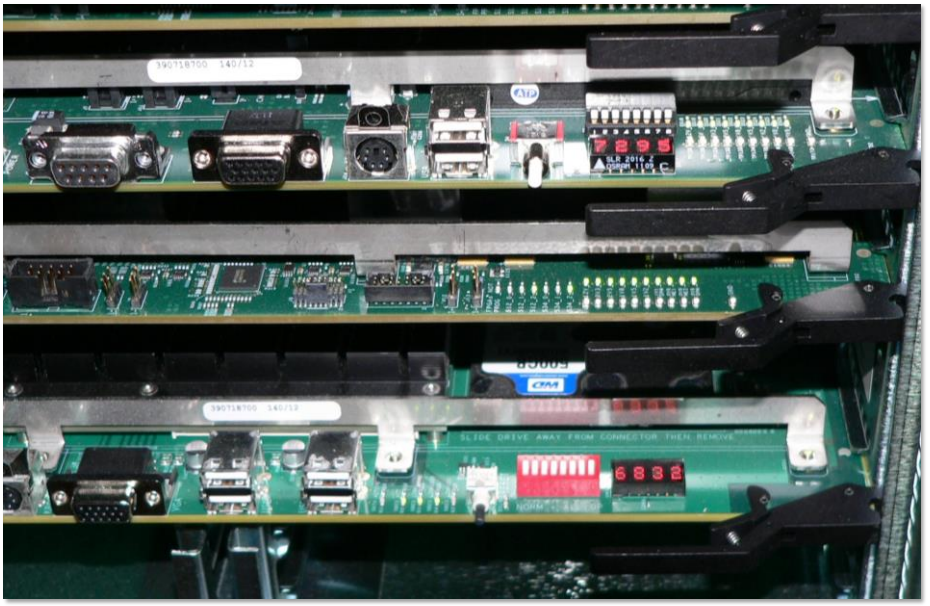
Section 6A - K-Frame



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K-Frames

- Frames
  - 6 RU (Compact) & 13RU (Standard) - 3G K-Frame
  - External Power Supplies
  - ME Boards
  - Controller Board
  - Input, Output and Modular I/O
- Troubleshooting / Diagnostics
  - Frame Diagnostics Methods:
    - Web Browser
    - Telnet
    - Logs
    - Diagnostic Data

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5-ME (6 RU) K-Frame

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6A - 3

This shows the Smaller Compact K-Frame board locations and external Power Supplies.

The Fan assembly on the left and air filter on the right can be easily removed.

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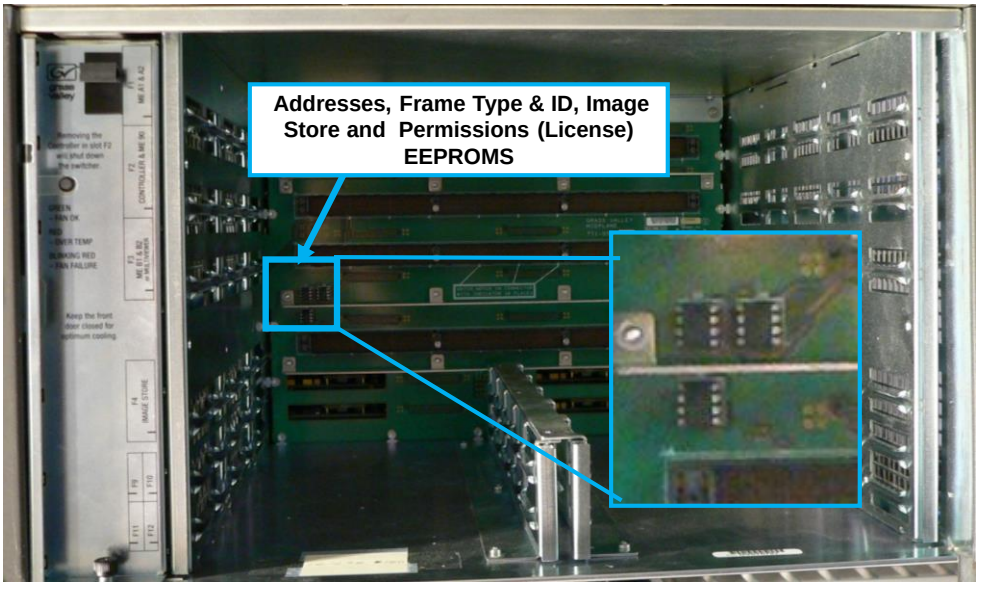
K-Frame IP Address Location



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6A - 4

Backplane Hardware

The IP address of the Frame Processor and Image Store, the system permissions (or software license options), last Operating Video Format are stored on 3 socketed EEPROMS on the Mid Plane board, above the ME B slot connector.

The System Name, Type (K-Frame) and Serial Number are also stored on these EEPROMs. This is also the registered customer ID number.

When replacing the frame or the Mid Plane Board, the licenses must be upgraded to the new frame. Either work with Customer Service to get a new license to install OR install the old programmed EEPROMS from the old frame into the newer frame with care.

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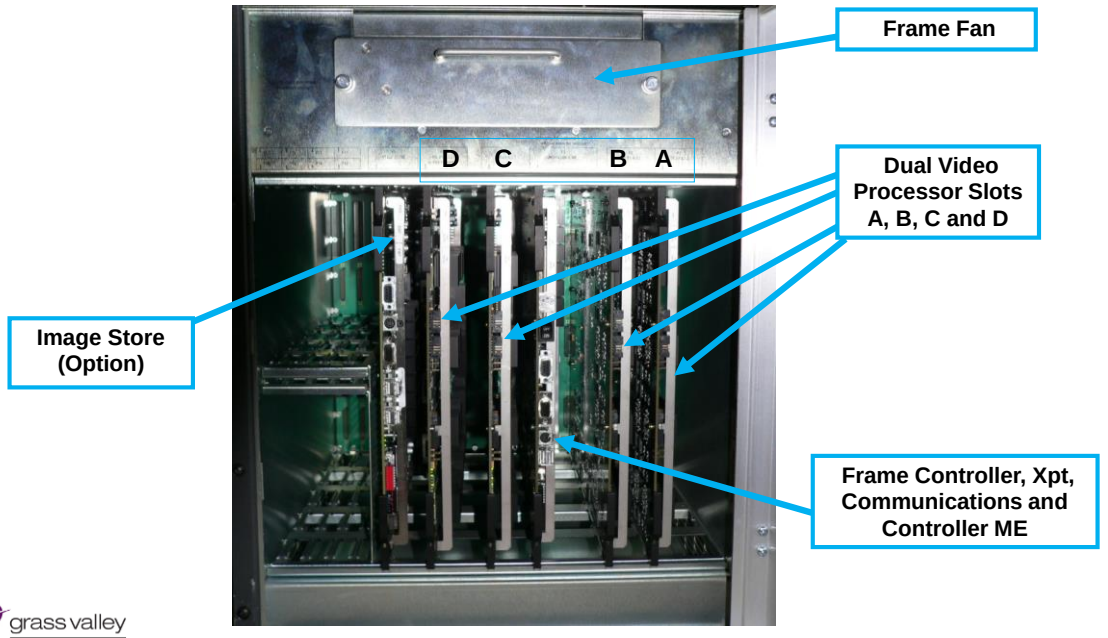
9-ME (13 RU) K-Frame



6A - 5

The main modules are inserted from the front.

There are 3 types of boards in the 3G frame. Up to 4 Video Processors (Dual ME) boards, 1 Controller Board and the Image Store.

Video Processor boards are labeled from the right starting with A.

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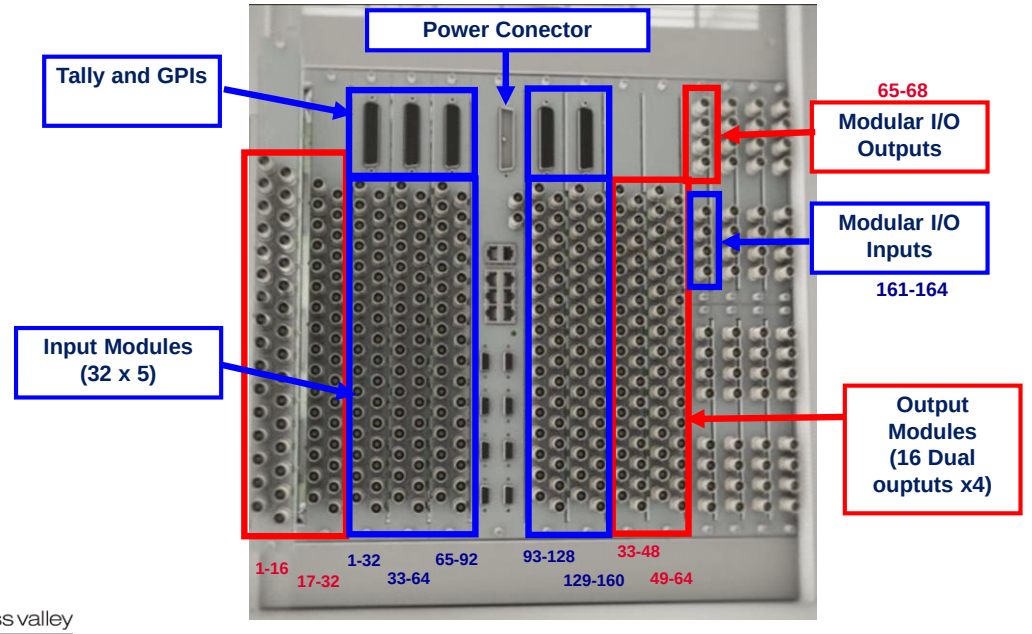
9-ME (13 RU) K-Frame - Rear (1)



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6A - 6

All rear modules are held in place with 2 screws.

Output boards have 2 BNCs for each output signal.

Each modular I/O board has 4 Inputs and 4 Outputs.

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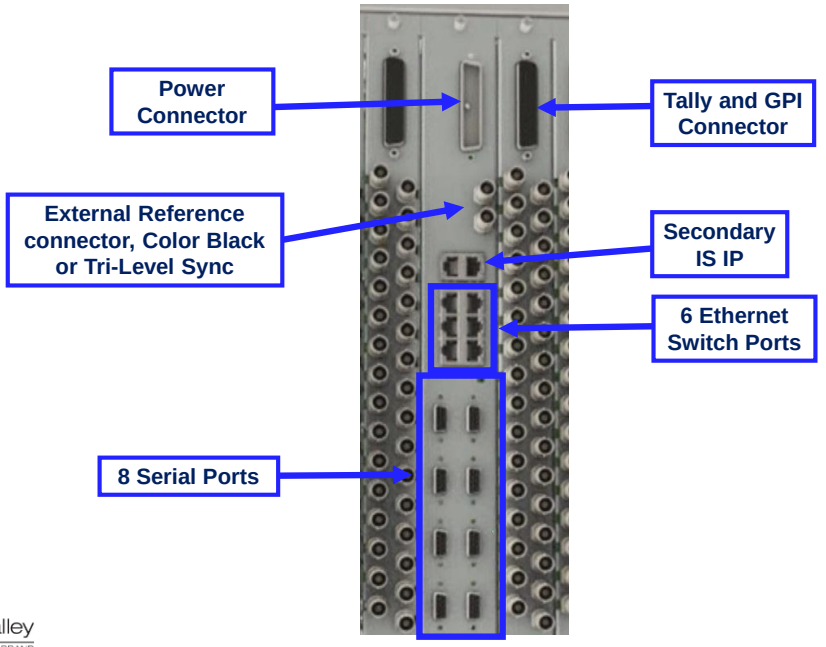
9-ME (13 RU) K-Frame - Rear



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6A - 7

The rear Communications module provides connections for 8 Serial ports, 6 ports of the internal 8 port Ethernet switch, an additional port for the Image Store, the loop-through External Reference and the Frame Power Supply.

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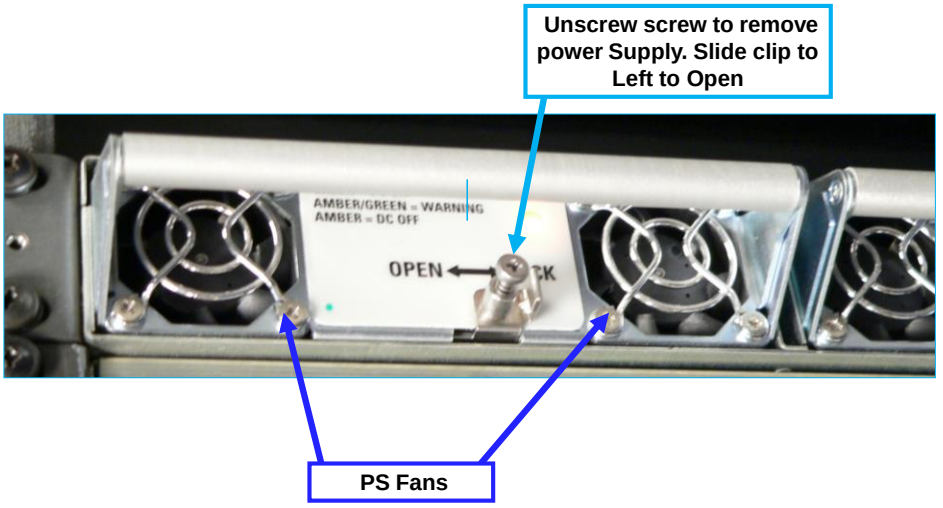
K-Frame - Power Supplies (1)



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6A - 8

Video Frame Power Supplies

All power supplies are auto ranging and will operate from 85 to 264 Volts, 47 to 63 Hertz.

Each Power Supply has its own IEC power connection on the back of the frame.

Each power supply provides 48 Volts D.C. and is capable of sourcing 16.7 Amps (800 Watts).

The PS frame contains spaces for 3 supplies (2 standard).

Each power supply has internal temperature sensors.

PS LED shows Green for good, Green/Amber for warning, and solid Amber for DC Off (AC Present)

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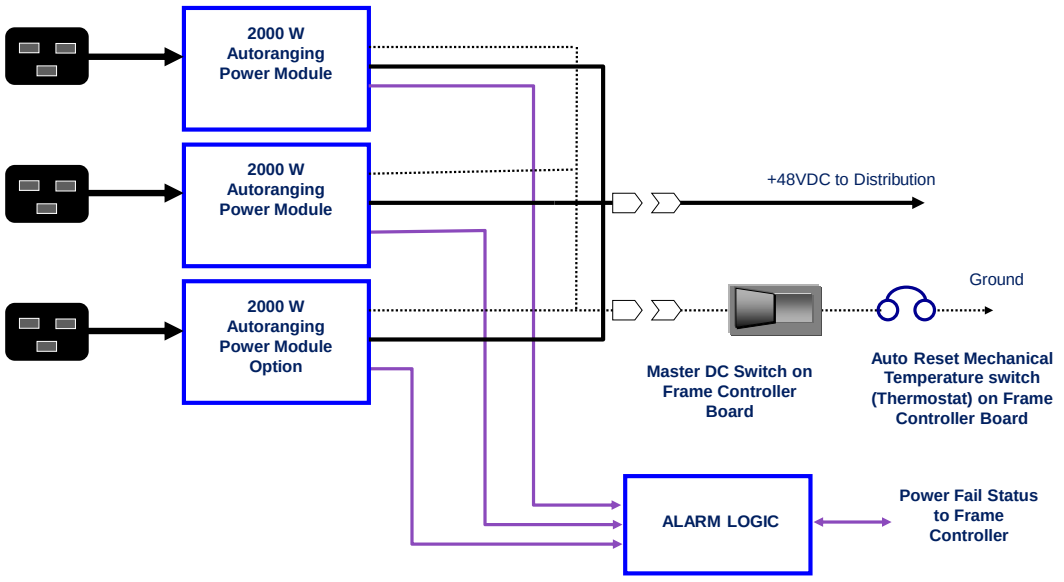
K-Frame - Power Supplies



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6A - 9

Power Supply Module

The same power supply tray is used for both the 6RU and the 13 RU frames.

The master DC switch is located on the Controller board.

One power supply is standard with the 6 RU switcher and the second is an option.

Two power supplies are standard with the 13 RU switcher and the third is an option.

All power supplies are hot swappable and true load sharing.

The power supplies will run on anything from 85 to 264 Volts A.C. at 47 to 63 Hertz.

The power supplies are controlled by a series D.C. ground circuit. The switch and mechanical thermostat on the Frame Controller board are in the circuit.

The Thermostat will shut the power supplies down when the temperature reaches 75 degrees C (167 F). This device will close the circuit when the temperature drops 5 to 8 degrees C.

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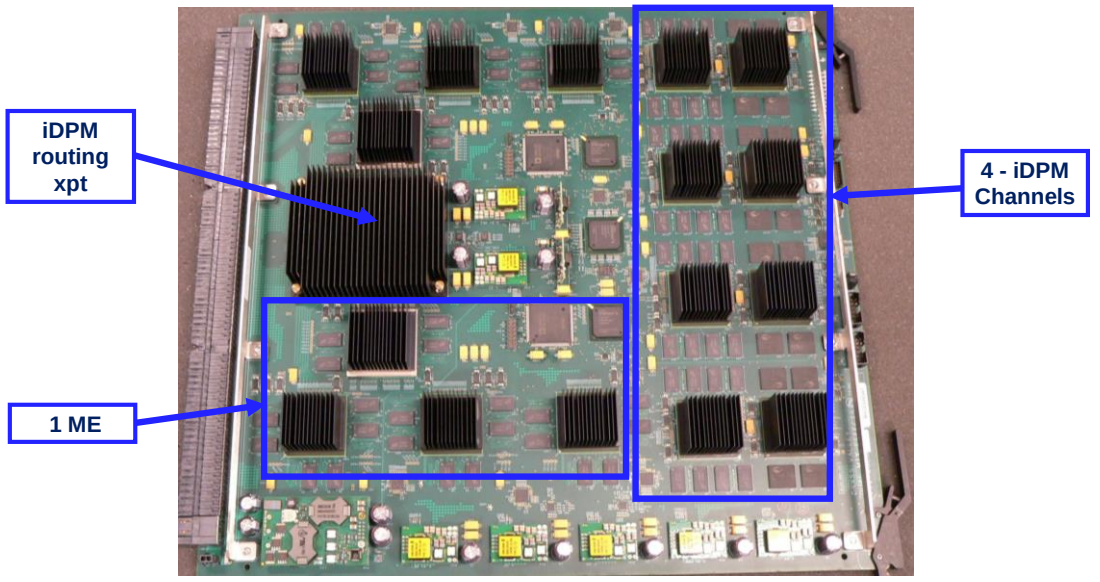
K-Frame Video Processing Board - Dual Mix Effects



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6A - 10

The Video Processor Dual M E board has no field replaceable parts.

The board has 2 complete M Es (Keys, Wipes, Mixer, 2D-DPMs, ME View) 4 channels of iDPM, and an iDPM routing xpt.

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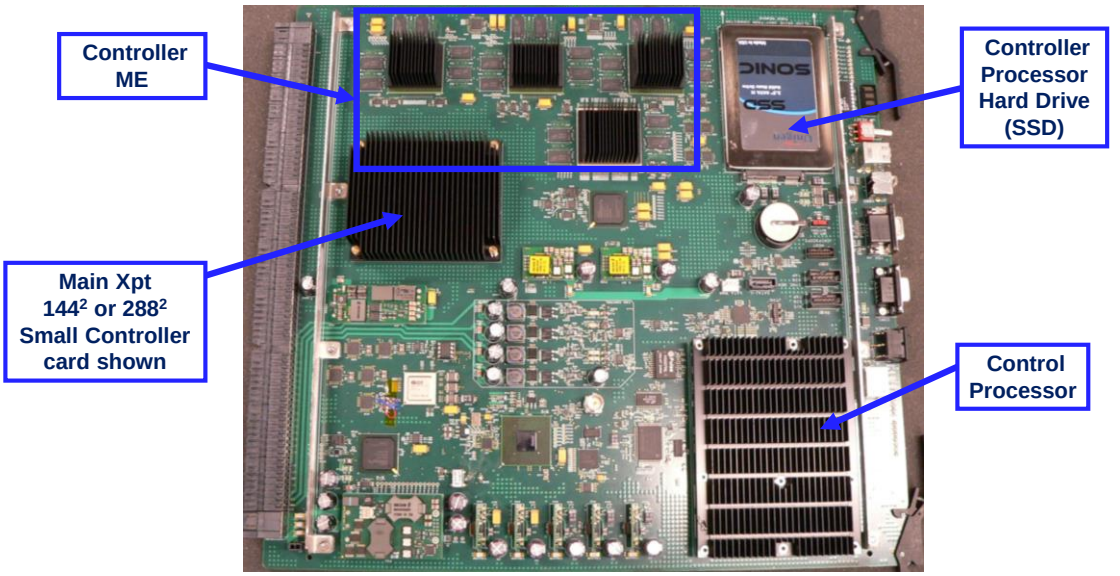
K-Frame - Controller Board



Small Controller Board Shown

6A - 11

The Controller board carries the Controller ME. The Main video routing xpt, The Controller Processor and its hard drive (SSD). It also supports the Serial ports, Ethernet Switch, Sync circuitry and 2 Test Signal and 2 Background generators.

The physical Xpt Chip is different on the 2 versions of the board. The Controller for the large frame also has an additional MultiViewer chip (MX-MV)

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K-Frame - Rear I/O Boards

Video Output Board Shown

Video Input Board is similar

Modular Input Output Board

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6A - 12

The main input and output boards look very similar.

The Output board (shown here) has 16 pairs of output BNCs

The Input board (Not shown) has 32 individual inputs.

The Modular I/O board is used for Set Def , Match Def or Bypass modes. In bypass it can be used as additional inputs and outputs. Note that if one input is set for Match def the corresponding Out put is set to Bypass. If the Output is set to Set Def the corresponding Input will be in Bypass.

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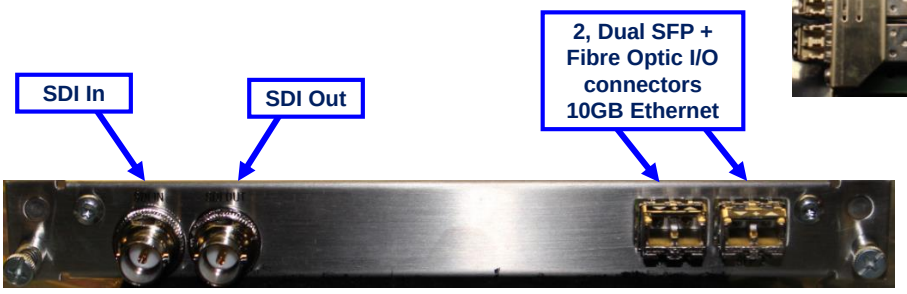
Modular I/0 IP card

The IP I/O card has:

- 2 Dual 10Gb Fibre Optic connectors
  - These are SFP PLUS! (Not standard SFP)
  - Each connector is bi-directional
- 2 BNC connectors for TICO compression onto Coax



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The modular I/O card has 2 – 10 G ports.

Each 10G port can carry 2 streams of uncompressed data of 1080p (3Gb)

Board uses SFP 'plus' 10G connectors for short distance connection using Fibre Optic cables.

Each Module also has an SDI input and SDI Output connector. These will be discussed later.

The module replaces a standard Modular I/O card and has connections to the Frame interconnect for 4 SDI signals in and 4 SDI signals out.

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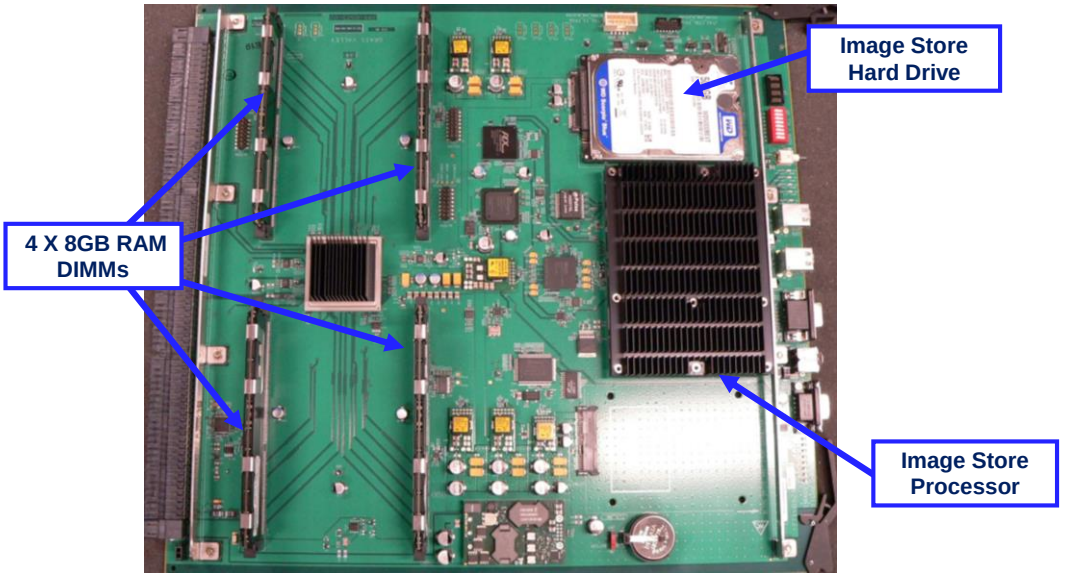
K-Frame - Image Store Board



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6A - 14

The Image Store board operates independently of the main Controller. It has it's own Processor, Hard drive for Image storage and up to 32GB of Memory.

All boards are shipped with 32 GB of memory installed. Licensing determines how much is available for use.

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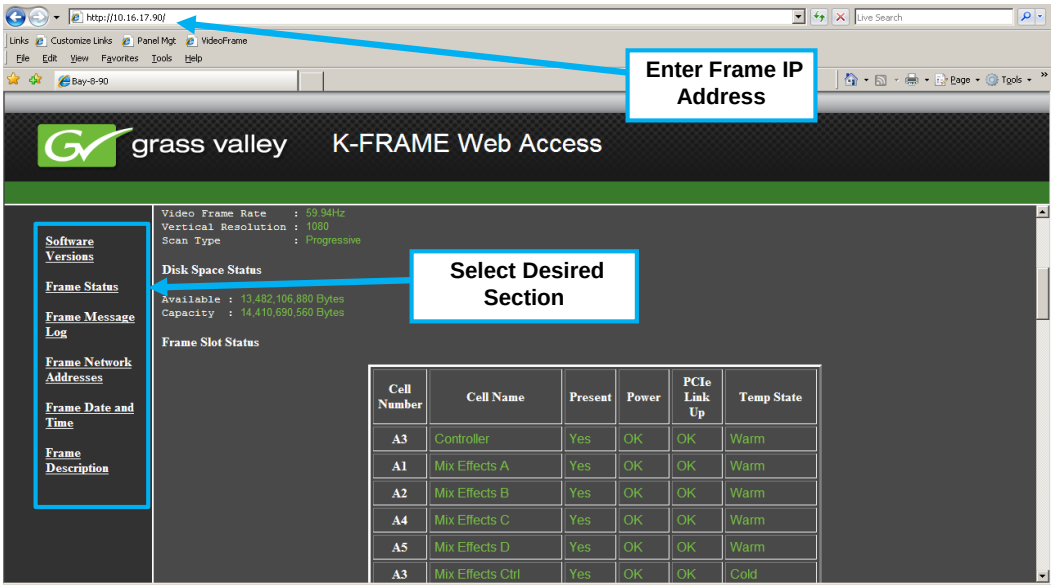
K-Frame Diagnostics - Web Browser (1)



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6A - 15

Web Browser access to the K–Frame processor showing Status page. This provides a quick way to verify the system operating condition.

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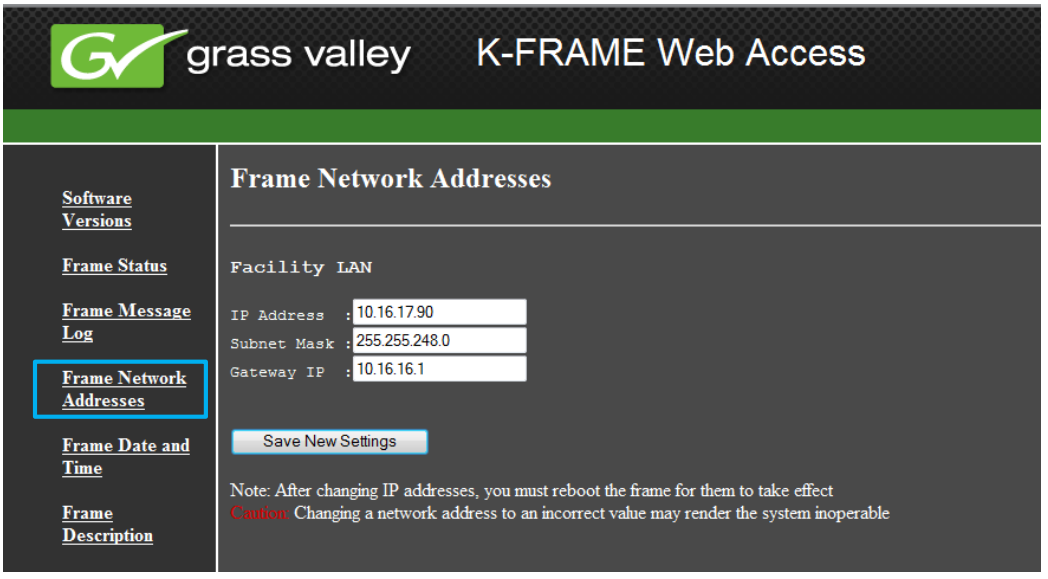
K-Frame Diagnostics - Web Browser (6)



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The 'Frame and Network Addresses' page enables the frame IP, Subnet Mask and Gateway IP to be set. A reboot is required to activate the Saved addresses.

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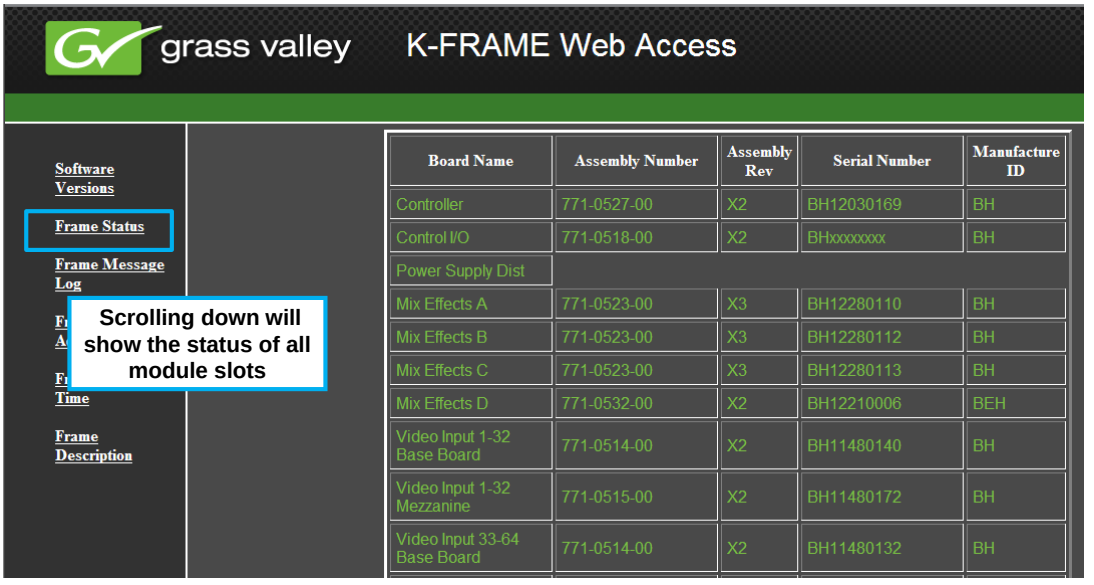
K-Frame Diagnostics - Web Browser (3)



Board Name	Assembly Number	Assembly Rev	Serial Number	Manufacture ID
Controller	771-0527-00	X2	BH12030169	BH
Control I/O	771-0518-00	X2	BHxxxxxxxx	BH
Power Supply Dist				
Mix Effects A	771-0523-00	X3	BH12280110	BH
Mix Effects B	771-0523-00	X3	BH12280112	BH
Mix Effects C	771-0523-00	X3	BH12280113	BH
Mix Effects D	771-0532-00	X2	BH12210006	BEH
Video Input 1-32 Base Board	771-0514-00	X2	BH11480140	BH
Video Input 1-32 Mezzanine	771-0515-00	X2	BH11480172	BH
Video Input 33-64 Base Board	771-0514-00	X2	BH11480132	BH

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6A - 17

'Frame Status' shows the state of all Front and Rear frame boards.

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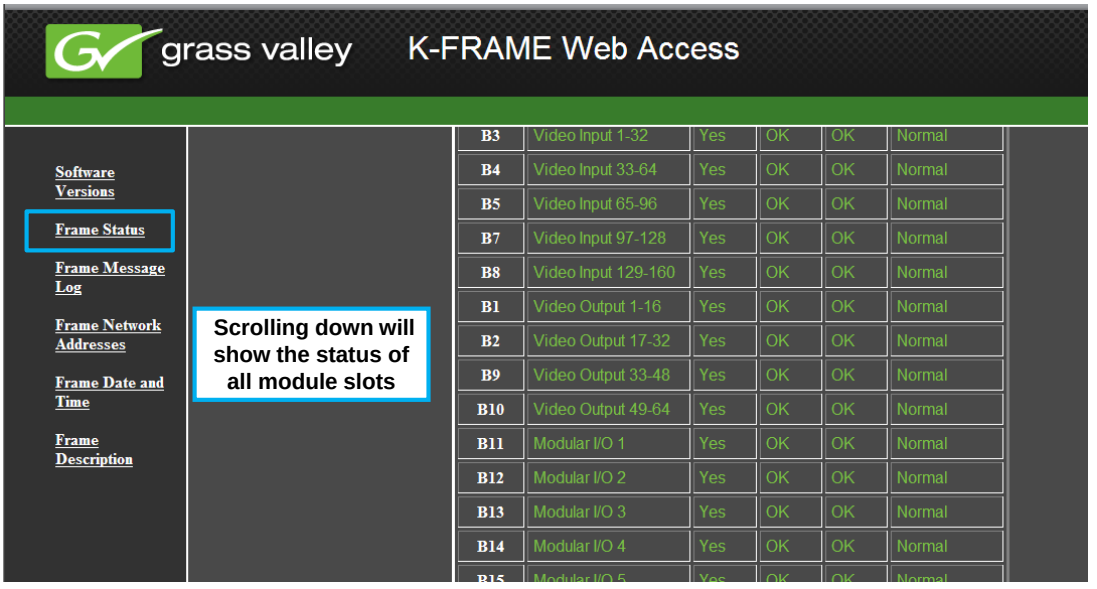
K-Frame Diagnostics - Web Browser (2)



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'Frame Status' shows the state of all Front and Rear frame boards.

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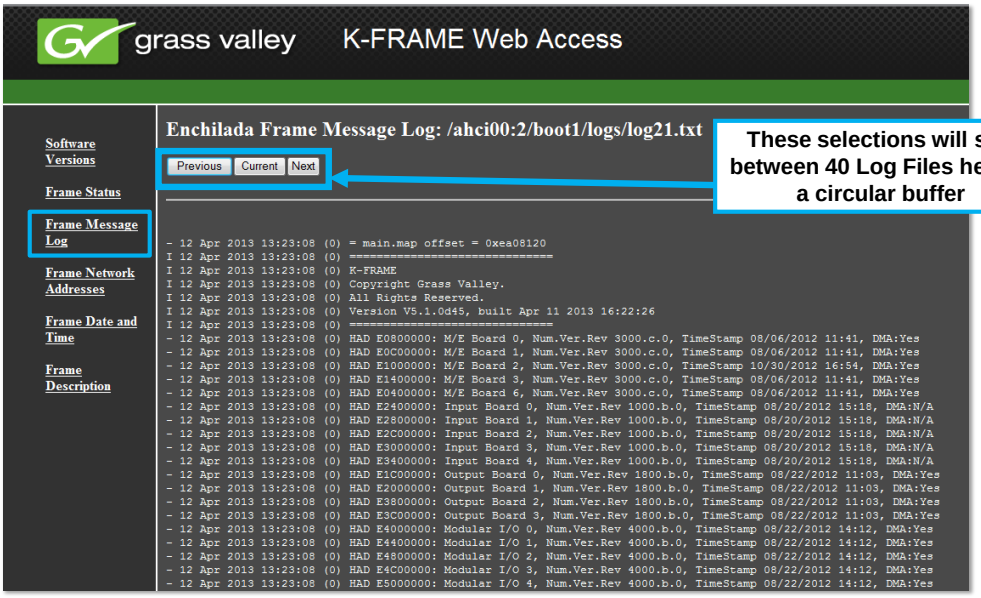
K-Frame Diagnostics - Web Browser (4)



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The ‘Frame Message Log’ shows the contents of a 40 page circular buffer.

This information is saved with the ‘Capture Diagnostic Data’.

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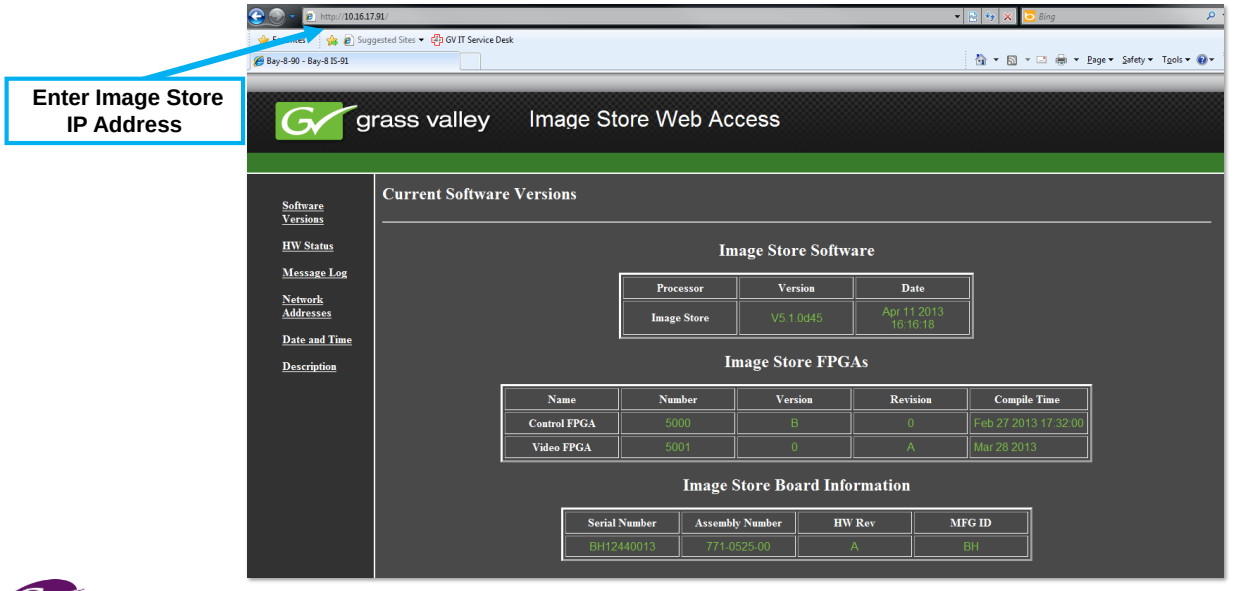
K-Frame Diagnostics - Image Store - Web Browser



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6A - 20

The Images store has it's own Web information. The pages are very similar to the frame processor pages.

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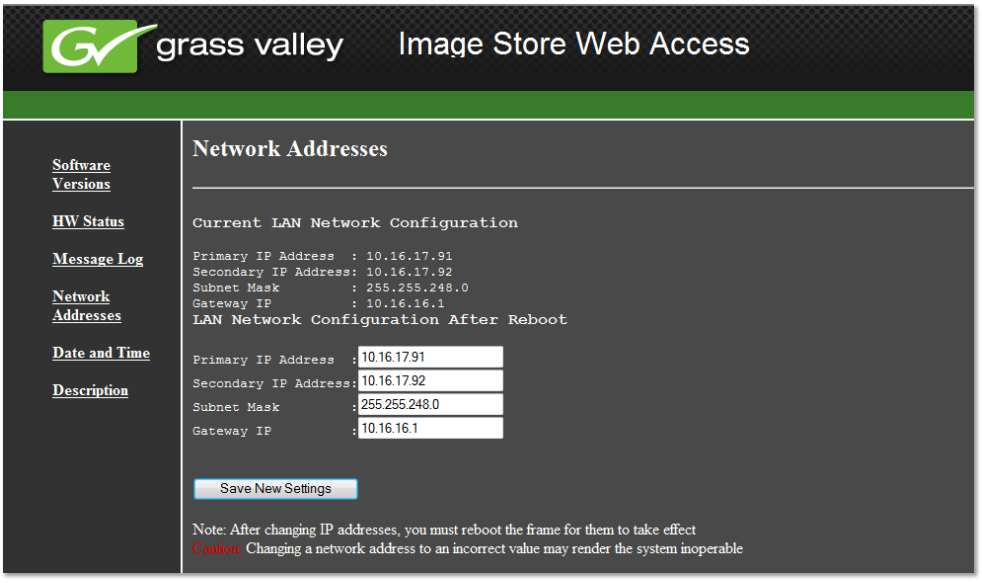
K-Frame Diagnostics - Image Store - Web Browser



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There are 2 IP addresses for the Image Store. The frame normally communicates to IP address frame IP address +1.

In this example the frame is at 10.16.17.90.

The second IP address connects to a dedicated Ethernet port on the rear of the frame.

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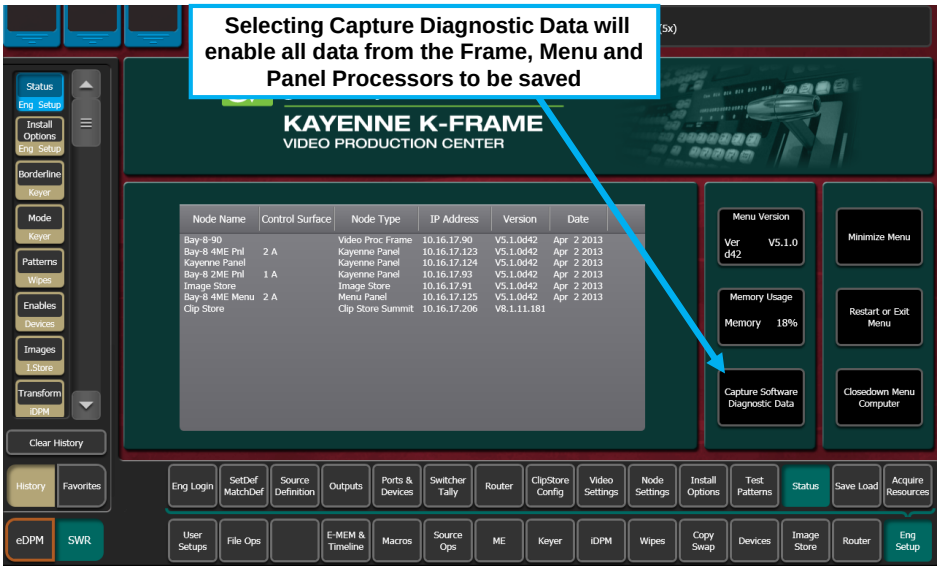
K-Frame Capture System Diagnostics - Menu



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Saving Diagnostic data takes about 15-30 minutes.

The menu will be inoperable during this time. The switcher will still be operational but may not operate as normal.

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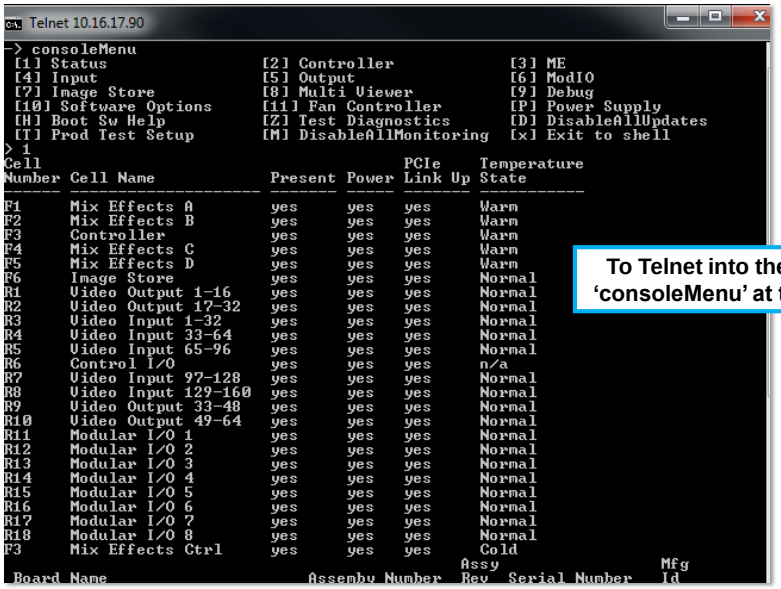
K-Frame Diagnostics - Telnet (1)



To Telnet into the frame type 'consoleMenu' at the > prompt

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6A - 23

Take extreme care when communicating to the frame in this way as some commands can render the system inoperable.

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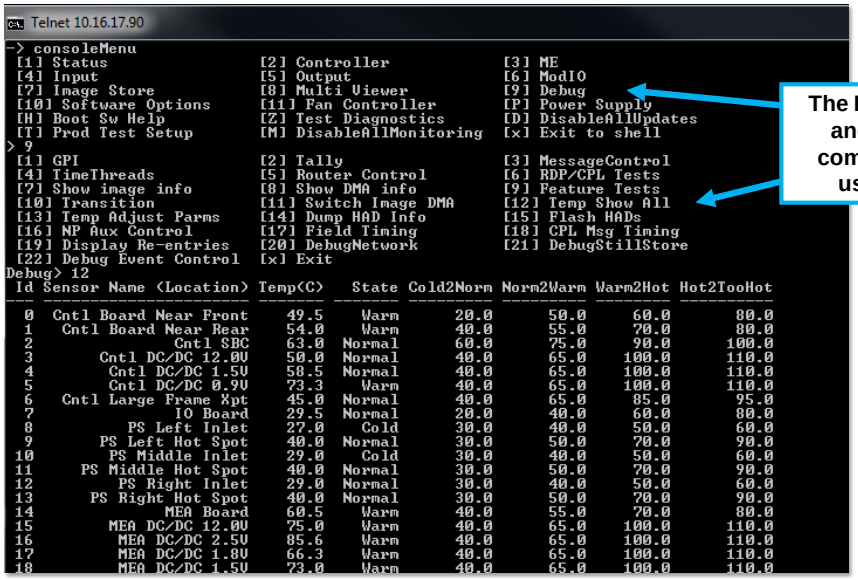
K-Frame Diagnostics - Telnet (2)



The Debug (9) command and TempShow (12) command can provide useful information

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6A - 24

Take extreme care when communicating to the frame in this way as some commands can render the system inoperable.

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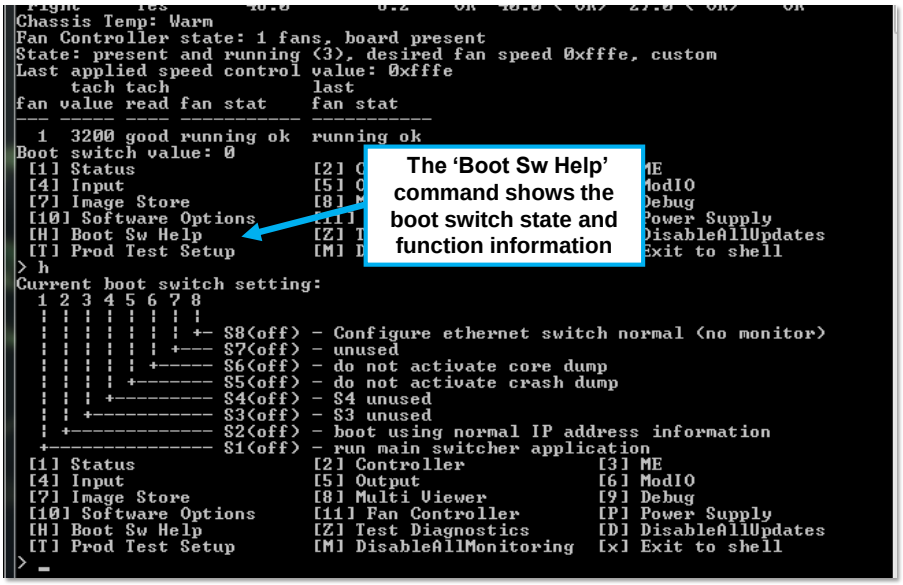
K-Frame Diagnostics - Telnet (3)



The H command provides information on the Boot Sw functions and state.

Normal operating mode is all boot switches off.

Position S2 temporarily sets the Frame IP Address to factory default numbers.

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K-Frame Logs

```
- 01 Apr 2013 15:15:53 (0) = main.map offset = 0xea08120
I 01 Apr 2013 15:15:53 (0) ==============================
I 01 Apr 2013 15:15:53 (0) K-FRAME
I 01 Apr 2013 15:15:53 (0) Copyright Grass Valley.
I 01 Apr 2013 15:15:53 (0) All Rights Reserved.
I 01 Apr 2013 15:15:53 (0) Version V5.1.0d41, built Mar 28 2013 10:41:45
I 01 Apr 2013 15:15:53 (0) ==============================
- 01 Apr 2013 15:15:53 (0) HAD E0800000: M/E Board 0, Num.Ver.Rev 3000.c.0, TimeStamp 08/06/2012 11:41, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E0C00000: M/E Board 1, Num.Ver.Rev 3000.c.0, TimeStamp 08/06/2012 11:41, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E1000000: M/E Board 2, Num.Ver.Rev 3000.c.0, TimeStamp 10/30/2012 16:54, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E1400000: M/E Board 3, Num.Ver.Rev 3000.c.0, TimeStamp 08/06/2012 11:41, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E0400000: M/E Board 6, Num.Ver.Rev 3000.c.0, TimeStamp 08/06/2012 11:41, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E2400000: Input Board 0, Num.Ver.Rev 1000.b.0, TimeStamp 08/20/2012 15:18, DMA:N/A
- 01 Apr 2013 15:15:53 (0) HAD E2800000: Input Board 1, Num.Ver.Rev 1000.b.0, TimeStamp 08/20/2012 15:18, DMA:N/A
- 01 Apr 2013 15:15:53 (0) HAD E2C00000: Input Board 2, Num.Ver.Rev 1000.b.0, TimeStamp 08/20/2012 15:18, DMA:N/A
- 01 Apr 2013 15:15:53 (0) HAD E3000000: Input Board 3, Num.Ver.Rev 1000.b.0, TimeStamp 08/20/2012 15:18, DMA:N/A
- 01 Apr 2013 15:15:53 (0) HAD E3400000: Input Board 4, Num.Ver.Rev 1000.b.0, TimeStamp 08/20/2012 15:18, DMA:N/A
- 01 Apr 2013 15:15:53 (0) HAD E1C00000: Output Board 0, Num.Ver.Rev 1800.b.0, TimeStamp 08/22/2012 11:03, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E2000000: Output Board 1, Num.Ver.Rev 1800.b.0, TimeStamp 08/22/2012 11:03, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E3800000: Output Board 2, Num.Ver.Rev 1800.b.0, TimeStamp 08/22/2012 11:03, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E3C00000: Output Board 3, Num.Ver.Rev 1800.b.0, TimeStamp 08/22/2012 11:03, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E4000000: Modular I/O 0, Num.Ver.Rev 4000.b.0, TimeStamp 08/22/2012 14:12, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E4400000: Modular I/O 1, Num.Ver.Rev 4000.b.0, TimeStamp 08/22/2012 14:12, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E4800000: Modular I/O 2, Num.Ver.Rev 4000.b.0, TimeStamp 08/22/2012 14:12, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E4C00000: Modular I/O 3, Num.Ver.Rev 4000.b.0, TimeStamp 08/22/2012 14:12, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E5000000: Modular I/O 4, Num.Ver.Rev 4000.b.0, TimeStamp 08/22/2012 14:12, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E5400000: Modular I/O 5, Num.Ver.Rev 4000.b.0, TimeStamp 08/22/2012 14:12, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E5800000: Modular I/O 6, Num.Ver.Rev 4000.b.0, TimeStamp 08/22/2012 14:12, DMA:Yes
- 01 Apr 2013 15:15:53 (0) HAD E5C00000: Modular I/O 7, Num.Ver.Rev 4000.b.0, TimeStamp 08/22/2012 14:12, DMA:Yes
- 01 Apr 2013 15:15:53 (0) IDT PCIe switch in DMA mode (config 0x0000016f)
- 01 Apr 2013 15:15:53 (0) DMA transfer subsystem ENABLED
- 01 Apr 2013 15:15:53 (0) ED&R Crash Dumps Enabled
- 01 Apr 2013 15:15:53 (0) ED&R Crash Dump directory set to: /ahci00:2/boot1/DUMP/DUMP_4-1-2013
- 01 Apr 2013 15:15:53 (0) Core Dump directory set to: /ahci00:2/boot1/DUMP/DUMP_4-1-2013
- 01 Apr 2013 15:15:53 (0)
- 01 Apr 2013 15:15:53 (0)        *** Console to Log STD_OUT restored. ***
- 01 Apr 2013 15:15:53 (0)     add net 0.0.0.0: netmask 0.0.0.0: gateway 10.16.16.1
- 01 Apr 2013 15:15:53 (0) Controller FPGA Files FPGA FileNames() Num:2
```

A reboot will always start a new page with the header information

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The K frame logs can be viewed in the web browser or from any captured Diagnostic data file.

Current shows the most current page in the web browser.

A reboot will always appear at the top of the page.

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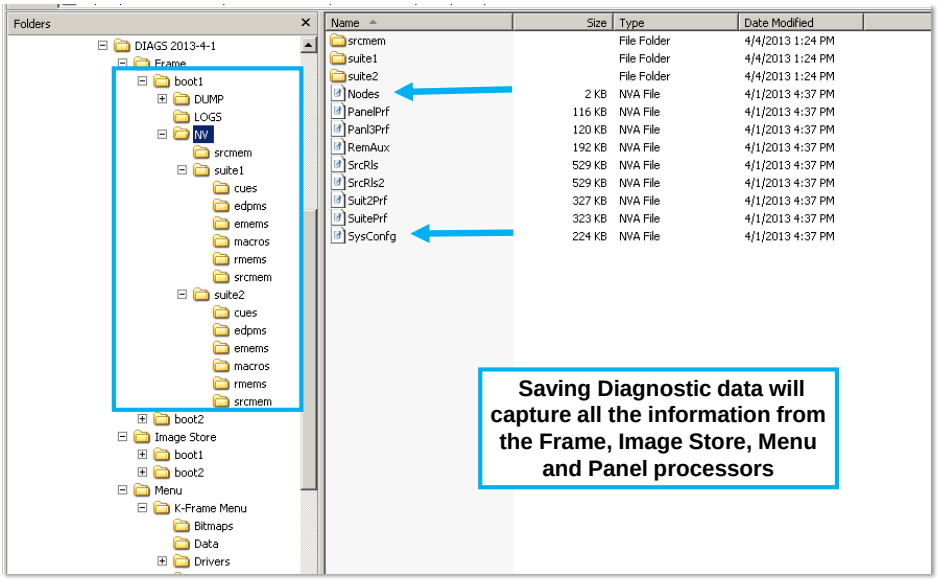
K-Frame Diagnostic Data



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The NV files can be examined in the Diagnostic Data.

The Nodes list shows all of the IP information for the panels and Menus.

The System Configuration will show all of the Engineering information.

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K-Frame Diagnostics - NV files - Sys Config

```
<?xml version="1.0" encoding="ISO-8859-1" standalone="yes"?>
<SystemConfig xmlns="urn:grassvalley.com:ENCHILADA:nv:V5.1.0d41">
<SystemCfg ID="62000000" nType="obj">
<param name="ImageStoreName" datatype="String">Image Store</param>
<param name="C2ipGatewayAddress" datatype="UInt32">303304714</param>
<PeriSetup ID="1" nType="obj">
<RouterIF ID="1" nType="obj">
<param name="RouterTypeRouterIPAddress" datatype="String">10.16.16.23</param>
<param name="RouterTypeRouterIPAddressSec" datatype="String">10.16.16.24</param>
</RouterIF>
<RemAuxIF ID="0" nType="obj">
<param name="RemAuxConfigured" datatype="Bool">true</param>
<param name="CtrlSurfaceNumber" datatype="UInt16">1</param>
<param name="RemAuxPanelName" datatype="String">126</param>
<param name="RemAuxPanelID" datatype="State">1</param>
<param name="RemDestinationType" datatype="State">1</param>
<param name="RemAuxIPAddr" datatype="String">10.16.20.126</param>
</RemAuxIF>
<EditorIF ID="0" nType="obj">
<param name="DeviceName" datatype="String">Editor 1</param>
</EditorIF>
<EditorIF ID="1" nType="obj">
<param name="DeviceName" datatype="String">Editor 2</param>
</EditorIF>
<SrcMachineIF ID="1" nType="obj">
<param name="DeviceName" datatype="String">SG3-1</param>
<param name="MachineControl" datatype="State">3</param>
<param name="VtrIfProtocol" datatype="State">5</param>
<param name="SerialPortNum" datatype="Int16">4</param>
</SrcMachineIF>
<SrcMachineIF ID="2" nType="obj">
<param name="DeviceName" datatype="String">SK2-1</param>
<param name="MachineControl" datatype="State">3</param>
<param name="VtrIfProtocol" datatype="State">5</param>
<param name="SerialPortNum" datatype="Int16">5</param>
</SrcMachineIF>
<SrcMachineIF ID="6" nType="obj">
<param name="DeviceName" datatype="String">K2-2</param>
<param name="VtrIfType" datatype="State">1</param>
<param name="MachineControl" datatype="State">3</param>
<param name="VtrIfProtocol" datatype="State">6</param>
<param name="OmnibusDeviceIPAddress" datatype="UInt32">940838922</param>
</SrcMachineIF>
```

This page displays part of a Sys Config XML file

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An example of a Sys Config file from captured Diagnostic Data NV file.

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K-Frame Diagnostics - Node list

```
<?xml version="1.0" encoding="ISO-8859-1" standalone="yes"?>
<PersistentNodes xmlns="urn:grassvalley.com:ENCHILADA:nv:V5.1.0d40">
<SystemCfg ID="62000000" nType="obj">
<Nodes ID="1" nType="obj">
<Node ID="1" nType="obj">
<param name="NodeIPAddress" datatype="UInt32">1611730954</param>
<param name="Name" datatype="String">Bay-8 2ME Menu</param>
</Node>
<Node ID="2" nType="obj">
<param name="NodeIPAddress" datatype="UInt32">1561399306</param>
<param name="Name" datatype="String">Bay-8 2ME Pnl</param>
</Node>
<Node ID="3" nType="obj">
<param name="NodeIPAddress" datatype="UInt32">2098270218</param>
<param name="Name" datatype="String">Bay-8 4ME Menu</param>
<param name="SuiteNumber" datatype="UInt16">1</param>
</Node>
<Node ID="4" nType="obj">
<param name="NodeIPAddress" datatype="UInt32">2064715786</param>
<param name="Name" datatype="String">Bay-8 4ME Pnl</param>
<param name="SuiteNumber" datatype="UInt16">1</param>
</Node>
<Node ID="5" nType="obj">
<param name="NodeIPAddress" datatype="UInt32">2148601866</param>
<param name="Name" datatype="String">Bay-8 KSP</param>
<param name="SuiteNumber" datatype="UInt16">1</param>
</Node>
<Node ID="6" nType="obj">
<param name="NodeIPAddress" datatype="UInt32">2483163146</param>
<param name="Name" datatype="String">Cliff-PC</param>
</Node>
<Node ID="15" nType="obj">
<param name="NodeIPAddress" datatype="UInt32">1845628938</param>
<param name="Name" datatype="String">KRIM PC</param>
</Node>
<Node ID="16" nType="obj">
<param name="NodeIPAddress" datatype="UInt32">437915658</param>
<param name="Name" datatype="String">andrew</param>
<param name="SuiteNumber" datatype="UInt16">1</param>
</Node>
</Nodes>
</SystemCfg>
</PersistentNodes>
```

This page displays an entire XML file for a Node list.

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An example of a K-Frame Node List file from captured Diagnostic Data NV file.

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