MTCA.4 Tutorial

Let Your **Application** benefit

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MicroTCA.4
Configuration and Maintenance

- Motivation
- Configuration Tools
  - Command Line Interface
  - Java-App
  - Web interface
- Examples of Configurations
  - Ethernet and PCIexpress Configurations
  - Emergency Configuration
- Maintenance Tools
  - Analysis locally: LEDs
  - Analysis remotely: inventory, current, revision
  - Firmware update

About N.A.T.

Network and Automation Technology

- Founded in 1990, privately owned
- Hard- and Software design and manufacturing
- Focus on innovation in communication
- international and worldwide operations
- Headquarters

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  53227 Bonn

  Germany

- Instructors:
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  - Dipl. Phys. Heiko Körte, heiko@nateurope.com

About N.A.T.

Network and Automation Technology

MicroTCA.4
Configuration and Maintenance

- About N.A.T.
- Comparison of Standards
- Configuration Tools
  - Command Line Interface
  - NATView
  - Web interface
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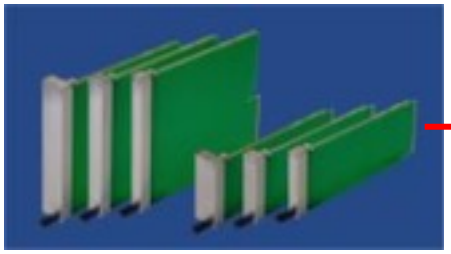
AMC
Pluggable in ATCA and MTCA Shelf

- The basic idea of MTCA is to have a shelf that contains just AMC modules
- Backplane directly accepts AMC modules
- AMCs are interchangeable between ATCA and MTCA
- The infrastructure of a ATCA Carrier was adapted into the MTCA shelf (power, management, switching)
- No rear I/O
- power input and all outputs to the front



ATCA Shelf

MTCA Shelf

Comparison of Standards
Differences in latest specs

	VPX	ATCA	MTCA
Common size	***3U, 6U***	***2U, 3U, 12U***	***1U, 2U, 3U, 5U, 9U***
Backplane	passive, switched	passive, switched	passive, switched
topologies	***single star, dual star (1/2 switch), full mesh, daisy-chain, ring***	***dual star, dual-dual star, full meshed***	***single star, dual star***
profiles	yes	no	no
Voltages	***MP: 3.3V PP: 3,3V, 5.0V, 12.0V optional: ±3.0V, ±12.0V***	***MP: 3,3V PP: 48.0V***	***MP: 3.3V PP: 12.0V***
Slot budget (PP)	115W@5V, 384W@12V 768W@48V	400W@48V	80W@12V
Pins per slot	***728 (6U), 168 (3U)***	***234/414***	***170 (AMC) 260(AMC+RTM)***
Link speed (Gbaud)	1.25, 2.5, 5, 6.25, 8.0	1.25, 2.5, 5, 6.25, 8.0	1.25, 2.5, 5, 6.25, 8.0
Link width	***x1, x2, x4, x8***	***x1, x2, x4, x8***	***x1, x2, x4, x8***
Fabrics	GbE, XAUI, PCIe, SRIO	GbE, **XAUI**, PCIe, SRIO	GbE, XAUI, PCIe, SRIO
Markets	***Mil, Aerospace***	***Mil, Aerospace, core Net***	***all***

Comparison of Standards
Results

- Results:
  - VPX targeting at one vertical market
    - ➡ limited volumes
    - ➡ industry develops for this market only
  - ATCA has it strength in bandwidth
    - ➡ limited use cases due to cost/function

➡ MTCA combines strengths and flexibility

MicroTCA
Architectural features - I/II

- simple backplane architecture
  - ✓ reduces costs and risks, is re-useable in future
- all signals at same signal level (MLVDS)
  - ✓ no electrical clash
- switched connections
  - ✓ no blocking transfer
  - ✓ type of backplane connection depends on kind of switch
- all slots managed and controlled
  - ✓ detection of incompatibilities and faults
  - ✓ health management and fault isolation
  - ✓ hot-swap and hot-plug

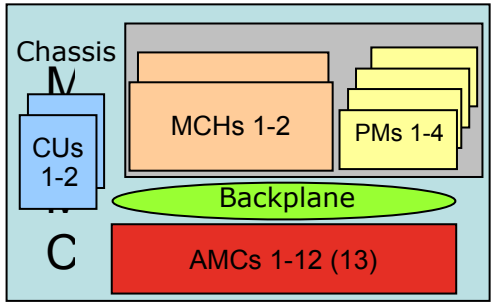
MicroTCA
Architectural features - II/II

- all data transfer are
  - independent
  - simultaneous
  - bidirectional

- data connections determined by one switch card:
  - **base/common options** fabric: GbE
  - **storage** fabric: SATA
  - **fat pipe** fabric: PCIe or XAUI or SRIO
  - **extended fat pipe** fabric: XAUI or SRIO

MicroTCA Architecture
Advanced Mezzanine Cards (AMCs)

- AMC eco system
  - single and multi-core CPUs (Intel, Freescale, ARM, etc.)
  - single and multi-core PP and NPUs
  - line interfaces (E1/T1, SDH, ATM, 3G/4G/5G)
  - antenna interfaces
  - FPGAs (Xilinx, Altera, etc.)
  - DSPs (TI, Freescale, Octasic, etc.)
  - analogue and digital IO
  - industrial busses (EtherCAT, Profibus, CANbus etc.)
  - ADCs and DACs
  - SSD and HDD storage
  - GPUs



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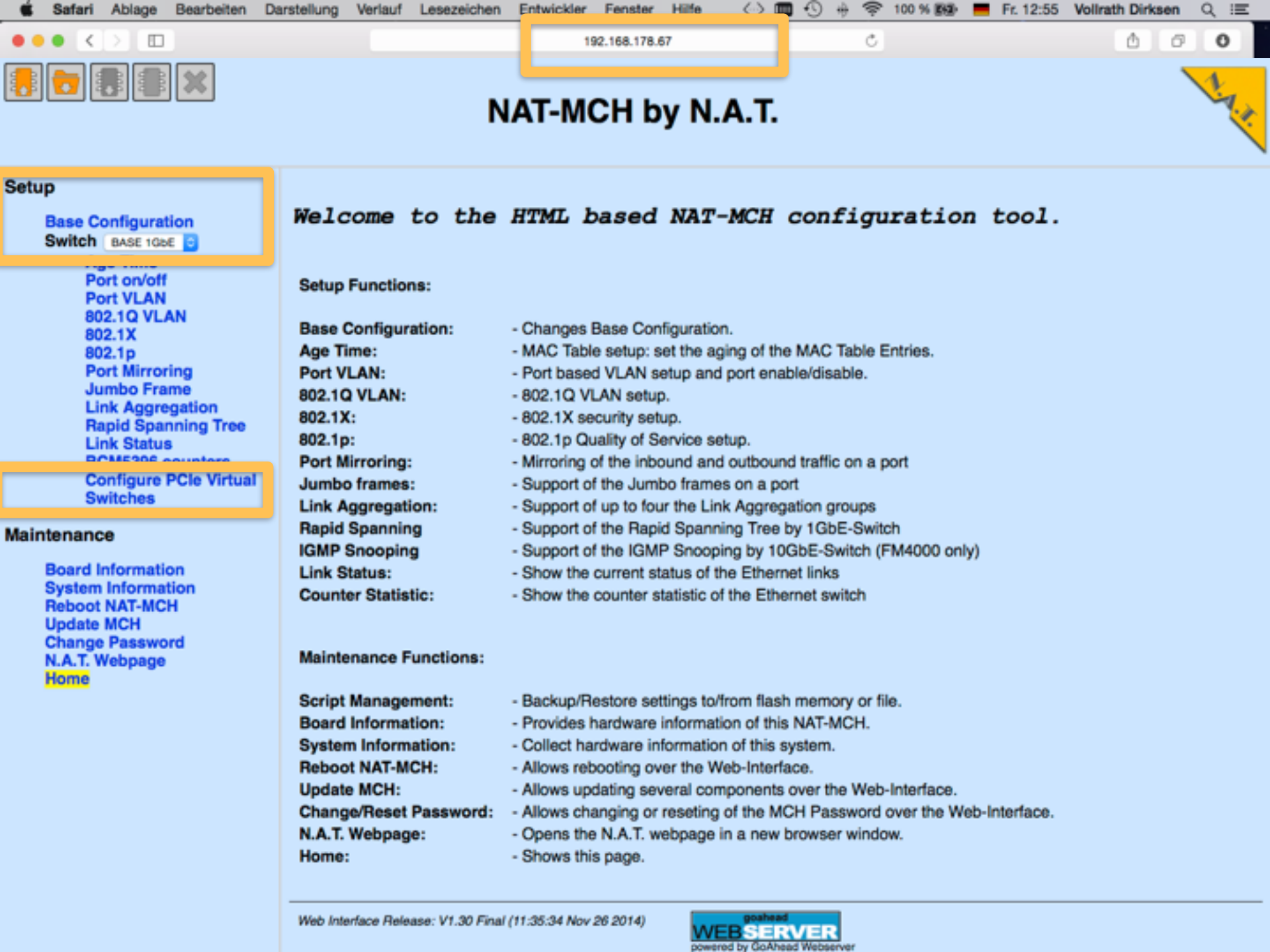
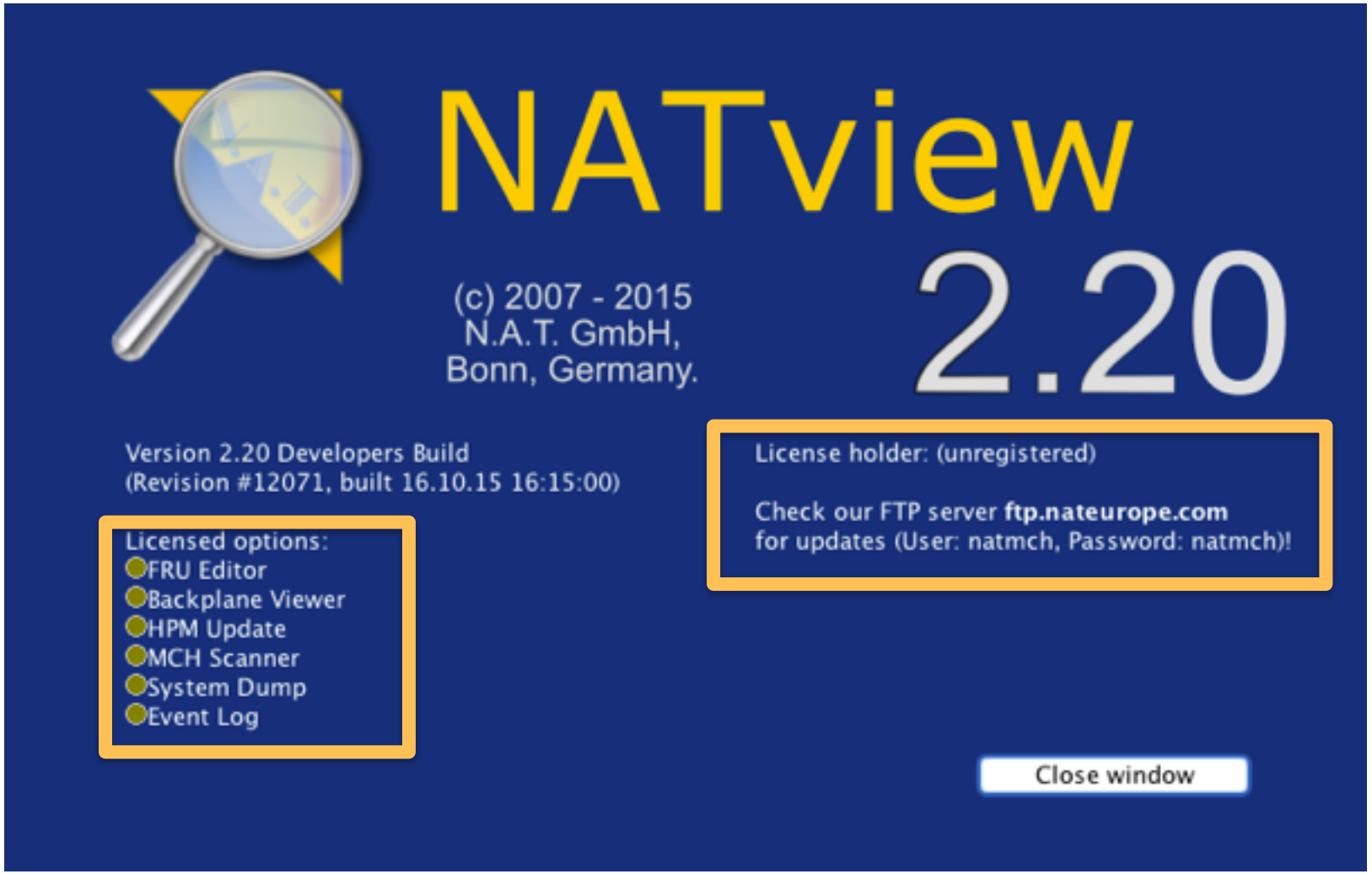

Safari Ablage Bearbeiten Darstellung Verlauf Lesezeichen Entwickler Fenster Hilfe
100 % Fr. 12:55 Vollrath Dirksen
192.168.178.67
NAT-MCH by N.A.T.
Setup
Base Configuration
Switch BASE 1GbE
Port on/off
Port VLAN
802.1Q VLAN
802.1X
802.1p
Port Mirroring
Jumbo Frame
Link Aggregation
Rapid Spanning Tree
Link Status
Configure PCIe Virtual Switches
Maintenance
Board Information
System Information
Reboot NAT-MCH
Update MCH
Change Password
N.A.T. Webpage
Home
Welcome to the HTML based NAT-MCH configuration tool.
Setup Functions:
Base Configuration: - Changes Base Configuration.
Age Time: - MAC Table setup: set the aging of the MAC Table Entries.
Port VLAN: - Port based VLAN setup and port enable/disable.
802.1Q VLAN: - 802.1Q VLAN setup.
802.1X: - 802.1X security setup.
802.1p: - 802.1p Quality of Service setup.
Port Mirroring: - Mirroring of the inbound and outbound traffic on a port
Jumbo frames: - Support of the Jumbo frames on a port
Link Aggregation: - Support of up to four the Link Aggregation groups
Rapid Spanning - Support of the Rapid Spanning Tree by 1GbE-Switch
IGMP Snooping - Support of the IGMP Snooping by 10GbE-Switch (FM4000 only)
Link Status: - Show the current status of the Ethernet links
Counter Statistic: - Show the counter statistic of the Ethernet switch
Maintenance Functions:
Script Management: - Backup/Restore settings to/from flash memory or file.
Board Information: - Provides hardware information of this NAT-MCH.
System Information: - Collect hardware information of this system.
Reboot NAT-MCH: - Allows rebooting over the Web-Interface.
Update MCH: - Allows updating several components over the Web-Interface.
Change/Reset Password: - Allows changing or reseting of the MCH Password over the Web-Interface.
N.A.T. Webpage: - Opens the N.A.T. webpage in a new browser window.
Home: - Shows this page.
Web Interface Release: V1.30 Final (11:35:34 Nov 26 2014)
goahead WEBSERVER
powered by GoAhead Webserver

JAVA Tool
OS independent



Your Maintenance Tools
Examples of command line interface (CLI)

- sdrrep_info - SDR repository information
- sel_info - System Event Log information
- **show_ekey - Show all activated connections**
- **show_fru - Show all FRUs**
- **show_fruinfo - fru_id FRU contents**
- **show_cu - Show cooling unit**
- **show_pm - Power Module Status**
- **show_sensorinfo - Show sensors for FRU**
- version - Print firmware version information
- ni - Print network configuration
- **history**

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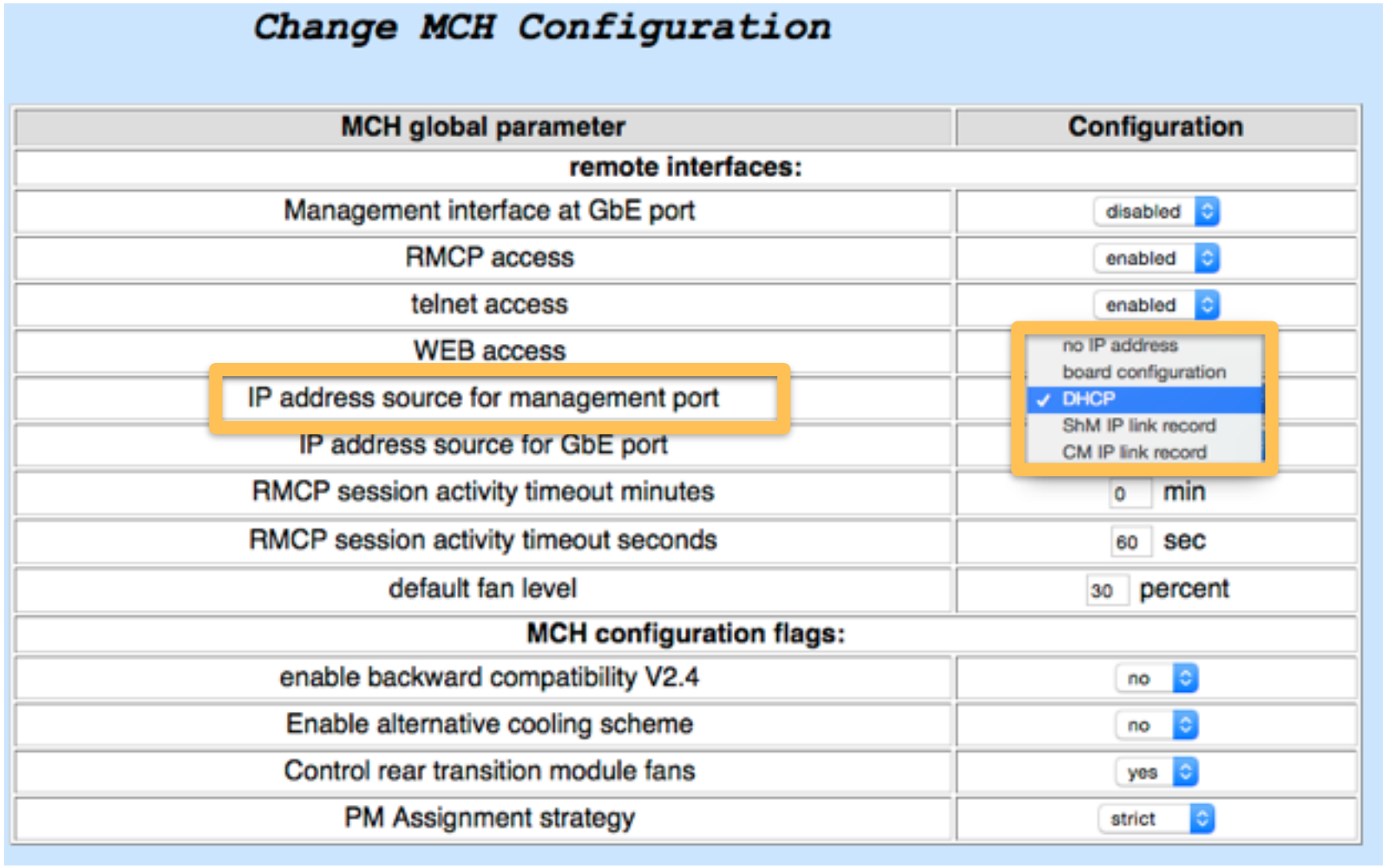
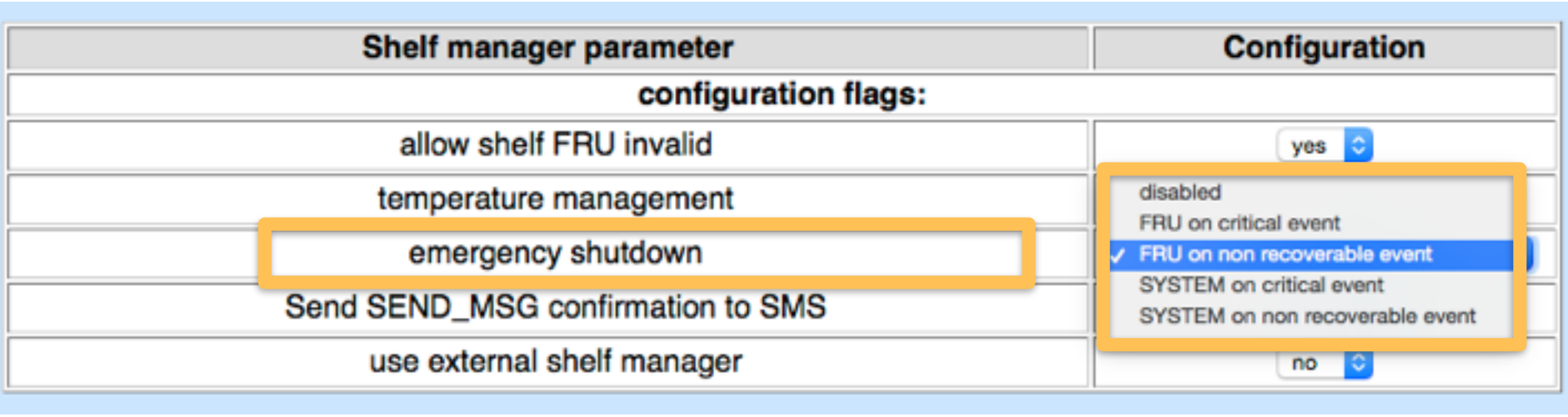
Web Interface
Source of IP address



Emergency Shutdown
Only switch of the faulty FRU



Shelf manager parameter	Configuration
configuration flags:	
allow shelf FRU invalid	yes
temperature management	disabled / FRU on critical event / ✓ FRU on non recoverable event / SYSTEM on critical event / SYSTEM on non recoverable event
emergency shutdown	
Send SEND_MSG confirmation to SMS	
use external shelf manager	no

NAT-MCH by N.A.T.

Setup

- Base Configuration
- Switch BASE 1GbE
  - Age Time
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  - 802.1X
  - 802.1p
  - Port Mirroring
  - Jumbo Frame
  - Link Aggregation
  - Rapid Spanning Tree
  - Link Status
  - BCM5396 counters
  - Configure PCIe Virtual Switches

Maintenance

- Board Information
- System Information
- Reboot NAT-MCH
- Update MCH
- Change Password
- N.A.T. Webpage
- Home

Port on/off (enable/disable)

Slot	AMC1	AMC2	AMC2	AMC3	AMC3	AMC4	AMC4	AMC5	AMC5	AMC6	AMC7	AMC7	FRT1	FRT2	UPDB	RTMB	CPU1
Port	0	0	1	0	1	0	1	0	1	0	0	1	-	-	-	-	-
Enable	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☑	☑	☑

Apply Discard

You need to click apply to save your changes.
The following table will be reloaded by clicking apply.

Port based VLAN Configuration

Slot	AMC1	AMC2	AMC2	AMC3	AMC3	AMC4	AMC4	AMC5	AMC5	AMC6	AMC7	AMC7	FRT1	FRT2	UPDB	RTMB	CPU1
Port	0	0	1	0	1	0	1	0	1	0	0	1	-	-	-	-	-
AMC1/0	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC2/0	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC2/1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC3/0	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC3/1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC4/0	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC4/1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC5/0	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC5/1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC6/0	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC7/0	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
AMC7/1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
FRT_1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑

Ethernet switch parameter	Configuration
configuration source	✓ no configuration / load from FLASH
Ignore Backplane FRU Info	

Clock module parameter	Configuration
configuration source	no configuration

PCIe parameter	Current Configuration
configuration flags:	
upstream slot power up delay	15 sec
PCIe hot plug delay for AMCs	0 sec
hot plug support	enabled
PCIe early ekey (before payload)	disabled
Use PCIe on MCH-RTM(disable AMC12)	yes

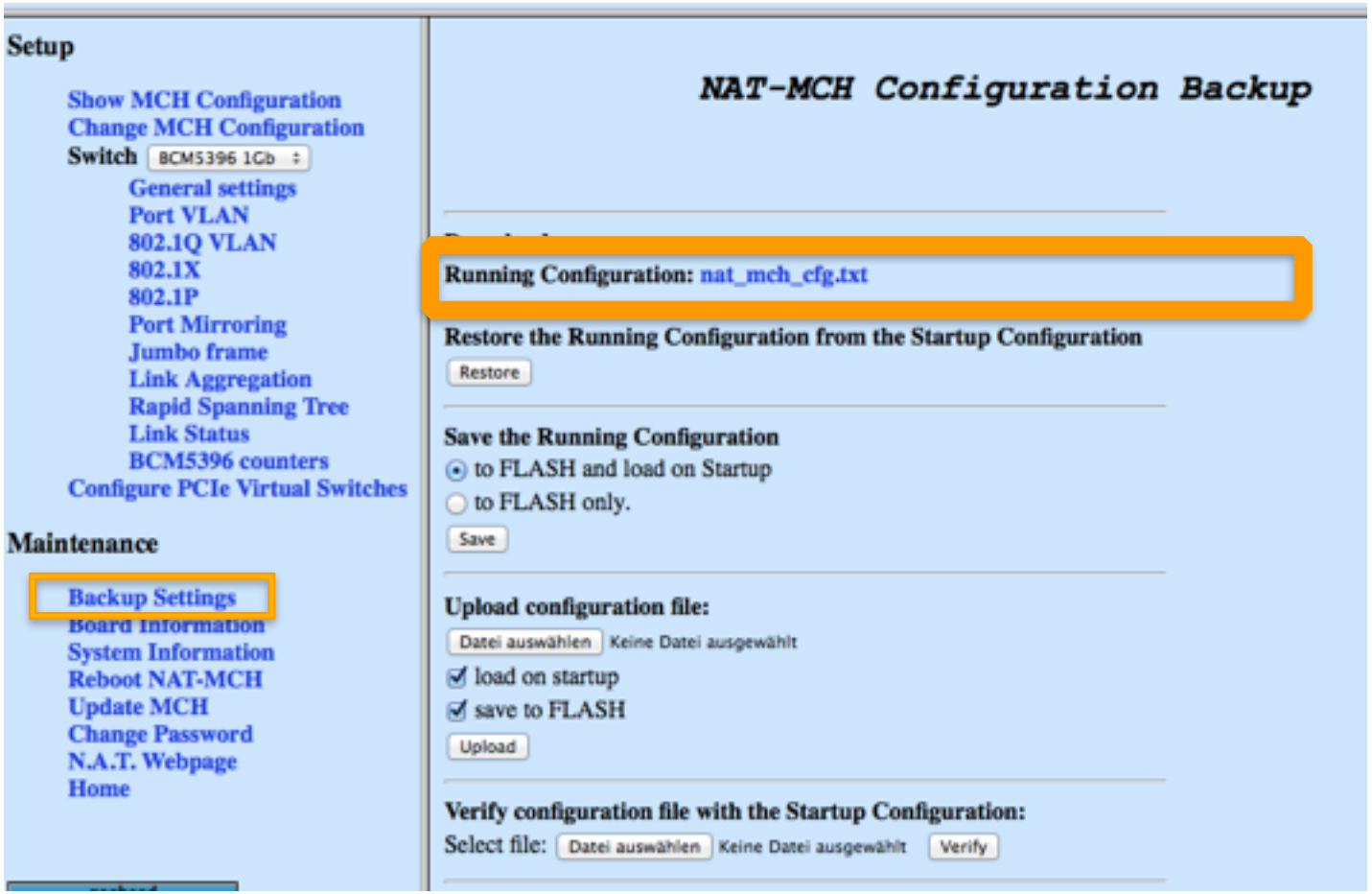
Time Protocol/SNTP parameter	Current Configuration
Time server IP	195 . 145 . 119 . 188
'Check for Time' delay minutes	0 min
'Check for Time' delay hours	0 h
local time offset	1 h
configuration flags:	
SNTP or Time Protocol	Time Protocol
Time client	enabled

DHCP parameter	Current Configuration
Host name	MTCA4TRAINING

Configuration and Setting of Multiple MCHs
Backup Settings

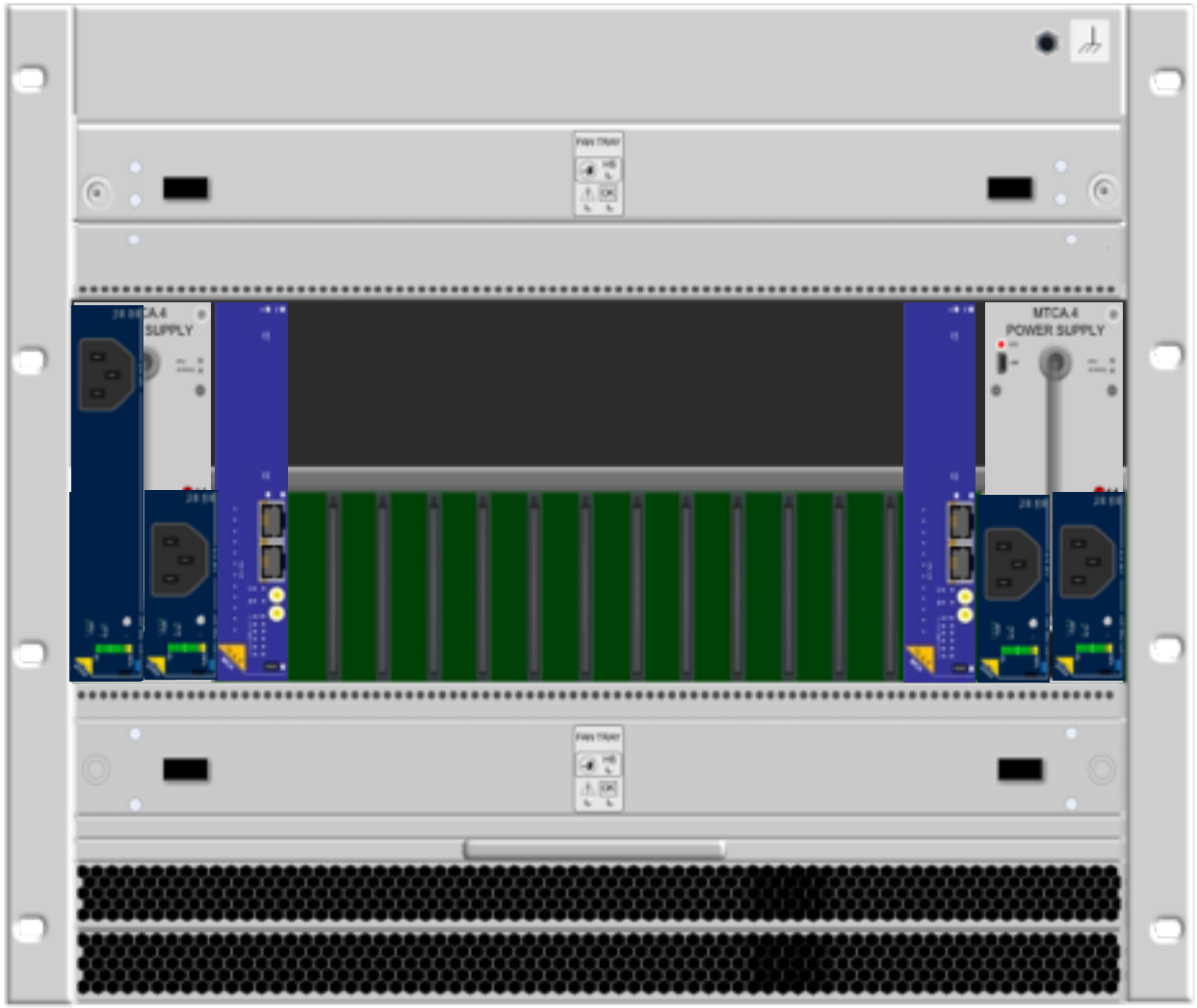
Backup current configuration settings to the onboard FLASH or an external file, or load settings from the onboard FLASH or an external file.

- Save
- Restore
- Generate
- Upload
- Verify



Backplanes with 4 Power Module Sites

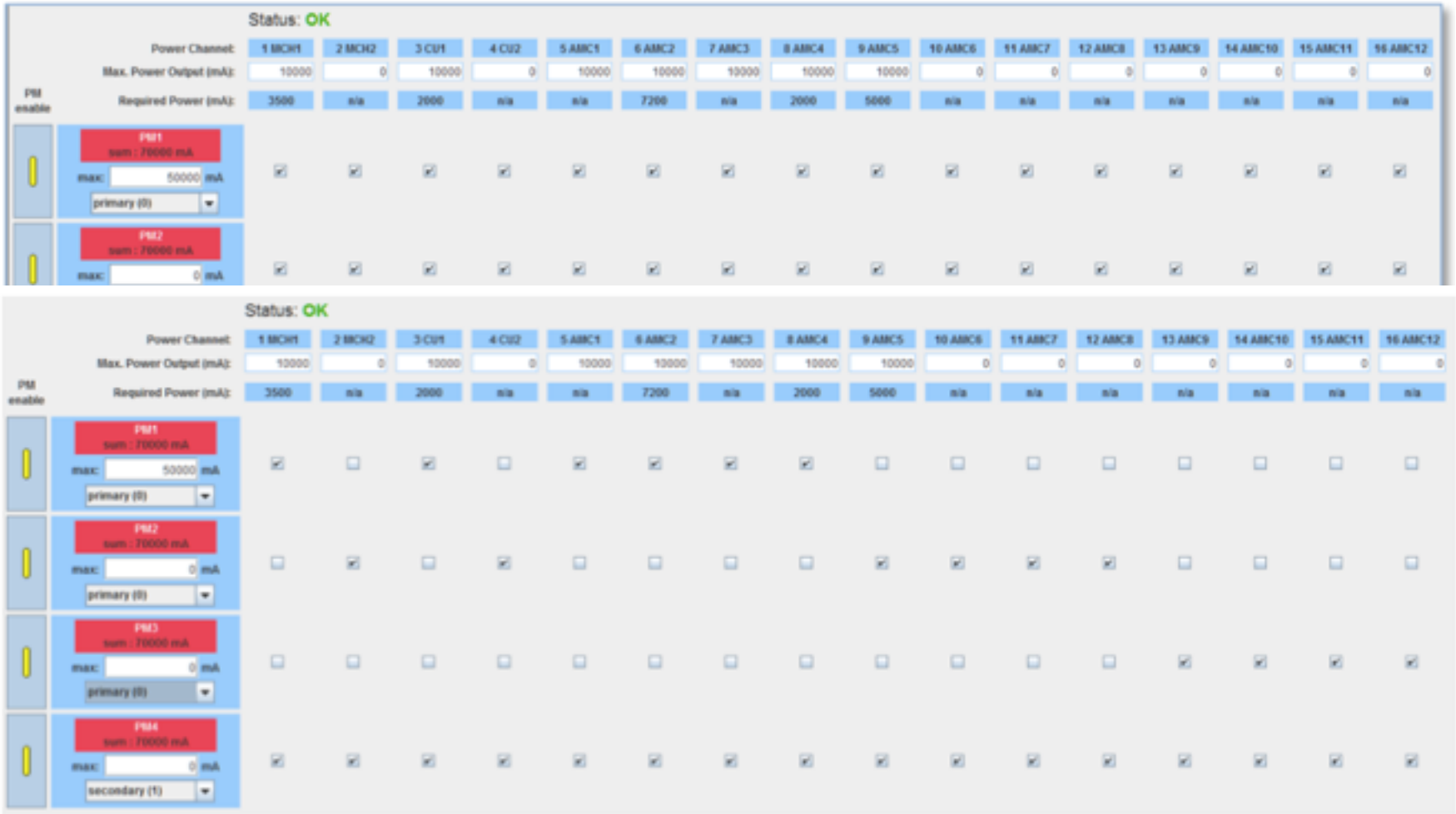
1, 2, 3, 4 PMs: Redundancy, Load Sharing



Maintenance Backplane

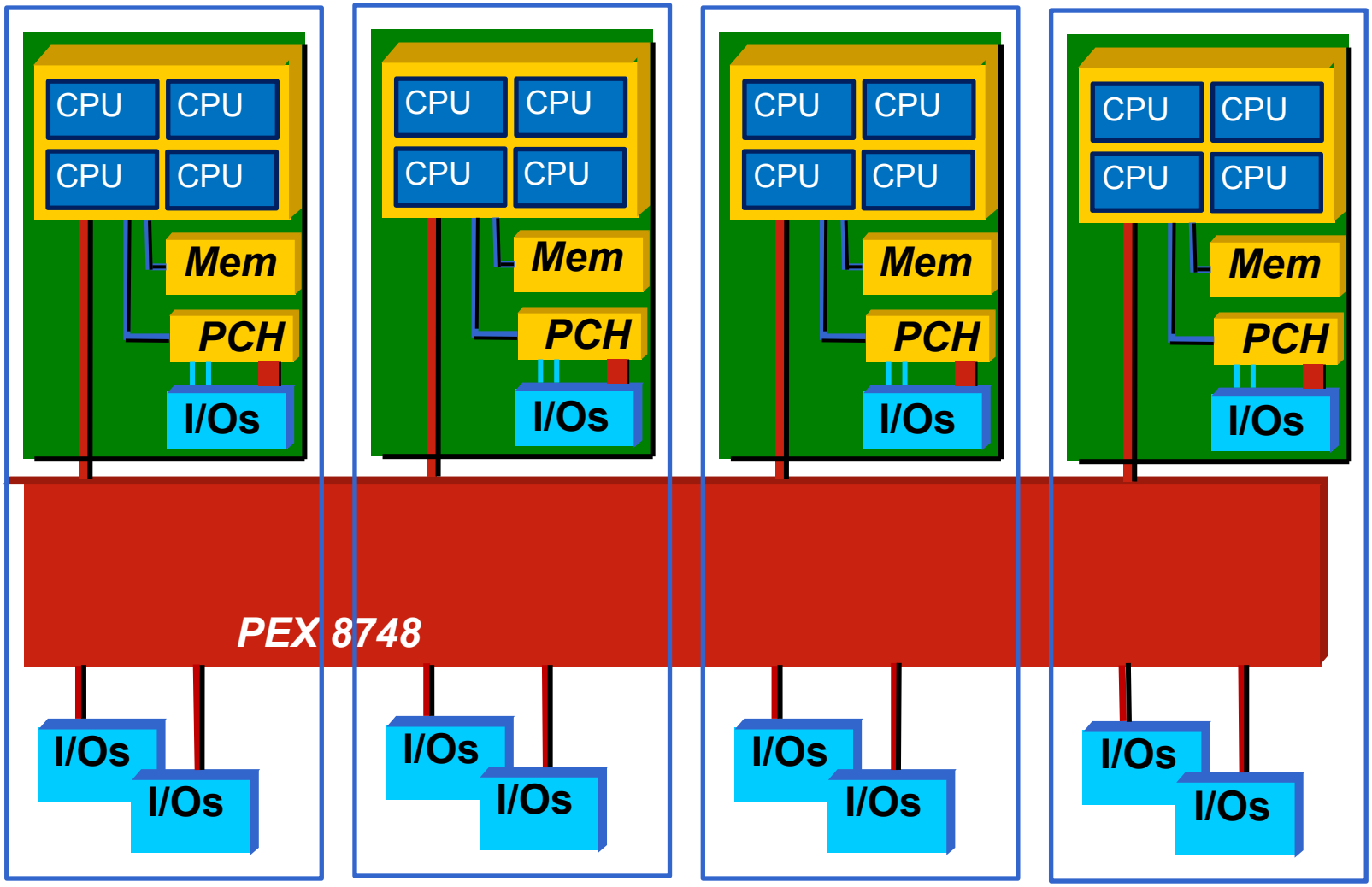
Power Configuration Management

- Example: full redundancy, n+1 redundancy



PEX8748

Multi-Host Configuration: up to 6 Cluster



NAT-MCH by N.A.T.

Setup

- Base Configuration
- Switch BASE 1GbE
  - Age Time
  - Port on/off
  - Port VLAN
  - 802.1Q VLAN
  - 802.1X
  - 802.1p
  - Port Mirroring
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PCIe Virtual Switch configuration

Select Host AMCs (Upstream) for each virtual switch that shall be enabled first.
Select Host AMCs (Non-Transparent Upstream) for each virtual switch that shall be enabled afterwards.
Select which AMCs shall be connected to each virtual switch as downstream in the end.

Virtual Switch	Upstream AMC	NT-Upstream AMC	AMC 1 4..7	AMC 2 4..7	AMC 3 4..7	AMC 4 4..7	AMC 5 4..7	AMC 6 4..7	AMC 7 4..7
none			○	○	○	○	○	○	○
Virtual Switch 0	RTM	- none -	●	●	●	●	●	○	●
Virtual Switch 1	AMC 6_4		○	○	○	○	○	◉	○
Virtual Switch 2	- none -		○	○	○	○	○	○	○
Virtual Switch 3	- none -		○	○	○	○	○	○	○
Virtual Switch 4	- none -		○	○	○	○	○	○	○
Virtual Switch 5	- none -		○	○	○	○	○	○	○
Max. Link Speed			8.0 GT/s	8.0 GT/s	8.0 GT/s	8.0 GT/s	8.0 GT/s	8.0 GT/s	8.0 GT/s

Apply

Note: You need to click apply before you can save your changes to EEPROM.

PCIexpress Configuration
Command Line Interface

```
nat> mchcfg
MCH CFG: configuration modes
  [ 2] reset to defaults
  [ 9] modify PCIe configuration
Enter configuration mode (RET=0/0x0): 9
PCIe parameter:
---------------
PCIe Virtual Switch configuration
change via web-interface
 VS # | Host    | NT-Host | Members
  0     RTM       none      AMC01_4 AMC02_4 AMC03_4 AMC04_4 AMC05_4 AMC07_4 AMC12_4
  1     AMC06_4             AMC06_4
Upstream slot power up delay:          15 sec
PCIe hot plug delay for AMCs:          0 sec
PCIe configuration flags:
  hot plug support:                    enabled
  PCIe early ekey (before payload):    disabled
  'no ekey' for PCIe:                  disabled
  PCIe clustering:                     enabled
```


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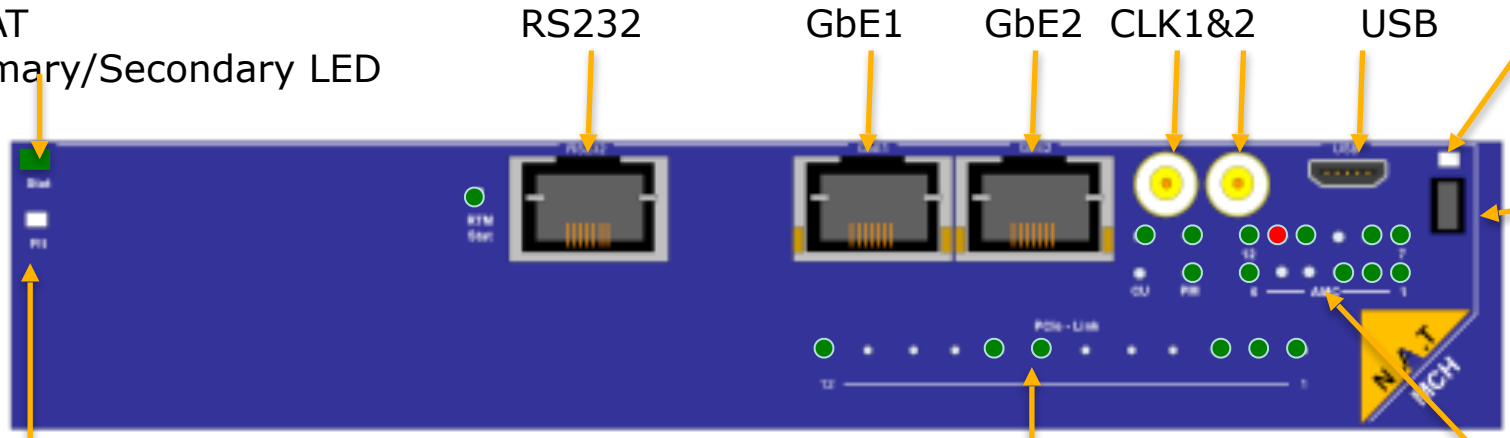
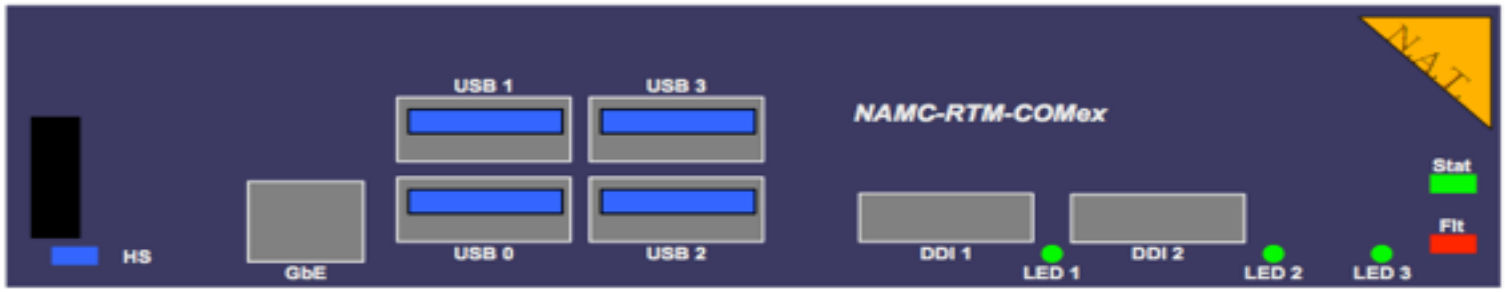
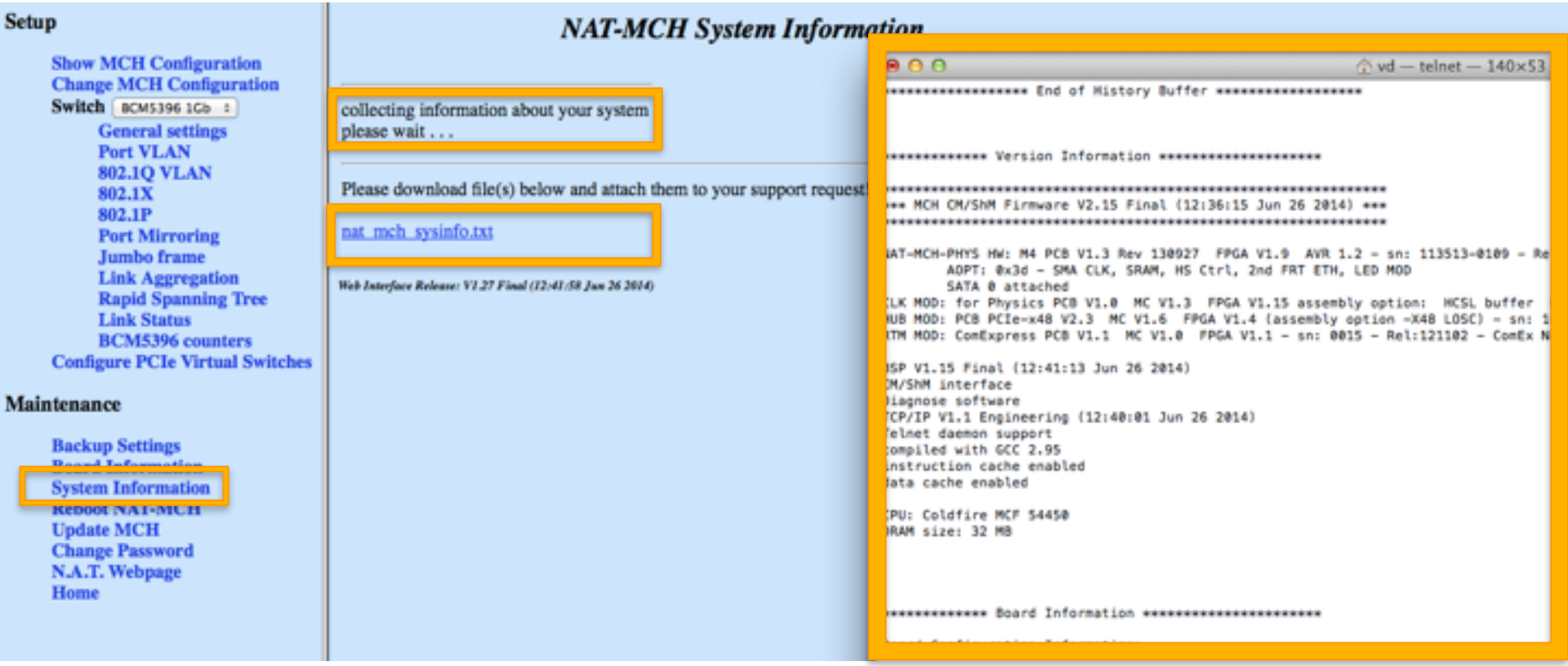
Analysis locally
LEDs



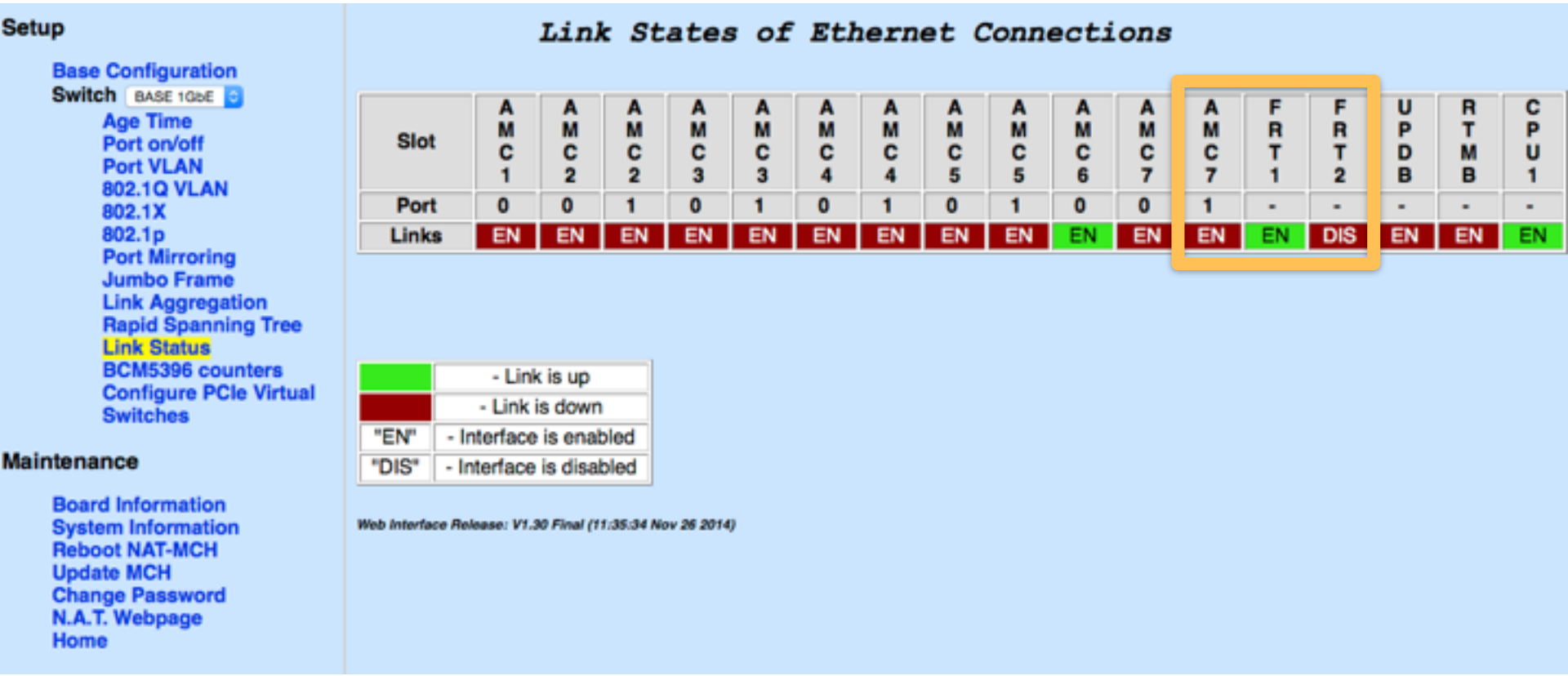


Analysis remotely: Webinterface
Complete Systeminformation in seconds

- Complete System Information output of the following commands collected in text file:
  - history, version, bi, mch, show_pm, show_sensor_info for all FRU-IDs
  - show_fruinfo 253 (backplane)
  - show_ekey, show_link_state, ...



Analysis remotely
Ethernet Link Status



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  - Age Time
  - Port on/off
  - Port VLAN
  - 802.1Q VLAN
  - 802.1X
  - 802.1p
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Maintenance

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- Reboot NAT-MCH
- Update MCH
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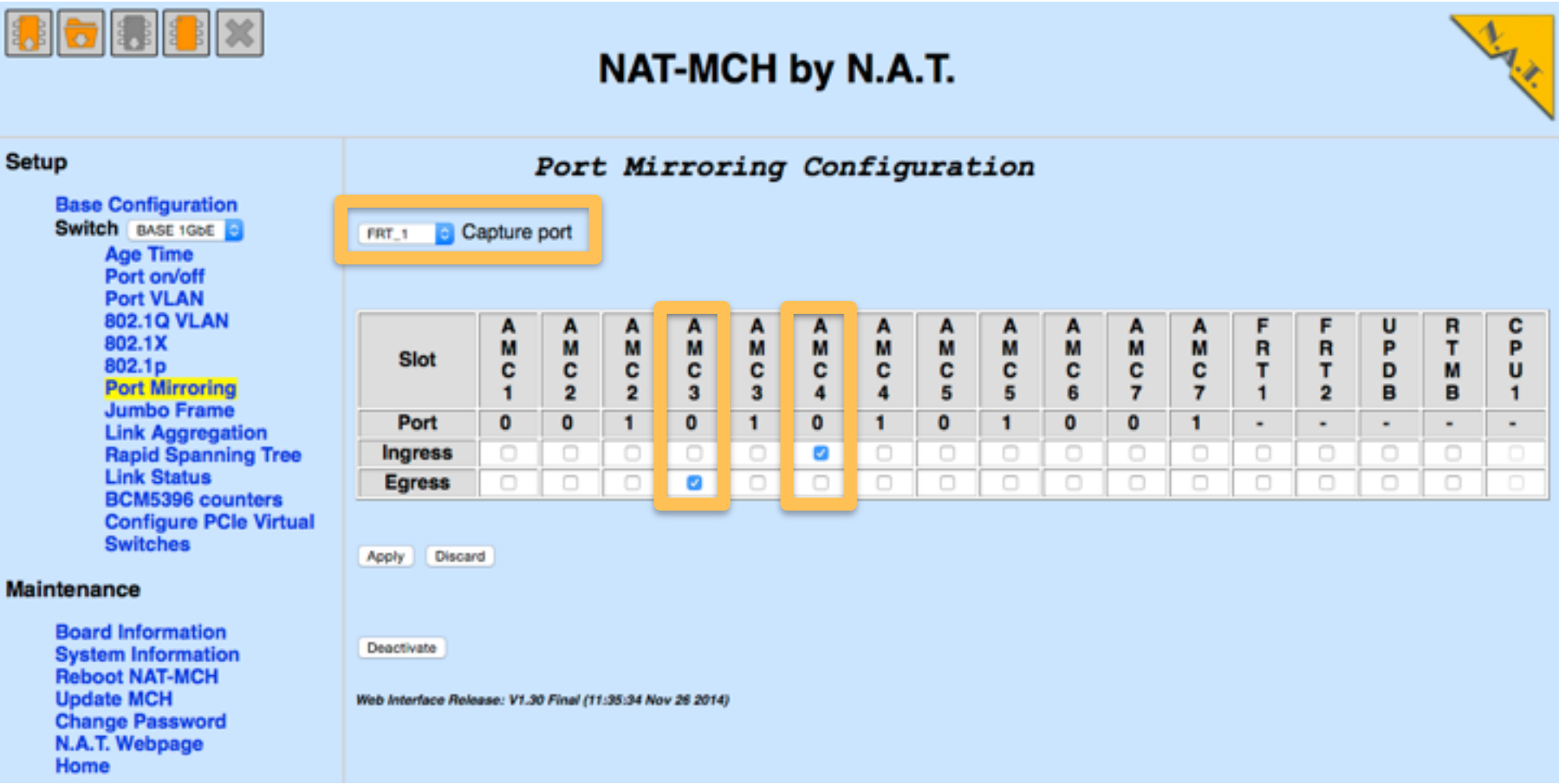
Link States of Ethernet Connections

Slot	AMC1	AMC2	AMC2	AMC3	AMC3	AMC4	AMC4	AMC5	AMC5	AMC6	AMC7	AMC7	FRT1	FRT2	UPDB	RTMB	CPU1
Port	0	0	1	0	1	0	1	0	1	0	0	1	-	-	-	-	-
Links	EN	EN	EN	EN	EN	EN	EN	EN	EN	EN	EN	EN	EN	DIS	EN	EN	EN

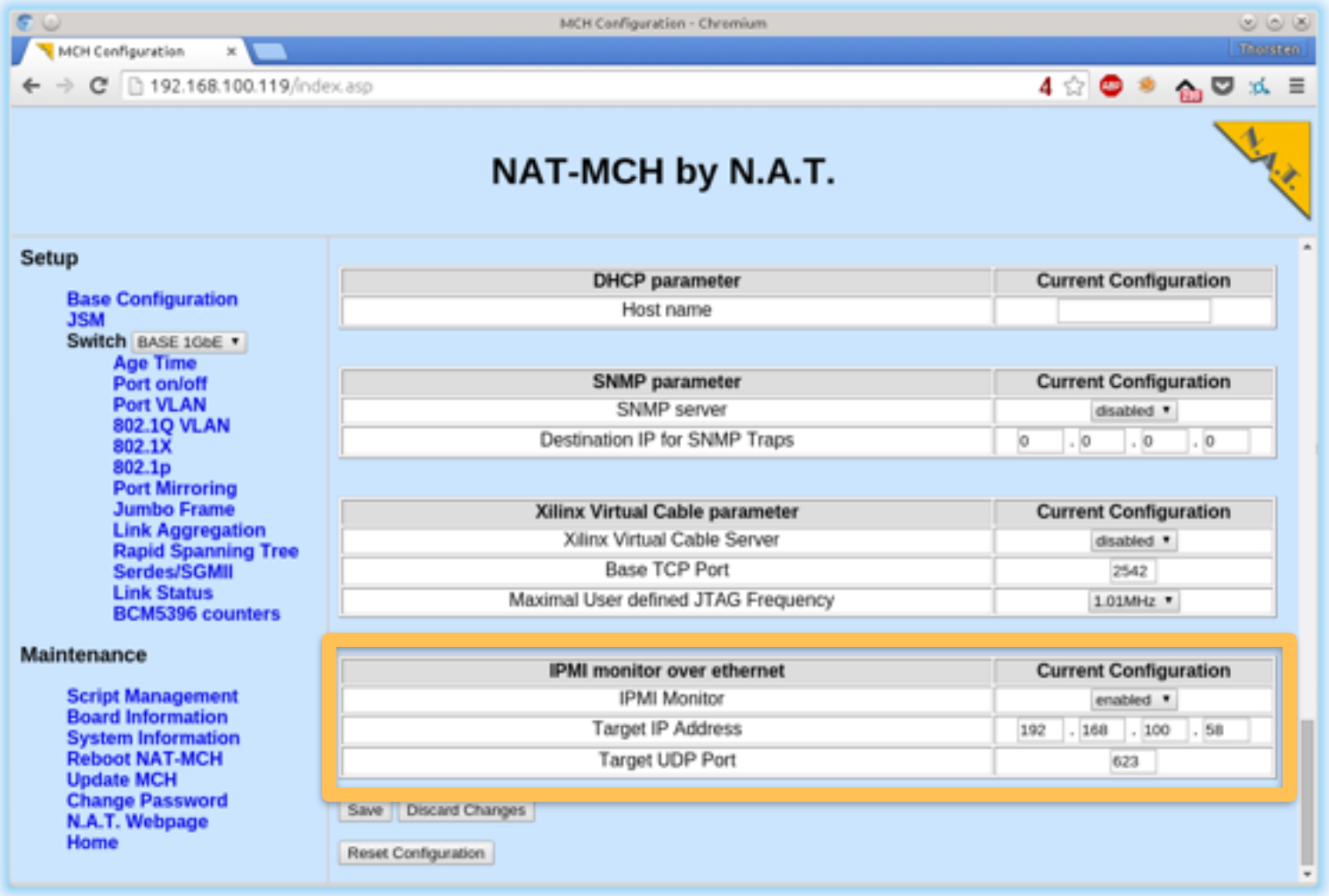
	- Link is up
	- Link is down
"EN"	- Interface is enabled
"DIS"	- Interface is disabled

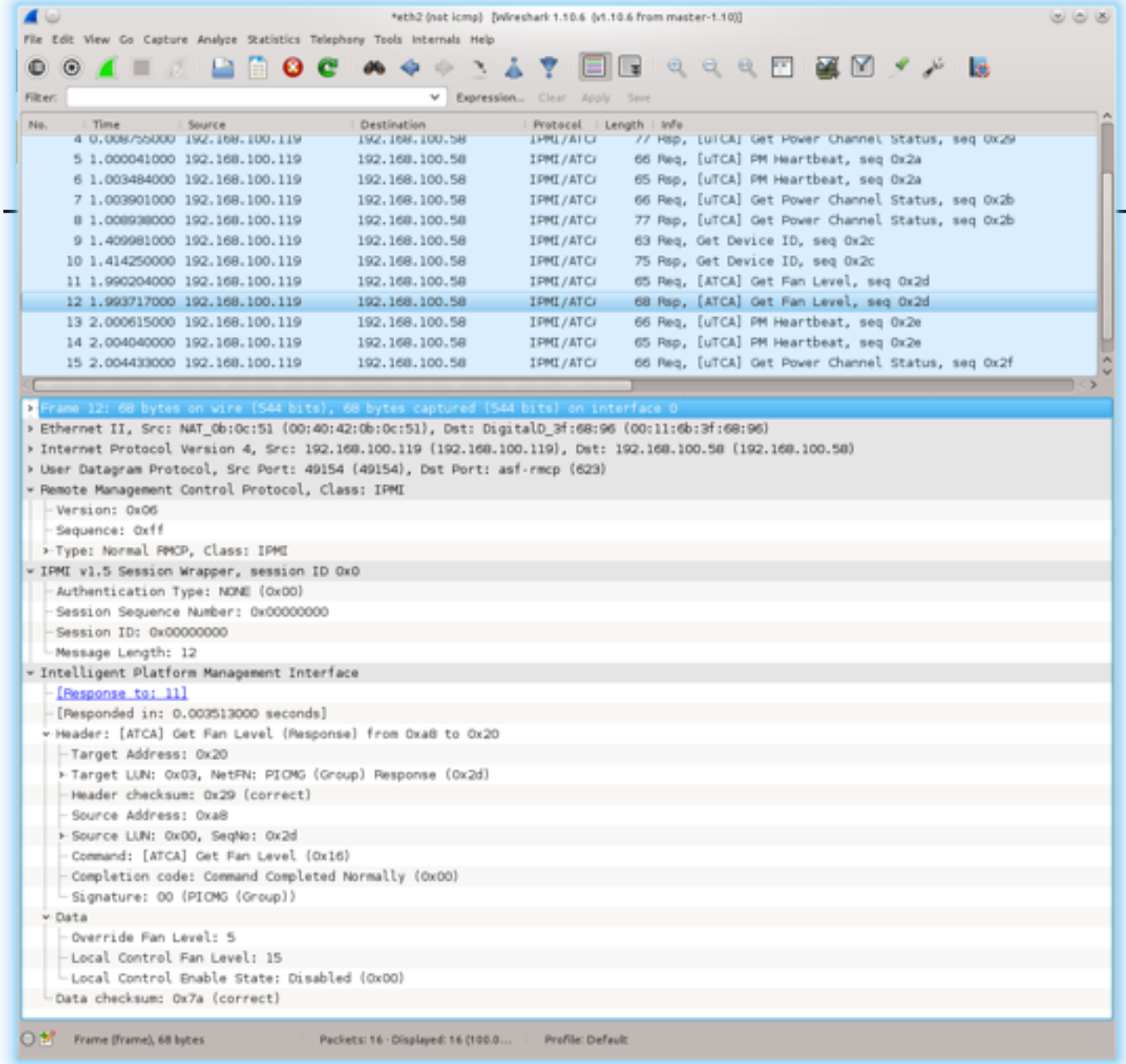
Web Interface Release: V1.30 Final (11:35:34 Nov 26 2014)

Ethernet Analysis with Wireshark
Mirroring inside GbE Port to Front GbE



Ethernet Analysis with Wireshark
Mirroring IPMI Traffic





More Debug Information
E-keying-debug Flag AMC in Slot 2 (FRU-ID 6)

Carrier manager parameter	Configuration
carrier number default	0
quiesced event timeout	10 sec
configuration flags:	
allow carrier FRU invalid	yes
overrule carrier FRU	no
shutdown system if MCH goes down	no
enable Clock E-keying	no
debug flags:	
IPMI	disabled
FRU	disabled
E-keying	✓ disabled / enabled
sensor	
event	disabled
power module	disabled
cooling unit	disabled
CM/ShM interface	disabled
FRU communication to debug (0=all)	6

Analysis Remotely: CLI
inventory, max. current, actual power consumption

- **show_fru**

```
FRU Information:
---------------
 FRU  Device  State  Name
=========================================
  0   MCH      M4    NMCH-CM
  3   mcmc1    M4    NAT-MCH-MCMC
  6   AMC2     M4    SIS8300
  7   AMC3     M1    NAMC-LM
  8   AMC4     M4    TAMC220-10
  9   AMC5     M4    TAMC651
 10   AMC6     M1    CCT AM 310/302
 40   CU1      M4    Schroff uTCA CU
 50   PM1      M4    NAT-PM-AC600
 60   Clk1     M4    MCH-Clock
 61   Hub1     M4    MCH-PCIe
 64   RTM1     M4    MCH-RTM-ComEx
 93   RTM4     M1    TAMC220-RTM
=========================================
```

- show_pm
- show_sensorinfo 50


```
nat> show_pm
-------------------------------------------------------------
PM1: - online, primary(fru 50)    : budget 50.0 A (alloc 23.5 A
avail 26.5 A)
PM2: - unknown
PM3: - unknown
PM4: - unknown
|-----------------------------------------------------------|
|chan  FRU FruId  primPM  secPM  PS1  POn  ENA   MP   PP  Amps |
|-----------------------------------------------------------|
  1   MCH1     3   1       -      y    y    y     y    y   5.5
  2   MCH2     4   -       -
  3    CU1    40   1       -      y    -    y     y    y   4.5
  4    CU2    41   -       -
  5   AMC1     5   1       -      -    -    -     -    -
  6   AMC2     6   1       -      y    -    y     y    y   5.0
  7   AMC3     7   1       -      y    -    y     y    -
  8   AMC4     8   1       -      y    -    y     y    y   4.0
  9   AMC5     9   1       -      y    -    y     y    y   4.5
 10   AMC6    10   1       -      y    -    y     y    -
 11   AMC7    11   -       -
 12   AMC8    12   -       -
 13   AMC9    13   -       -
 14  AMC10    14   -       -
 15  AMC11    15   -       -
 16  AMC12    16   -       -
|-----------------------------------------------------------|
```

(overcurrent)


```
nat> show_sensorinfo 50
Sensor Information for FRU 50 / PM1
=================================================================
  #   SDRType  Sensor Entity Inst  Value   State    Name
-----------------------------------------------------------------
 30   MDevLoc          0x0a  0x61                  NAT-PM-AC600
  1   Full     Temp    0x0a  0x61  33 C      ok     T_CPU
  2   Full     Temp    0x0a  0x61  48 C      ok     T_XFrm
  3   Full     Temp    0x0a  0x61  35 C      ok     T-PSB
  4   Full     Temp    0x0a  0x61  54 C      ok     T-PFC1
  5   Full     Temp    0x0a  0x61  49 C      ok     T-REC
  6   Full     Voltage 0x0a  0x61  264 V     ok     VINAC
  7   Full     Voltage 0x0a  0x61  444 V     ok     VINDC
  8   Full     Voltage 0x0a  0x61  12.4 V    ok     12V
  9   Full     Voltage 0x0a  0x61  3.4 V     ok     3.3V
 10   Full     Current 0x0a  0x61  5.50 A    ok     I_Sum
 11   Compact  Current 0x0a  0x61  2.20 A    ok     I_CH01
 12   Compact  Current 0x0a  0x61  0.00 A    ok     I_CH02
 13   Compact  Current 0x0a  0x61  0.50 A    ok     I_CH03
 14   Compact  Current 0x0a  0x61  0.00 A    ok     I_CH04
 15   Compact  Current 0x0a  0x61  0.00 A    ok     I_CH05
 16   Compact  Current 0x0a  0x61  2.20 A    ok     I_CH06
 17   Compact  Current 0x0a  0x61  0.00 A    ok     I_CH07
 18   Compact  Current 0x0a  0x61  0.30 A    ok     I_CH08
 19   Compact  Current 0x0a  0x61  0.30 A    ok     I_CH09
 20   Compact  Current 0x0a  0x61  0.00 A    ok     I_CH10
 21   Compact  Current 0x0a  0x61  0.00 A    ok     I_CH11
 22   Compact  Current 0x0a  0x61  0.00 A    ok     I_CH12
```

MTCA.4 Debugging
E-Keying

- show_ekey

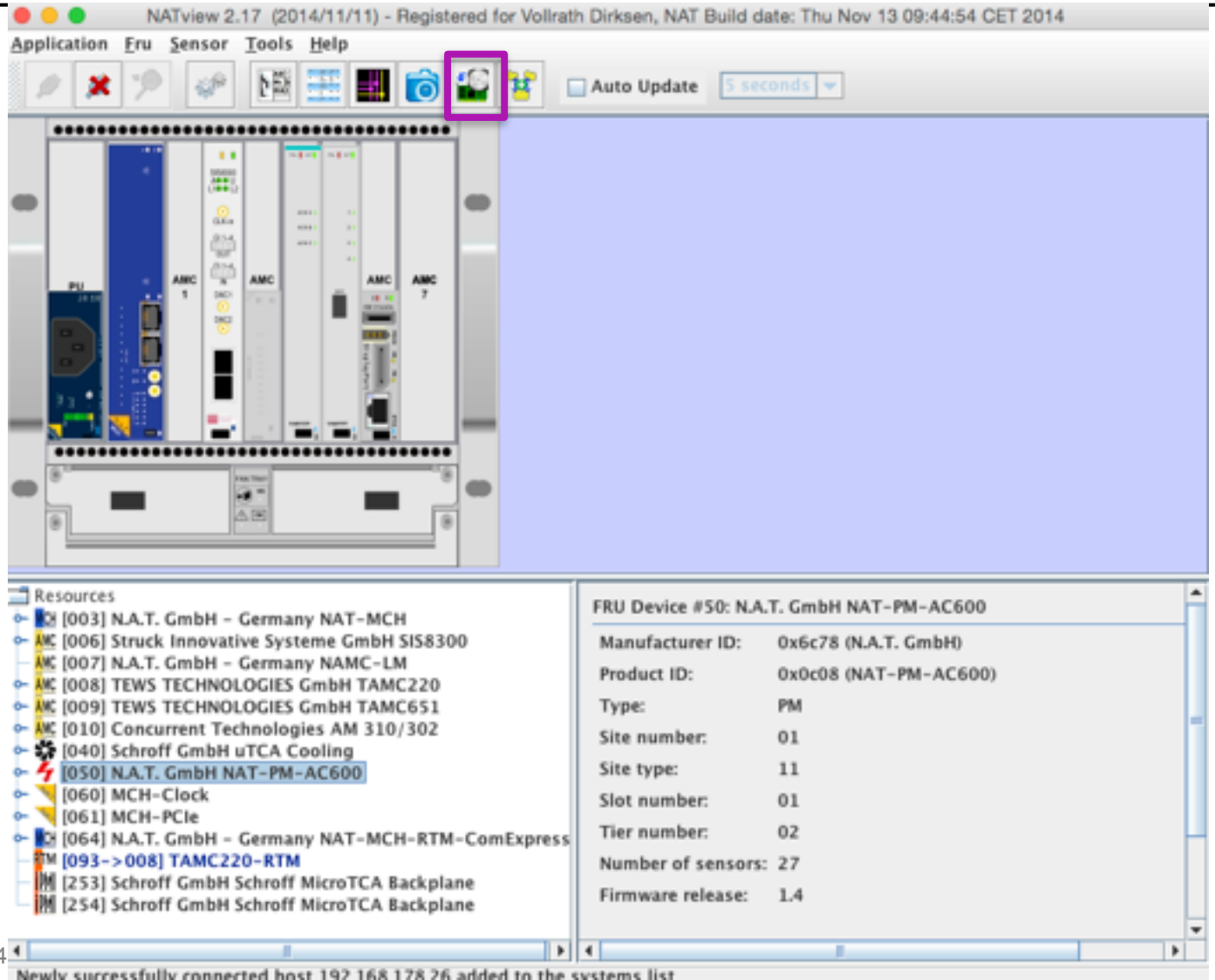
```
EKeying information - activated Links:
---------------------------------------
 AMC FRU State Channel Type Port
=================================================
AMC1   5   M4    0     PCIe   4 <-> MCH1 Fabric D downstream Gen 1, no SSC
                              5 <-> MCH1 Fabric E downstream Gen 1, no SSC
                              6 <-> MCH1 Fabric F downstream Gen 1, no SSC
                              7 <-> MCH1 Fabric G downstream Gen 1, no SSC

AMC2   6   M4    0     PCIe   4 <-> MCH1 Fabric D downstream Gen 1, no SSC
                              5 <-> MCH1 Fabric E downstream Gen 1, no SSC
                              6 <-> MCH1 Fabric F downstream Gen 1, no SSC
                              7 <-> MCH1 Fabric G downstream Gen 1, no SSC

AMC3   7   M4    0     PCIe   4 <-> MCH1 Fabric D downstream Gen 1, no SSC
                              5 <-> MCH1 Fabric E downstream Gen 1, no SSC
                              6 <-> MCH1 Fabric F downstream Gen 1, no SSC
                              7 <-> MCH1 Fabric G downstream Gen 1, no SSC

...........
```

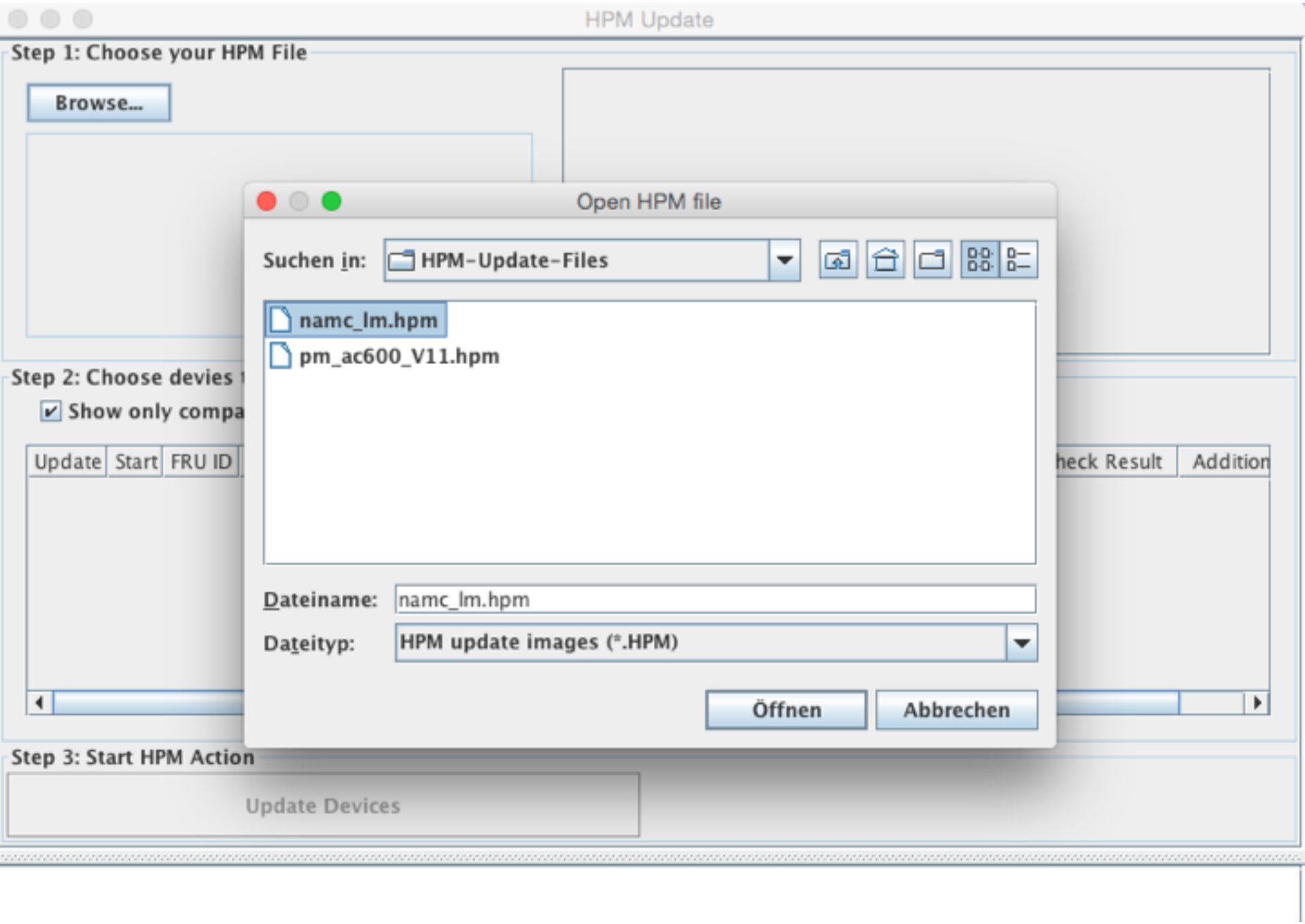

MTCA.4 Debugging
Result of PCIexpress Training

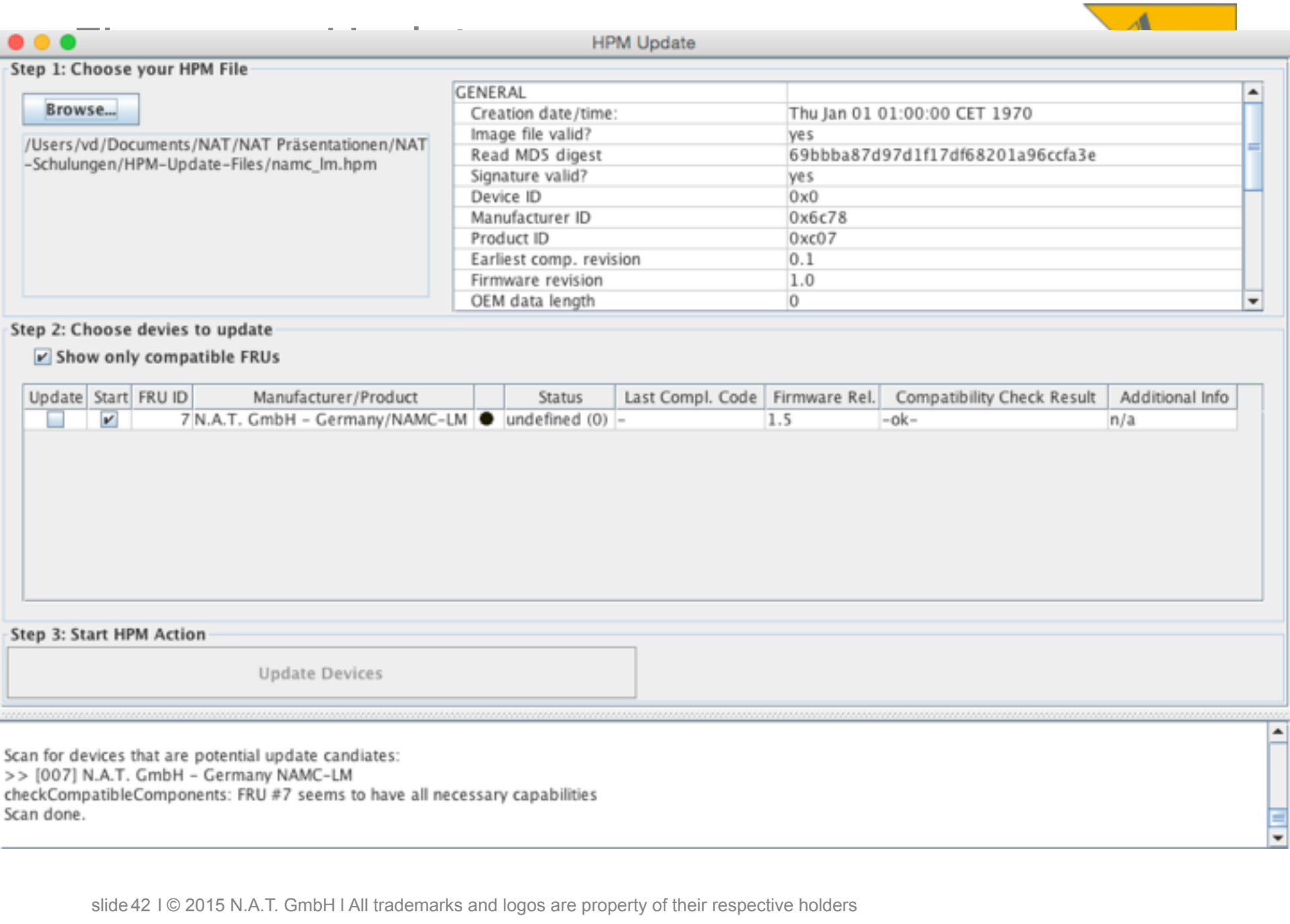
- show_link_state

```
AMC  1 Port  4 is PCIe - x4 - 2,5 GT/s
AMC  1 Port  5 is PCIe - x4 - 2,5 GT/s
AMC  1 Port  6 is PCIe - x4 - 2,5 GT/s
AMC  1 Port  7 is PCIe - x4 - 2,5 GT/s
AMC  2 Port  4 is PCIe - x4 - 2,5 GT/s
AMC  2 Port  5 is PCIe - x4 - 2,5 GT/s
AMC  2 Port  6 is PCIe - x4 - 2,5 GT/s
AMC  2 Port  7 is PCIe - x4 - 2,5 GT/s
AMC  3 Port  4 is PCIe - x4 - 2,5 GT/s
AMC  3 Port  5 is PCIe - x4 - 2,5 GT/s
AMC  3 Port  6 is PCIe - x4 - 2,5 GT/s
AMC  3 Port  7 is PCIe - x4 - 2,5 GT/s
AMC  4 Port  4 is PCIe - x4 - 2,5 GT/s
AMC  4 Port  5 is PCIe - x4 - 2,5 GT/s
AMC  4 Port  6 is PCIe - x4 - 2,5 GT/s
AMC  4 Port  7 is PCIe - x4 - 2,5 GT/s
local RTM link status:
   Ethernet - 1000Base-BX
   PCIe - x16 – 8 GT/s
```


Firmware Update of all System Components
Easy with NATview Firmware-Update-Function



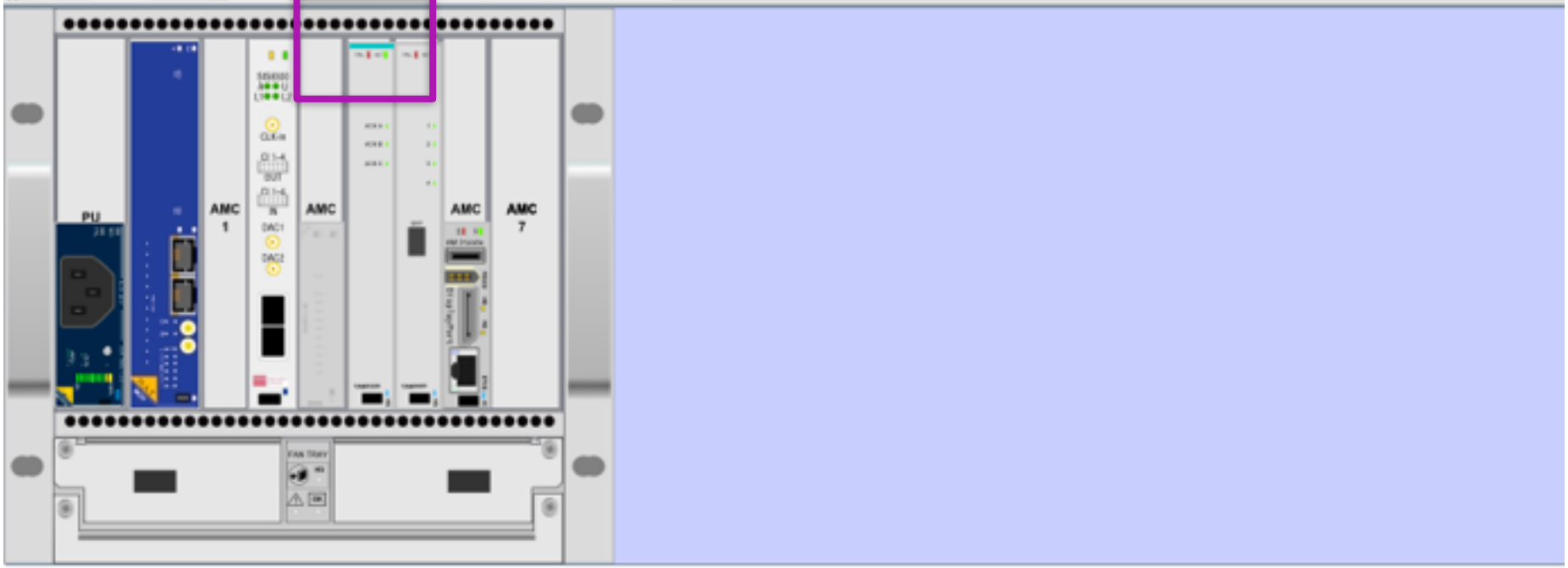




NATview 2.17 (2014/11/11) - Registered for Vollrath Dirksen, NAT Build date: Thu Nov 13 09:44:54 CET 2014

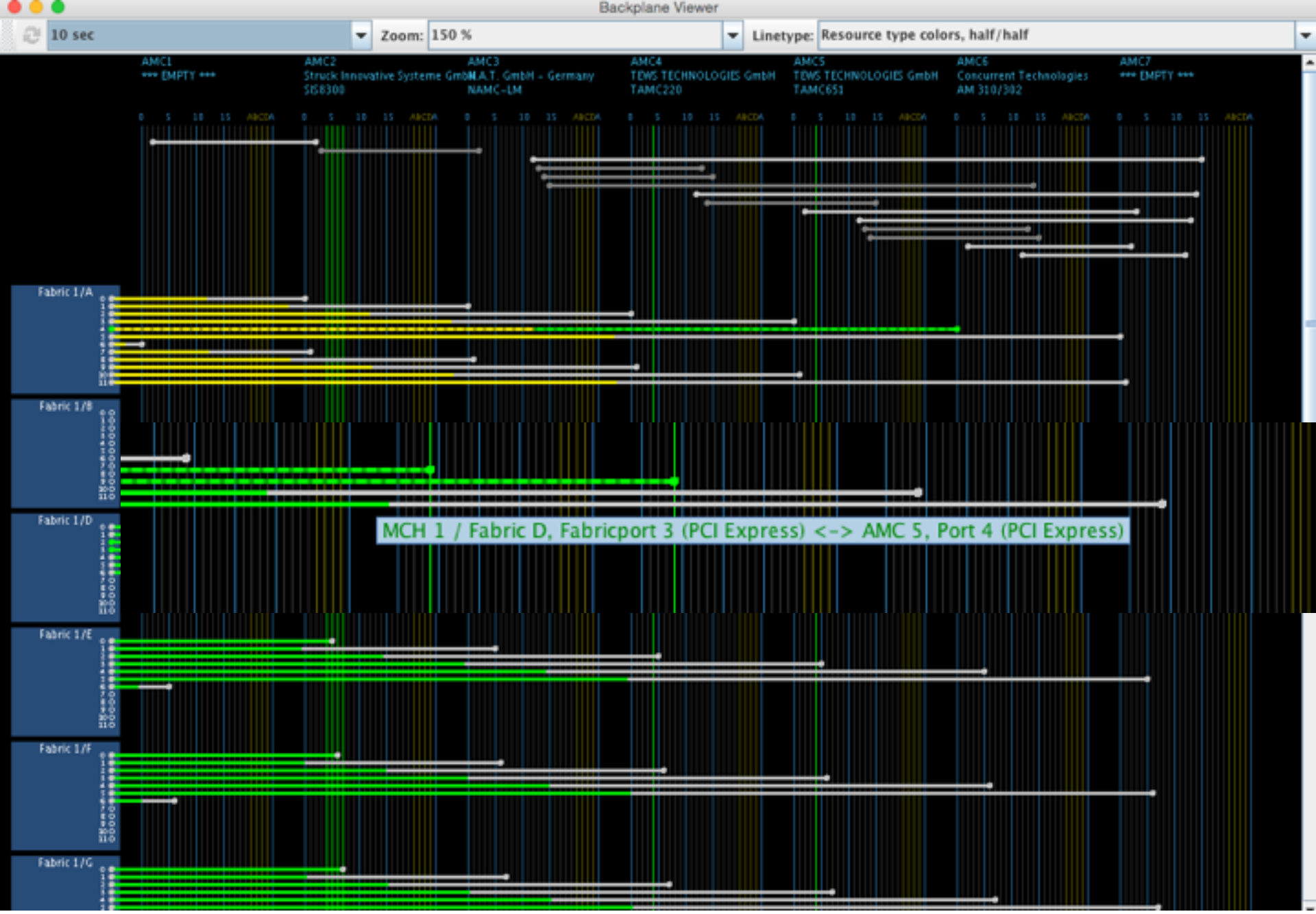
Application Eru Sensor Tools Help

Auto Update 5 seconds

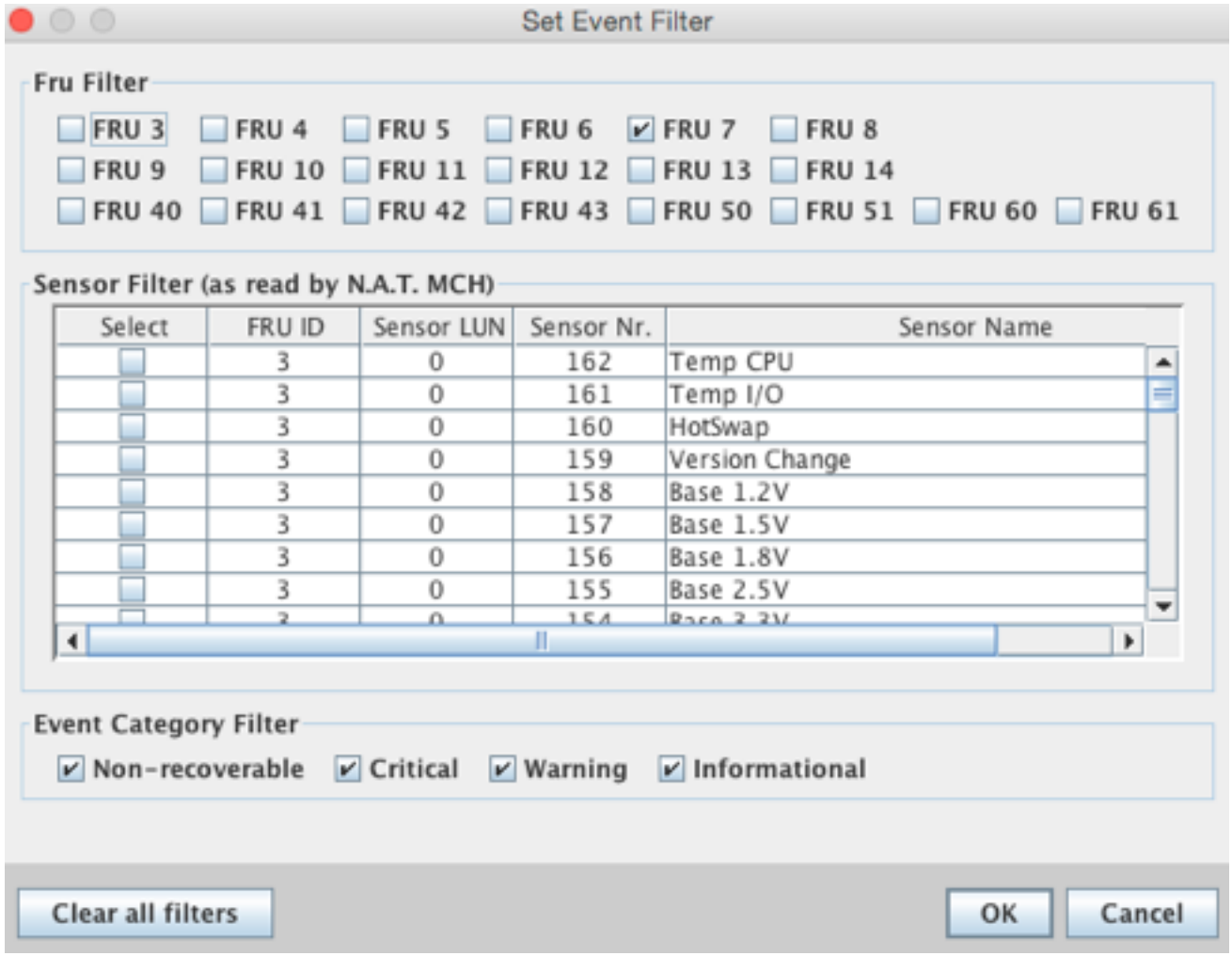


Resources
- [003] N.A.T. GmbH - Germany NAT-MCH
- [006] Struck Innovative Systeme GmbH SIS8300
- [007] N.A.T. GmbH - Germany NAMC-LM
- [008] TEWS TECHNOLOGIES GmbH TAMC220
- [009] TEWS TECHNOLOGIES GmbH TAMC651
- [010] Concurrent Technologies AM 310/302
- [040] Schroff GmbH uTCA Cooling
- [050] N.A.T. GmbH NAT-PM-AC600
- [060] MCH-Clock
- [061] MCH-PCIe
- [064] N.A.T. GmbH - Germany NAT-MCH-RTM-ComExpress
- [093->008] TAMC220-RTM
- [253] Schroff GmbH Schroff MicroTCA Backplane
- [254] Schroff GmbH Schroff MicroTCA Backplane

Newly successfully connected host 192.168.178.26 added to the systems list.

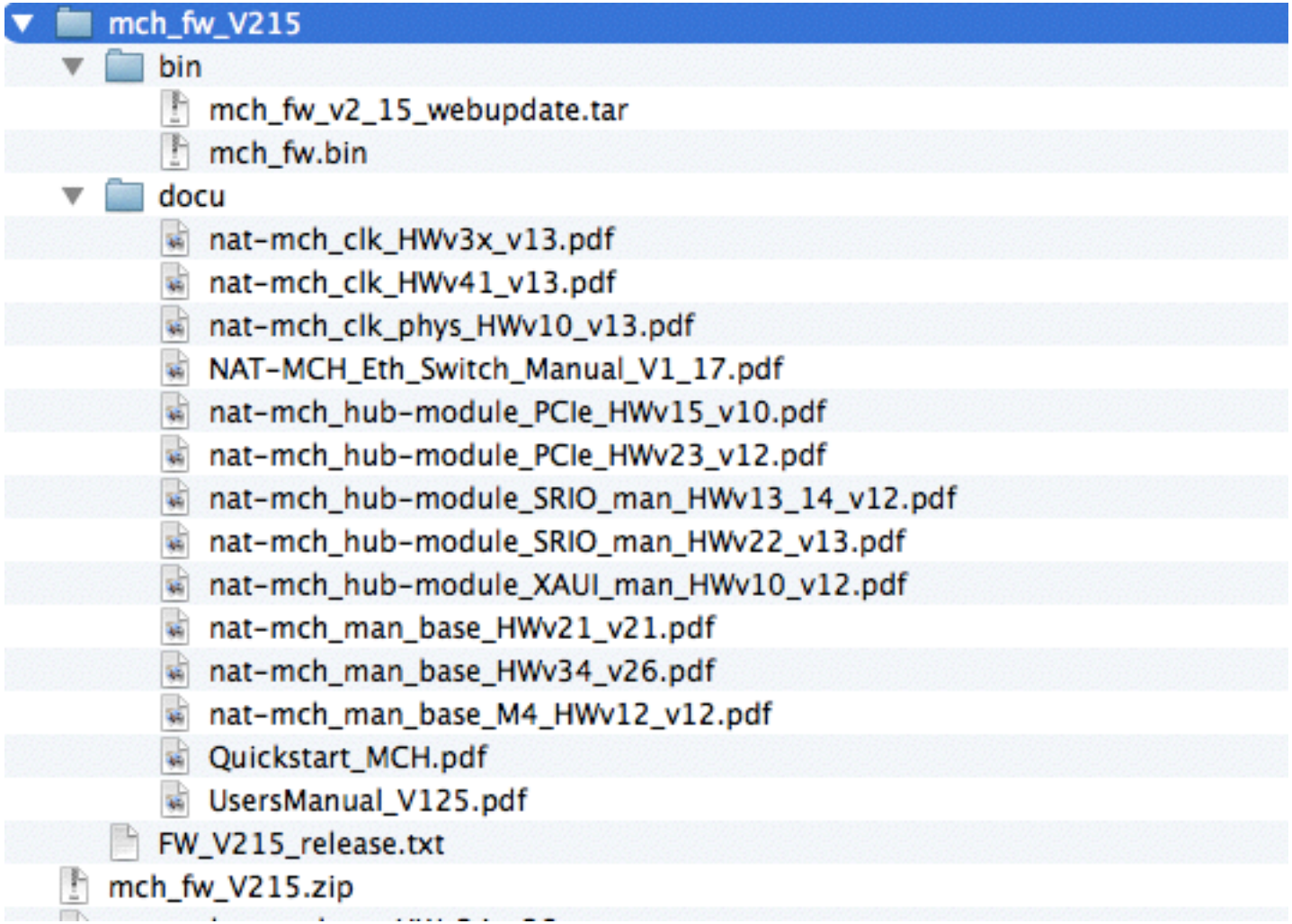


NATView
Set Event Filter



Firmware Update

NAT-MCH: Unzip firmware (Password!)



MCH Firmware Update
Web Interface

MCH Firmware Update
Web Interface

Device	Current FW version	Update FW version	Update this device?
Base board			
Firmware	V2.15	V2.16	☑
Clock module			
Hub module			
PCIe Atmel	V1.9	V1.9	☐
PCIe HUB Module FPGA	V1.5	V1.5	☐

DO NOT POWER-OFF OR RESTART THE DEVICE DURING UPDATE.

When Update is complete, a power cycle has to be done.

MicroTCA.4
Configuration and Maintenance

- About N.A.T.
- Comparison of Standards
- Configuration Tools
  - Command Line Interface
  - Java-App
  - Web interface
- Examples of Configurations
  - Ethernet and PCIexpress Configurations
  - Emergency Configuration
- Maintenance Tools
  - Analysis locally: LEDs
  - Analysis remotely: inventory, current, revision
  - Firmware update

Thank you very much!
Questions?

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MTCA.4 Training:

mtca.desy.de/support/training

