

EXE Connections and Configurations

The following steps should be observed when setting up the EXE.

Power Supply Connection:

The power supply comes with an external power switch mounted on a 1RU panel.



There is one switch for the power supplies at the top of the frame and one switch for the supplies at the bottom of the frame. When the switch is in the *Off* position all the power modules will be shutdown, and when the switch is returned to the *On* position it will cause the power modules to power back up.

Each switch has a mating cable, with four alarm connectors. *The alarm connectors are required for the power tray to current share and therefore must be plugged into the back of each operating power supply tray.*



connection

First, connect an Ethernet cable from the Control Network to the front of the PSU unit. Use a web browser to open the Power Supply Unit (PSU) web interface, login with username *Admin* and password *exeadmin*. By default each PSU's IP is set to **192.168.0.230**.



Main Mod	lules Sys. Config	- 00	Battery Mgt.		
Main Page		<u> </u>	_		
System Status		E I t e	// Alarms Syst No Ac E	tem Normal stive Alarms.	
System Location System Type System Voltage System Current	NIC1000 Valere NIC1000 48V Plant 48.06 V 43 A	k V a I			
Temperatu Controller Temperature TComp Temperature Probe 1	re Probes / Auxilliary Input 53°C / 127.4°F Disabled Normal	s r e			
Location IP Address Version Setpoint ID	Valere NIC1000 192:168.0.230 24.03.56 1:A04-10VV	e f	System State System Started System Time Cumulative Runtime	System Normal Tue Feb 10 2167 7:37:04 PM Tue Feb 17 2167 2:27:48 PM 1 Year 280 Days 16:53:29	

On the *Main* page verify that the System Voltage is set to 48V.

Main	Modules	Sys. Co	nfig.		Battery Mgt.		
1odules Pa	age		6				
// NIC1000	0						
Shelf 1							
R	Rectifier 1		Rectifier 2		Rectifier 3		Rectifier 4
	OK-0807		OK-0807		OK-0807		OK-0807
Voltage:	48.03 V	Voltage:	48.03 V	Voltage:	47.96 V	Voltage:	47.99 V
Current:	10.29 A	Current:	10.62 A	Current:	10.80 A	Current:	11.61 A
Capacity:	52.50 A	Capacity:	52.50 A	Capacity:	52.50 A	Capacity:	52.50 A
Model #:	H2500A2	Model #:	H2500A2	Model #:	H2500A2	Model #:	H2500A2
FW Ver:	1.8	FW Ver:	1.8	FW Ver:	1.8	FW Ver:	1.8
12	4786117871	13	3086104809	1	33086104853	12	3486111702
12	4786117871	13	3086104809	l e r	33086104853	12	3486111702
12	4786117871	1	3006104809	l e r e	33086104853	12	3486111702
Location	4786117871 Valeri	13 • NIC1000	3006104809	l e r e	33086104853	System No.	rmal
Location IP Address	4786117871 Valeri 192.1	■ NIC1000 68.0.230	3006104809	l e r e	33086104853 rstem State rstem Started	System No Tue Feb 10	rmal 2167 7:55:33 PM
Location IP Address Version	4786117871 Valer: 192.11 24.03	■ NIC1000 68.0.230 56	3006104809	l e r e	stem State (stem Started (stem Time	System Mo Tue Feb 10 Tue Feb 10	rmal 2167 7:55:33 PM 2167 2:27:50 PM

On the *Modules* page verify that all Rectifiers in a Shelf have similar current consumptions.



Compare the PSU currents of different shelves that power the top half of the frame and the bottom half of the frame (if applicable). The shelves that are current sharing should have similar current consumptions; if they do not then check the current sharing cable that interconnects the PSU shelves.

EXE NCS-A Connections:

1. Connect the NCS-A to the EXE frame according to wiring diagram, use instructions below as reference:



- **a.** Connect the NCS's *Control* port using a 1GE RJ-45 SFP to a switch or directly to the controlling PC so that the NCS User Interface may be accessed.
- **b.** Connect the NCS's *FC CFG A* port using a 1GE RJ-45 SFP to *EXE-FC A* on *FC Cfg1* using another 1GE RJ-45 SFP.
- **c.** Connect the NCS's *FC CFG B* port using a 1GE RJ-45 SFP to *EXE-FC B* on *FC Cfg1* using another 1GE RJ-45 SFP.
- d. Connect the NCS's 10GE SFP1 port to EXE-FC A on Ctrl 1.
- e. Connect the NCS's 10GE SFP2 port to EXE-FC B on Ctrl 1.
- f. Repeat steps a-e with the second NCS except this time using *FC Cfg2* on both FC's, and *Ctrl 2* on both FCs for the 10Gb fibers (as shown in the reference diagram above).
- g. Connect reference input to Ref1 on both FC's.

Special Note:

The connections listed above require specific SFP types:

a. On EXE-NCS-A , 10GE ports use MO-10GE-SFP-10KM



- b. On EXE-FC , 10GE ports use **SFP10G-TR13-A**
- c. On EXE-FC , 1GE ports use SFPTR-RJ45-SER-AV



Map of NCS ports to physical ports:

Control	\rightarrow	eth0
FC CFG A	\rightarrow	eth2
FC CFG B	\rightarrow	eth3
SC1	\rightarrow	eth4
SC2	\rightarrow	eth5
10GE SFP-1	\rightarrow	eth7
10GE SFP-2	\rightarrow	eth6



EXE NCS-A Settings

EXE-NCS-A Network Configuration

The EXE-NCS-A network can be set from either the Host webpage or command line interface. This step is required if the customer wants to use a different IP address, Netmask or Gateway than the pre-set settings.

- 1. To configure Host's IP address from web interface:
 - a. Use web browser to open the Host webpage, in the address bar enter the preset host IP address

EVERIZ exe_ncs				Logout	
Host	EXE-NCS-A				
Guest	NCS				
	Version	exe-ncs-a-host-trunk-r9339			
	NCS index	0			
	Network				
	IP Address	10.254.98.10			
	Subnet Mask	255.255.255.0			
	Gateway	10.254.98.1			
		Apply			
	Time Servers				
	Time Server 0	10.0.0.75		Apply	
	Time Server 1			Apply	
	Time Server 2			Apply	
	Time Peer 0			Apply	
	Upgrade				
	Select upgrade file:	Choose File No file chosen		upgrade	

- b. Change IP Address, Subnet Mask and Gateway (if required) of the NCS Host.
- c. Select the *Apply* button.
- 2. To configure Host's IP address from command line:
 - a. Connect a monitor and keyboard to the NCS unit. Login to NCS Host with the username: *root*, password: *evertz*.
 - b. Set the IP address, netmask and gateway with the command below; retry until no error messages are returned (*Most errors are due to typing mistakes*):
 - netsetup --force config ip_address netmask gateway || echo error



Example:

```
NCS-0# netsetup --force config 172.16.227.51 255.255.0.0 172.16.1.1
|| echo error
```

c. Verify if the network is configured as expected using the following commands:

Finally reboot the system for the changes to take effect; enter *reboot* in the NCS host terminal.

```
EXE-NCS-A host will automatically assign an IP address for the Guest by using the Host's IP + 1.
For example: Host IP is 10.10.10.10 \rightarrow Guest IP will be 10.10.10.11
```

EXE-NCS-A Host

1. Login to the EXE-NCS host webpage with username *root*, password *evertz*. This will bring up the *Host* page displaying the firmware version installed on the host and all host settings.

EVERIZ exe_ncs			Logout
Host	EXE-NCS-A		
Guest	NCS		
	Version	exe-ncs-a-host-trunk-r9339	
	NCS index	0	
	Network		
	IP Address	10.254.98.10	
	Subnet Mask	255.255.255.0	
	Gateway	10.254.98.1	
		Арріу	
	Time Servers		
	Time Server 0	10.0.0.75	Apply
	Time Server 1		Apply
	Time Server 2		Apply
	Time Peer 0		Apply
	Upgrade		
	Select upgrade file:	Choose File No file chosen	upgrade

The parameters on this page are defined as:

- a. Version: Displays the firmware version that is installed on the Host.
- b. **NCS Index:** Displays the state of control for the NCS
 - 0 : means the NCS is set up as *main control*.
 - 1 : means the NCS is set up as *redundant control*.

*Note: The NCS's cannot have same NCS Index.



- c. **Time Server:** The IP address of the *Time Server* being used to synchronize the NCS Host clock with an NTP server.
- 2. The Second page is the *Guest* page.

Host	EXE-NCS-A				
Guest	Guest settings				
	Message : Guest 0 stopped successfully.				
	Guest Image	Action Restore Factory Settings	Status		
		start restore	GUEST STOPPED		
	Image settings				
	Image	File (Version)	Action		
		exe-guest-trunk-r9291 (exe-guest-trunk-r9291)	delete		
		exe-guest-trunk +9300 (exe-guest-trunk +9300)	delete		
		exe-guest-trunk-r9302 (exe-guest-trunk-r9302)	delete		
		exe-guest-trunk-r9320 (exe-guest-trunk-r9320)	delete		
		exe-guest-trunk-r9329 (exe-guest-trunk-r9329)	delete		
		exe-guest-trunk-r9424 (exe-guest-trunk-r9424)	delete		
		exe-guest-trunk-r9432 (exe-guest-trunk-r9432)	delete		
		exe-guest-trunk-r9441 (exe-guest-trunk-r9441)	delete		
		exe-guest-trunk-r9445 (exe-guest-trunk-r9445)	delete		
		exe-guest v15118-r8155 (exe-guest v15118-r8155)	delete		
		exe-guest-trunk (9489 (exe-guest-trunk (9489)) exe-guest-trunk (9511 (exe-guest-trunk (9511)	delete		
	13 Cho	ose File No file chosen	create		
			(Constanting of the second		
Card settings					
C	ard	Guest			
FC	C01				
FC	C02		j		
X	C01				
X	C02				
X	C03	null			
x	C04	null			
X	C05	0			
x	C06				
X	C07				
X	C08				
LC	C01				
LC	C02				
LC	C03				
LC	C04				
LC	C05				
LC	C06				
LC	C07				
LC	C08	0			
LC	C09				
LC		0			
LC	C11	0			

The parameters on this page are defined as:

- a. **Guest Settings:** Displays the *image* that is currently used for the Guest. Select Start/Stop under the *Action* label; this will start/stop the guest image. *NOTE: Stop both NCS Guest's before making any firmware changes to avoid sync issues.*
 - Only start the Guest when all settings have been applied.
 - Always start the Guests one NCS at a time.



- Always start the Guest of *NCSO* first (Main NCS).
- EXE frame will power on after Guest started.
- b. **Image Settings:** Displays a list of pre-loaded Guest images. Choose the appropriate image number under the label *Image* corresponding to the Guest of choice. If the desired image isn't loaded on the list, click *Choose File*, and select the image file then select *Create*.
- c. **Card Settings**: These allow the user to *enable/disable* blades in the frame.
 - Blades that are not present in EXE frame need to be *Disabled*.
 - Blades can be disabled by clicking on the box and choosing Null.
 - Blades can only be *enabled/disabled* when the Guest is stopped.
- d. When all settings and configurations are done:
 - a. Power on EXE frame and wait for 5 minutes
 - b. Ensure all blades boot up.
 - c. Ensure both NCS's sync up (i.e. Display *Peer Controller: Online*)
 - d. Ensure all previously enabled ports return to *Up*.

Troubleshooting EXE System issues

1. EXE frame can't boot

There are some reasons that may cause the EXE frame to be unable to boot up properly. The most common reason is because there is no link between the NCS' and the FC's. The following steps will describe how to troubleshoot this problem:

- a. Go to the Host webpage and ensure the Guest is started.
- b. Verify the connections from Guest
 - i. SSH into the NCS guest with username: *root*, password: *evertz*.
 - ii. Type command *checklinks*.
 - If all links are connected properly, it will return "All links are okay".
 - If links have problem, NCS guest will show some messages as below:

Link down On NCS0

"exe-NCS-0:eth7" connected to "exe-FC-01:fm0-01-F01-P01(fm0-01)" (Link between Ctr1(fm0-01-F01-P01(fm0-01)) port on FC01 and 10GE-SFP1(eth7) on NCS0 is down)
"exe-NCS-0:eth6" connected to "exe-FC-02:fm0-01-F02-P01(fm0-01)" (Link between Ctr1 (fm0-01-F02-P01(fm0-01)) port on FC02 and 10GE-SFP2(eth6) on NCS0 is down)
"exe-NCS-0:eth2" connected to "exe-FC-01:eth0" (Link between FC Cfg1 (eth0) port on FC01 and FC CfgA (eth2) on NCS0 is down)

- "exe-NCS-0:eth3" connected to "exe-FC-02:eth0" (Link between FC Cfg1 (eth0) port on FC02 and FC CfgB (eth3) on NCS0 is down)



Link down On NCS1

"exe-NCS-1:eth7" connected to "exe-FC-01:fm0-02-F01-P02(fm0-02)" (Link between Ctr2(fm0-02-F01-P02(fm0-02)) port on FC01 and 10GE-SFP1(eth7) on NCS1 is down)
"exe-NCS-1:eth6" connected to "exe-FC-02:fm0-02-F02-P02(fm0-02)" (Link between Ctr2(fm0-02-F02-P02(fm0-02)) port on FC02 and 10GE-SFP2(eth6) on NCS1 is down)
"exe-NCS-1:eth2" connected to "exe-FC-01:eth1" (Link between FC Cfg2 (eth1) port on FC01 and FC CfgA (eth2) on NCS1 is down)

- "exe-NCS-1:eth3" connected to "exe-FC-02:eth1" (Link between FC Cfg2 (eth1) port on FC02 and FC CfgB (eth3) on NCS1 is down)

Cable is swapped

- "exe-NCS-0:eth2" connected to "exe-FC-01:eth0" + "exe-NCS-0:eth2" connected to "exe-FC-01:eth1"

→ 1GE link is swapped on FC01. Currently, *FC Cfg2* (eth1) on FC01 is connected to *FC CfgA* (eth2) on *NCS0* instead of connected to FC CfgA (eth2) on *NCS1*

 "exe-NCS-0:eth7" connected to "exe-FC-01:fm0-01-F01-P01(fm0-01)" + "exe-NCS-0:eth7" connected to "exe-FC-01:fm0-02-F01-P02(fm0-02)"
 → 10GE link is swapped on FC01. Currently, Ctr2 (fm0-02-F01-P02(fm0-02)) port on FC01 is connected to 10GE-SFP1(eth7) on NCS0 instead of connected to 10GE-SFP1(eth7) on NCS1

Peering link is disconnected

- *"exe-NCS-0:eth4" connected to "exe-NCS-1:eth4"* → The first Peer link between NCS0 and NCS1 is disconnected
- *"exe-NCS-0:eth5" connected to "exe-NCS-1:eth5"* → The second Peer link between NCS0 and NCS1 is disconnected
- c. Check LED lights from the back of NCS for 1GE links and 10GE links. Reseat the SFP from the FC's side if any of them are not lit up. The link should be recovered after reseating.
 NOTE: The LED lights for the 10GE links are located between 10GE SFPs. The top 2 LED lights are associated with the 10GE SFP2 port. The bottom 2 LED lights are associated with the 10GE SFP1 port.
- 2. Port down

There are some reasons that may cause the EXE port to remain *Down*.

- a. The Port is set to *Down* on the Guest Webpage:
 - i. Go to the Port tab on the Guest webpage, make sure Operation is set to Up.
- b. The Port is set to the wrong speed:
 - i. Go to the Port tab on the Guest webpage, make sure *Speed* is set to the proper speed (1GE/10GE).



- c. Ports set to wrong type
 - i. Go to Port tab on Guest webpage, ensure *Transceiver Type* is set to the right cable type. There are 2 types of cable.
 - **Optical:** Use for fiber cables.
 - **DAC:** Use for copper cables.
 - ii. If you need to set series of port at one time, follow these steps:
 - o SSH to guest.
 - o Type cfgsh
 - o Type set portConfigTransceiverType <port range> <type>
 Example:

```
set portConfigTransceiverType 10..40 dac
```

```
set portConfigTransceiverType 100..240 optical
```

- d. Link is down on the other side (end-device)
 - i. Ensure the link is UP on other device which is connected to EXE port.
- e. Bad SFP
 - i. Go to Port tab on Guest webpage and check "TX power level" and "RX power level".
 - Tx[dBm] should read no less than -8.2, and no greater than +0.5
 - Rx[dBm] should read no less than -10, and no greater than +0.5
 - ii. If Tx power is -16, -20 or -40, it is means it is a bad SFP.

3. EXE not swiching in VBI - Verify reference (Genlock) status

- a. From guest SSH to FC by using command:
 - o ssh fc01 (For the top FC)
 - o ssh fc02 (For the bottom FC)
- b. Change directory to /evertz/factory/fc folder and run ./ref script FC-01# cd /evertz/factory/fc

FC-01# ./ref

- Ref1: 15.7331655129 kHz (15890)
- Ref2: not detected (32768)
- i. The ./ref utility reports the detected line rate:
 - NTSC is 27000000/1716 = 15.734 kHz
 - PAL is 2700000/1728 = 15.625 kHz
 - HD formats have higher frequency line rates.