the controller).

It is possible to copy text from the CLI output by swiping it with the mouse and pressing Ctrl+C (or other standard OS short cut). This key sequence copies the text into the clipboard where it can be used as desired.