

# MTCA.4 Workshop :

## Easy Power Redundancy and Load Sharing Configuration of MTCA.4 System

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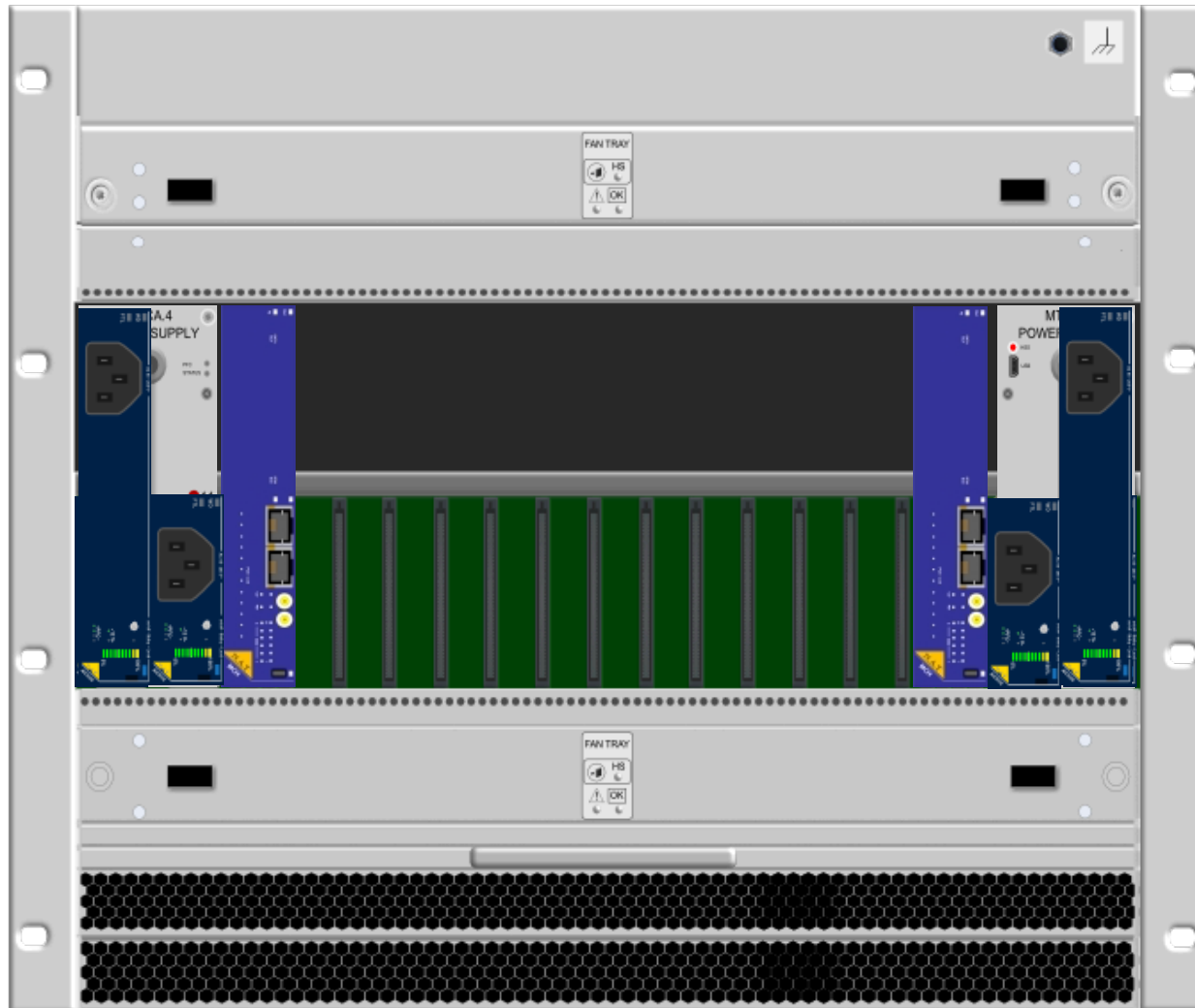
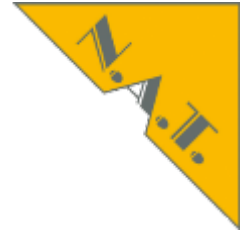
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- Power Modules in MTCA.4 Backplanes
  - Firmware Update of Power Module
- Maintenance
  - Power Budget, Overcurrent
  - Actual power consumption
- Power Configuration setting in Backplane
- Easy Configuration with Power Module Configurator
- Summary

# Backplanes with 4 Power Module Sites

## 1, 2, 3, 4 PMs: Redundancy, Sharing?



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# MTCA.4 Debugging

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    -      -      Y    Y    Y    Y  Y    5.5  |  
| 3     CU1   40    1      -      Y    -    Y    Y  Y    4.5  |  
| 4     CU2   41    -      -      Y    -    Y    Y  Y    4.5  |  
| 5    AMC1    5    1      -      -    -    -    -  -    5.0  |  
| 6  AMC2    6  1    -      Y  -    Y  Y  Y  5.0  |  
| 7    AMC3    7    1      -      Y    -    Y    Y  -    (overcurrent) |  
| 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  -    5.0  |  
|11    AMC7   11    -      -      Y    -    Y    Y  -    4.5  |  
|12    AMC8   12    -      -      Y    -    Y    Y  -    4.5  |  
|13    AMC9   13    -      -      Y    -    Y    Y  -    4.5  |  
|14    AMC10  14    -      -      Y    -    Y    Y  -    4.5  |  
|15    AMC11  15    -      -      Y    -    Y    Y  -    4.5  |  
|16    AMC12  16    -      -      Y    -    Y    Y  -    4.5  |  
|-----  
|-----
```

```
nat> show_sensorinfo 50
```

```
Sensor Information for FRU 50 / PM1
```

```
=====
```

```
-----
```

#	SDRType	Sensor Entity	Inst	Value	State	Name
---	---------	---------------	------	-------	-------	------

```
-----
```

30	MDevLoc		0x0a	0x61		<b>NAT-PM-AC600</b>
----	---------	--	------	------	--	---------------------

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	<b>Compact</b>	<b>Current</b>	<b>0x0a</b>	<b>0x61</b>	<b>2.20 A</b>	<b>ok</b>	<b>I_CH06</b>
----	----------------	----------------	-------------	-------------	---------------	-----------	---------------

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
----	---------	---------	------	------	--------	----	--------

# NATview

## Power-Module Current Sensors



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

Application Fru Sensor Tools Help

Auto Update 5 seconds

Resources

- CH [003] N.A.T. GmbH - Germany NAT-MCH
- AMC [006] Struck Innovative Systeme GmbH SIS8300
- AMC [007] N.A.T. GmbH - Germany NAMC-LM
- AMC [008] TEWS TECHNOLOGIES GmbH TAMC220
- AMC [009] TEWS TECHNOLOGIES GmbH TAMC651
- AMC [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] TEWS TECHNOLOGIES GmbH TAMC002-TM
- [253] Schroff GmbH Schroff MicroTCA Backplane
- [254] Schroff GmbH Schroff MicroTCA Backplane

FRU Device #50: N.A.T. GmbH NAT-PM-AC600

Manufacturer ID:	0x6c78 (N.A.T. GmbH)
Product ID:	0x0c08 (NAT-PM-AC600)
Type:	PM
Site number:	01
Site type:	11
Slot number:	01
Tier number:	02
Number of sensors:	27
Firmware release:	1.4



# NATview

## Power-Module Current Sensors

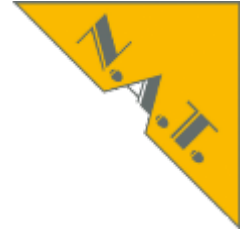


The screenshot displays the NATview interface. On the left, a tree view lists various sensors, with '[12] I\_CH08' selected. The right pane shows the configuration for 'Sensor # 12 / LUN 0: I\_CH08 = 6 A'. A bar chart indicates the current is 6 A. A table shows the MIN threshold is 10 A (critical) and the MAX threshold is non-critical. The 'non-recoverable' status is also indicated. Buttons for 'Update' and 'Edit thresholds' are visible.

MIN	MAX
critical 10	non-critical

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# Power for MTCA.0 and MTCA.4

## Power Solutions by N.A.T.



- NAT-PM-DC420                      Input DC -48V                      Payload: 420W
- NAT-PM-DC840                      Input DC -48V                      Payload: 840W
- NAT-PM-AC600                      Input AC 110-265V                      Payload: 600W
- NAT-PM-AC600D                      Input AC 110-265V                      Payload: 600W (double width)
- NAT-PM-AC1000                      Input AC 110-265V                      Payload: 1000W (double width)
- NAT-RPM-PSC                      Input AC 110-265V                      Payload: 1000W (double width)



DC420

DC840

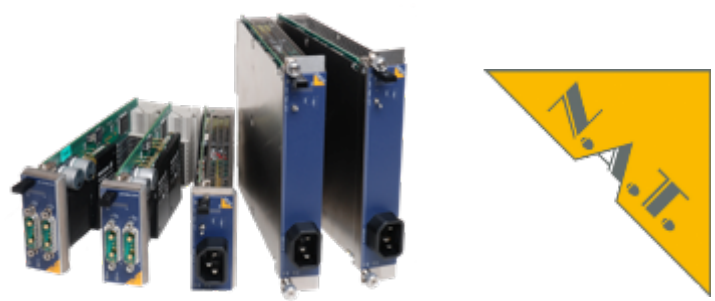
AC600

AC600D

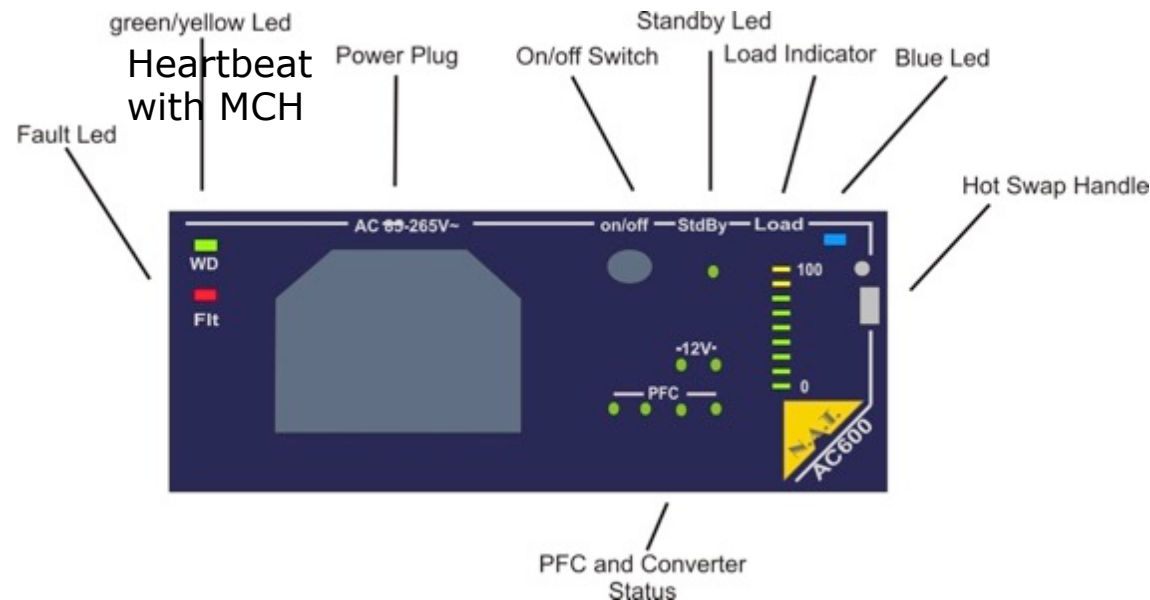
AC1000 (2015)

# Power Solutions by N.A.T.

## Features

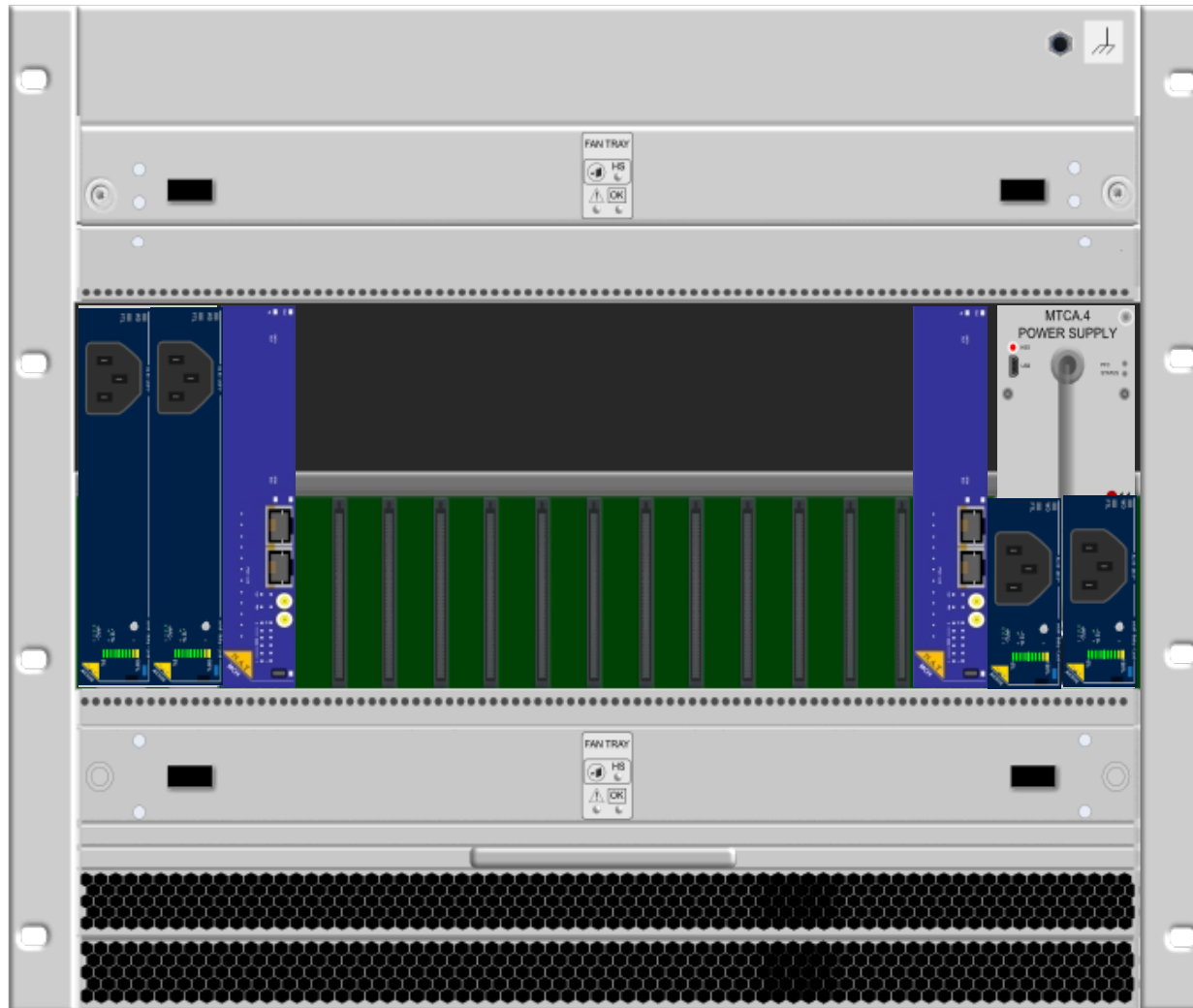


- Unique Features:
  - Load Indicator
  - On/off switch (AC Variants only)
- Load sharing and redundancy:
  - All modes supported: N+1 (N=1..3), 2+2
- Firmware Upgrade via HPM



# Backplanes with 4 Power Module Sites

## 1, 2, 3, 4 PMs: Redundancy, Sharing?



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# NATview

## FRU Editor of Backplane FRU



NATview 2.17 (2014/11/11) - Registered for Stefan Sperling, NATview Developer Build date: Wed Nov 26 12:55:00 CET 2014

Application Fru Sensor Tools Help

Resources

- MCH [003] N.A.T. GmbH - Germany NAT-MCH
- AMC [006] N.A.T. GmbH - Germany NAMC-LM
- AMC [010] N.A.T. GmbH - Germany NAMC-LM
- AMC [013] N.A.T. GmbH - Germany NAMC-QorIQ-P40
- AMC [015] N.A.T. GmbH - Germany NAMC8569-CPU
- [040] Schroff GmbH uTCA Cooling
- [041] Schroff GmbH uTCA Cooling
- [050] N.A.T. GmbH NAT-PM-DC840
- [051] NAT-PM-DC
- [052] N.A.T. GmbH NAT-PM-DC840
- [053] N.A.T. GmbH NAT-PM-DC840
- [060] MCH-Clock
- [061] MCH PCIe
- [253] Schroff GmbH 12-Slot MicroTCA Shelf**
- [254] Schroff GmbH Schroff MicroTCA Backplane

Newly successfully connected host 192.168.137.175 added to the systems list.

# NATview Backplane FRU Editor

## Power Configuration



The screenshot shows the 'Fru Editor: FRU #253' application window. The interface includes a menu bar with 'Close window', 'Read from file...', 'Write to file...', and 'Write'. Below the menu bar is a tree view titled 'FRU Information Tree' with the following structure:

- FRU Information Tree
  - Internal Use Area
  - Chassis Info Area
  - Board Info Area
  - Product Info Area
  - Multi Record Area
    - OEM Record - FRU Information Partition Record
    - OEM Record - Carrier Manager IP Link Record
    - OEM Record - MicroTCA Carrier Information Record
    - OEM Record - MicroTCA Carrier Power Policy Record
    - OEM Record - MicroTCA Carrier Activation and Power Management Record
    - OEM Record - Carrier Point-to-point Connectivity Record
    - OEM Record - Carrier Point-to-point Connectivity Record
    - OEM Record - Carrier Point-to-point Connectivity Record
    - OEM Record - Carrier Point-to-point Connectivity Record
    - OEM Record - Carrier Point-to-point Connectivity Record
    - OEM Record - Carrier Point-to-point Connectivity Record
    - OEM Record - Carrier Clock Point-to-point Connectivity Record
    - OEM Record - Carrier Clock Point-to-point Connectivity Record

The 'OEM Record - MicroTCA Carrier Power Policy Record' and 'OEM Record - MicroTCA Carrier Activation and Power Management Record' are highlighted with an orange box. A blue speech bubble points to these records, containing the following text:

Modification  
in Backplane FRU of

- Carrier Power Policy Record
- Carrier Activation Record
- Power Management Records

The main area of the window displays a table with the following visible content:

Product Info Area Checksum (z...	0x7a	Decimal Integer
----------------------------------	------	-----------------



# NATview

## FRU Editor of Backplane FRU



Fru Editor: FRU #253

Close window Read from file... Write to file... Write to FRU device... Power Configuration Manager...

- OEM Record - FRU Information Partition Record
- OEM Record - Carrier Manager IP Link Record
- OEM Record - MicroTCA Carrier Information Record
- OEM Record - MicroTCA Carrier Power Policy Record
  - Power Policy Descriptor 1
    - Power Channel Entry 1
    - Power Channel Entry 2
    - Power Channel Entry 3
    - Power Channel Entry 4
    - Power Channel Entry 5
    - Power Channel Entry 6
    - Power Channel Entry 7
    - Power Channel Entry 8

Field	Value	CodeType
Power Channel Id	6 - AMC2	Multiple Choice

# NATview

## FRU Editor of Backplane FRU



Fru Editor: FRU #253

Close window Read from file... Write to file... Write to FRU device... Power Configuration Manager...

- OEM Record - FRU Information Partition Record
- OEM Record - Carrier Manager IP Link Record
- OEM Record - MicroTCA Carrier Information Record
- OEM Record - MicroTCA Carrier Power Policy Record
  - Power Policy Descriptor 1
    - Power Channel Entry 1
    - Power Channel Entry 2
    - Power Channel Entry 3
    - Power Channel Entry 4
    - Power Channel Entry 5
    - Power Channel Entry 6
    - Power Channel Entry 7
    - Power Channel Entry 8
- OEM Record - MicroTCA Carrier Activation and Power Man
  - Carrier Activation Descriptor 1
  - Carrier Activation Descriptor 2
  - Carrier Activation Descriptor 3
  - Carrier Activation Descriptor 4
  - Carrier Activation Descriptor 5
  - Carrier Activation Descriptor 6
  - Carrier Activation Descriptor 7
  - Carrier Activation Descriptor 8
  - Carrier Activation Descriptor 9
  - Carrier Activation Descriptor 10
  - Carrier Activation Descriptor 11

Field	Value	CodeType
Site Type	7 - AMC	Multiple Choice
Site Number	2	Decimal Integer
Power channel number	6	Decimal Integer
Maximum channel current	7600	Decimal Integer
Activation Control Flags	1	Decimal Integer
Delay Before Next Power On	0	Decimal Integer
Deactivation control flags	1	Decimal Integer

# NATview Backplane FRU Editor

## Power Configuration Manager

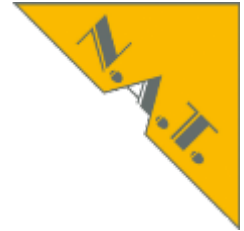


Modification  
in Backplane FRU of

- Carrier Power Policy Record
- Carrier Activation Record
- Power Management Records

# NATView Power Configuration Manager

## Power Calculation



**Fru Editor: FRU #253**

Field	Value	CodeType
Site Type	7 - AMC	Multiple Choice
Site Number	1	Decimal Integer
Power channel number	5	Decimal Integer
Maximum channel current	10000	Decimal Integer
Activation Control Flags		Decimal Integer
Delay Before Next Power On	1000	Decimal Integer
Deactivation control flags	1	Decimal Integer

**Power Configuration Manager**

Status: **OK**

Power Channel: 1 MCH1 2 MCH2 3 CU1 4 CU2 5 AMC1 6 AMC2 7 AMC3 8 AMC4 9 AMC5 10 AMC6

Max. Power Output (mA): 10000 0 10000 0 10000 10000 10000 10000 10000 0

Required Power (mA): 300 n/a 200 n/a n/a n/a n/a n/a n/a

PM enable: PH1 sum : 60000 mA, max: 0000 mA, primary (0)

PH2 sum : 0

+

# NATView Power Configuration Manager

## No Redundancy



Power Configuration Manager

Cancel Quit and Save

Status: **OK**

Power Channel:	1 MCH1	2 MCH2	3 CU1	4 CU2	5 AMC1	6 AMC2
Max. Power Output (mA):	10000	0	10000	0	10000	10000
Required Power (mA):	3500	n/a	2000	n/a	5000	n/a

PM enable

**PM1**  
sum : 70000 mA  
max: 50000 mA  
primary (0)

**PM2**  
sum : 0 mA  
max: 0 mA  
undefined (ff)

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





# NATView PCM

## n+1 Redundancy



Power Configuration Manager

Cancel Quit and Save

Status: **OK**

Power Channel:	1 MCH1	2 MCH2	3 CU1	4 CU2	5 AMC1	6 AMC2	7 AMC3	8 AMC4	9 AMC5	10 AMC6	11 AMC7
Max. Power Output (mA):	7000	7600	7600	7600	7200	7200	7200	7200	7200	7200	7200
Required Power (mA):	3500	n/a	7600	7600	n/a	7200	n/a	n/a	n/a	800	n/a

PM enable	PM1 sum : 116200 mA max: 50000 mA primary (0)	PM2 sum : 116200 mA max: 50000 mA primary (0)	PM3 sum : 116200 mA max: 50000 mA primary (0)	PM4 sum : 116200 mA max: 50000 mA secondary (1)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



# NATView PCM

## Redundant-Sharing



Power Configuration Manager

Cancel Quit and Save

Status: **OK**

Power Channel:	1 MCH1	2 MCH2	3 CU1	4 CU2	5 AMC1	6 AMC2	7 AMC3	8 AMC4	9 AMC5	10 AMC6	11 AM
Max. Power Output (mA):	7000	7600	7600	7600	7200	7200	7200	7200	7200	7200	
Required Power (mA):	3500	n/a	7600	7600	n/a	7200	n/a	n/a	n/a	800	n/a

PM enable

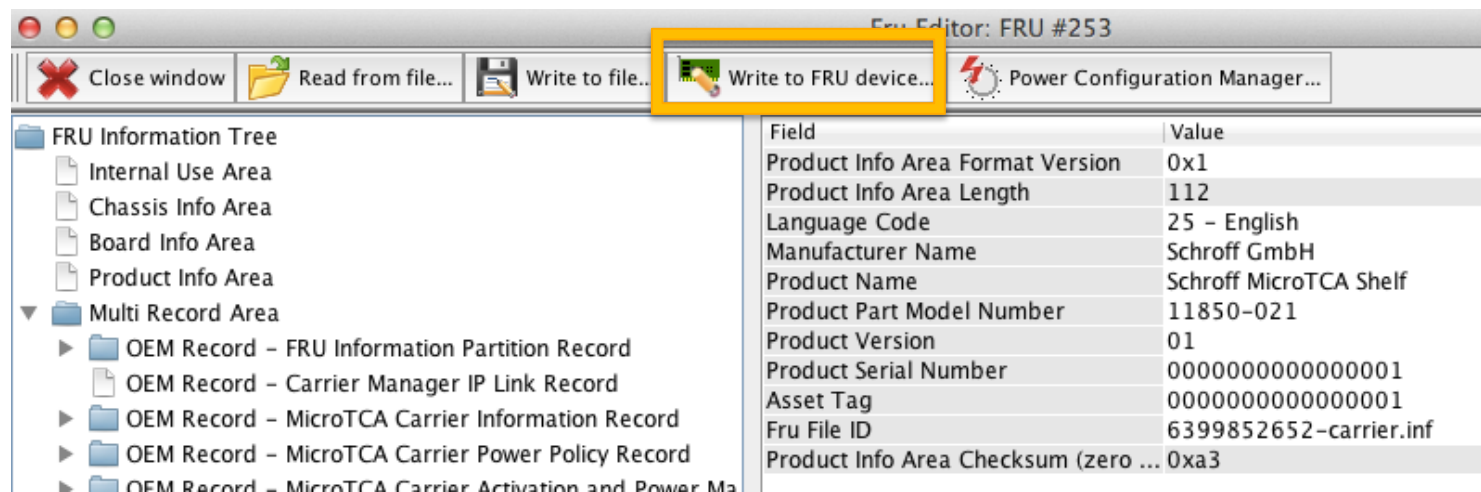
PM	1 MCH1	2 MCH2	3 CU1	4 CU2	5 AMC1	6 AMC2	7 AMC3	8 AMC4	9 AMC5	10 AMC6	11 AM
PM1 sum : 116200 mA max: 50000 mA primary (0)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
PM2 sum : 116200 mA max: 50000 mA primary (0)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM3 sum : 116200 mA max: 50000 mA secondary (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
PM4 sum : 116200 mA max: 50000 mA secondary (1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

# Maintenance Backplane

## Power Configuration Management



- Save your configuration in Backplane Flash EEPROM
- Restart your system



# MTCA.4 Debugging in Backplane defined Power Configuration



- Doublecheck with Command Line Interface of MCH

```
nat> show_pwrconf
```

```
Backplane power policy: - backplane channel assignment:
```

```
-----  
PChannel: | 1 2 3 4 5 6 7 8 9 10 11 12  
PM1(prim) | x - x - x x x x x x - -  
PM2( - ) |  
PM3( - ) |  
PM4( - ) |  
BP Amps: | 7.6 0.0 7.0 0.0 7.6 7.6 7.6 7.6 7.6 7.6 0.0 0.0  
-----
```

```
nat>
```

# MTCA.4 Workshop : Easy Power Redundancy and Load Sharing Configuration of MTCA.4 system

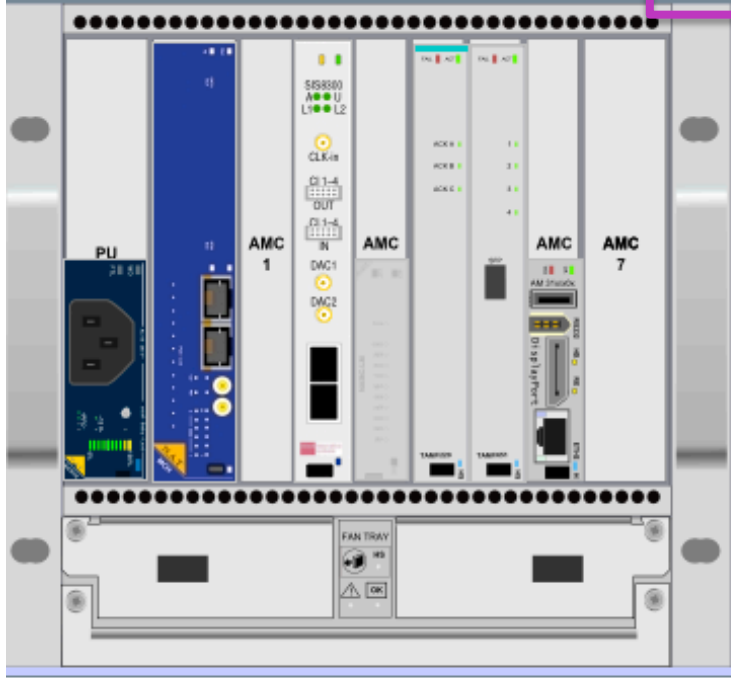
---



- Power Modules in MTCA.4 Backplanes
  - Firmware Update of Power Module
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Auto Update 5 seconds



- Resources
- MCH [003] N.A.T. GmbH - Germany NAT-MCH
  - AMC [006] Struck Innovative Systeme GmbH SIS8300
  - AMC [007] N.A.T. GmbH - Germany NAMC-LM
  - AMC [008] TEWS TECHNOLOGIES GmbH TAMC220
  - AMC [009] TEWS TECHNOLOGIES GmbH TAMC651
  - AMC [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
  - MCH [064] N.A.T. GmbH - Germany NAT-MCH-RTM-ComExpress
  - RTM [093->008] TAMC220-RTM
  - PMI [253] Schroff GmbH Schroff MicroTCA Backplane
  - PMI [254] Schroff GmbH Schroff MicroTCA Backplane

FRU Device #50: N.A.T. GmbH NAT-PM-AC600

Manufacturer ID:	0x6c78 (N.A.T. GmbH)
Product ID:	0x0c08 (NAT-PM-AC600)
Type:	PM
Site number:	01
Site type:	11
Slot number:	01
Tier number:	02
Number of sensors:	27
Firmware release:	1.4

## Step 1: Choose your HPM File

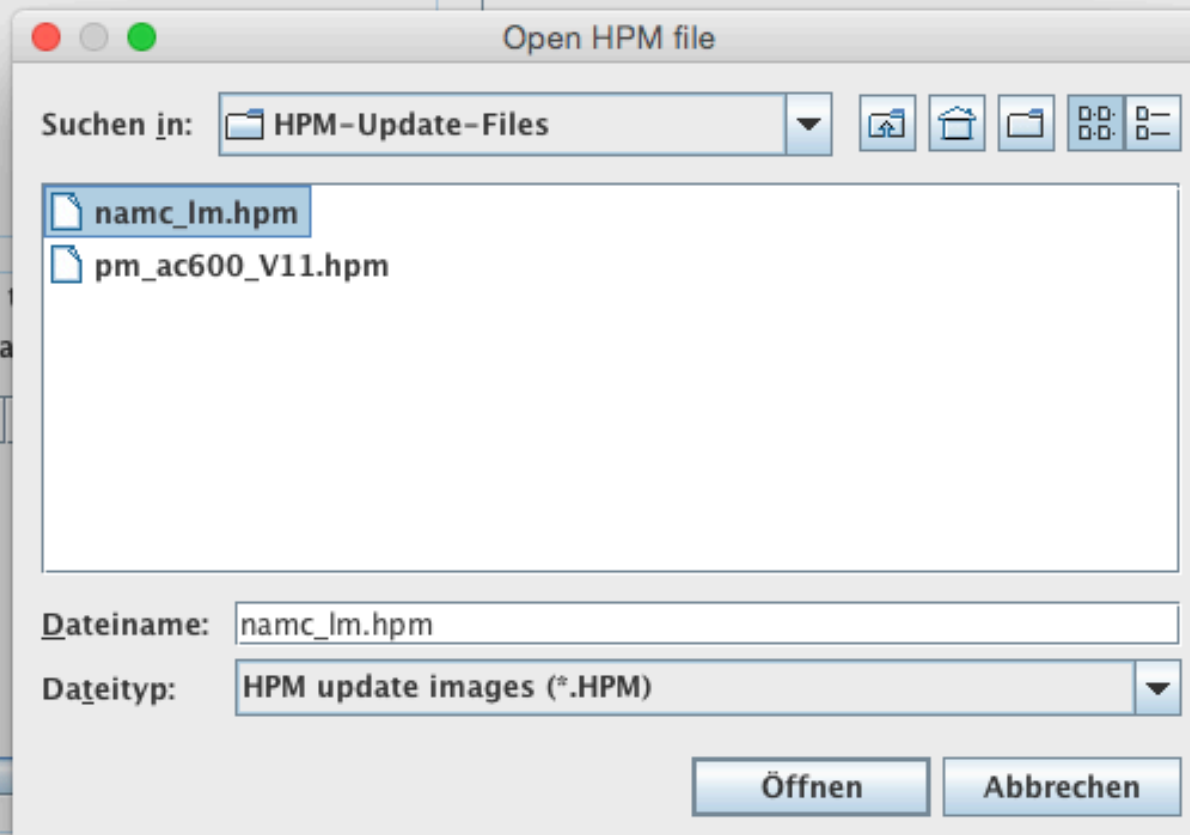
## Step 2: Choose devices

 Show only compatible

Update	Start	FRU ID
--------	-------	--------

Check Result	Addition
--------------	----------

## Step 3: Start HPM Action



# HPM Update

## Step 1: Choose your HPM File

Browse...

/Users/vd/Documents/NAT/NAT Präsentationen/NAT-Schulungen/HPM-Update-Files/namc\_lm.hpm

### GENERAL

Creation date/time:	Thu Jan 01 01:00:00 CET 1970
Image file valid?	yes
Read MD5 digest	69bbba87d97d1f17df68201a96ccfa3e
Signature valid?	yes
Device ID	0x0
Manufacturer ID	0x6c78
Product ID	0xc07
Earliest comp. revision	0.1
Firmware revision	1.0
OEM data length	0

## Step 2: Choose devies to update

Show only compatible FRUs

Update	Start	FRU ID	Manufacturer/Product	Status	Last Compl. Code	Firmware Rel.	Compatibility Check Result	Additional Info
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7	N.A.T. GmbH - Germany/NAMC-LM	● undefined (0)	-	1.5	-ok-	n/a

## Step 3: Start HPM Action

Update Devices

```
Scan for devices that are potential update candiates:  
>> [007] N.A.T. GmbH - Germany NAMC-LM  
checkCompatibleComponents: FRU #7 seems to have all necessary capabilities  
Scan done.
```

Step 1: Choose your HPM File

Browse...

/Users/vd/Documents/NAT/NAT Präsentationen/NAT-Schulungen/HPM-Update-Files/pm\_ac600\_141101.hpm

GENERAL	
Creation date/time:	Thu Jan 01 01:00:00 CET 1970
Image file valid?	yes
Read MD5 digest	4b702ada32b85c596ec404261cc08042
Signature valid?	yes
Device ID	0x0
Manufacturer ID	0x6c78
Product ID	0xc08
Earliest comp. revision	0.1
Firmware revision	1.0
OEM data length	0

Step 2: Choose devies to update

Show only compatible FRUs

Update	Start	FRU ID	Manufacturer/Product	Status	Last Compl. Code	Firmware Rel.	Compatibility Check Result	Additional Info
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	N.A.T. GmbH/NAT-PM-AC600	init (1)	-	1.4	-ok-	n/a

Step 3: Start HPM Action

Cancel update

FRU #50: initiate upgrade action (#1)

Image contains firmware for the components 0  
 Timeouts: Self test = 0 s Rollback = 0 s Inaccessibility = 0 s  
 Earliest compatible revision is 0.1  
 Firmware revision is 1.0

OEM data  
 length = 0 bytes

Action Record #01:

-----  
 processActionRecord() offset = 35  
 Upgrade Action Type = Upload firmware image (2)  
 Components 0  
 Upgrade Action Header CRC = 0xfd  
 Firmware  
   Version = 1.6  
   Description = AVR-firmware  
   Length = 142808 bytes  
 Checksum is valid

-----  
 Scan for devices that are potential update candidates:  
 >> [050] N.A.T. GmbH NAT-PM-AC600  
 checkCompatibleComponents: FRU #50 seems to have all necessary capabilities  
 Scan done.  
 FRU #50: status code 1



Step 1: Choose your HPM File

**Browse...**

/Users/vd/Documents/NAT/NAT Präsentationen/NAT-Schulungen/HPM-Update-Files/pm\_ac600\_141101.hpm

GENERAL	
Creation date/time:	Thu Jan 01 01:00:00 CET 1970
Image file valid?	yes
Read MD5 digest	4b702ada32b85c596ec404261cc08042
Signature valid?	yes
Device ID	0x0
Manufacturer ID	0x6c78
Product ID	0xc08
Earliest comp. revision	0.1
Firmware revision	1.0
OEM data length	0

Step 2: Choose devies to update

Show only compatible FRUs

Update	Start	FRU ID	Manufacturer/Product	Status	Last Compl. Code	Firmware Rel.	Compatibility Check Result	Additional Info
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	N.A.T. GmbH/NAT-PM-AC600	transmit (2)	-	1.4	-ok-	n/a

Step 3: Start HPM Action

**Cancel update**

FRU #50: transmit block #72 offset 16455

11%

image contains firmware for the components 0  
 Timeouts: Self test = 0 s Rollback = 0 s Inaccessability = 0 s  
 Earliest compatible revision is 0.1  
 Firmware revision is 1.0

---  
 OEM data  
 length = 0 bytes

---  
 Action Record #01:

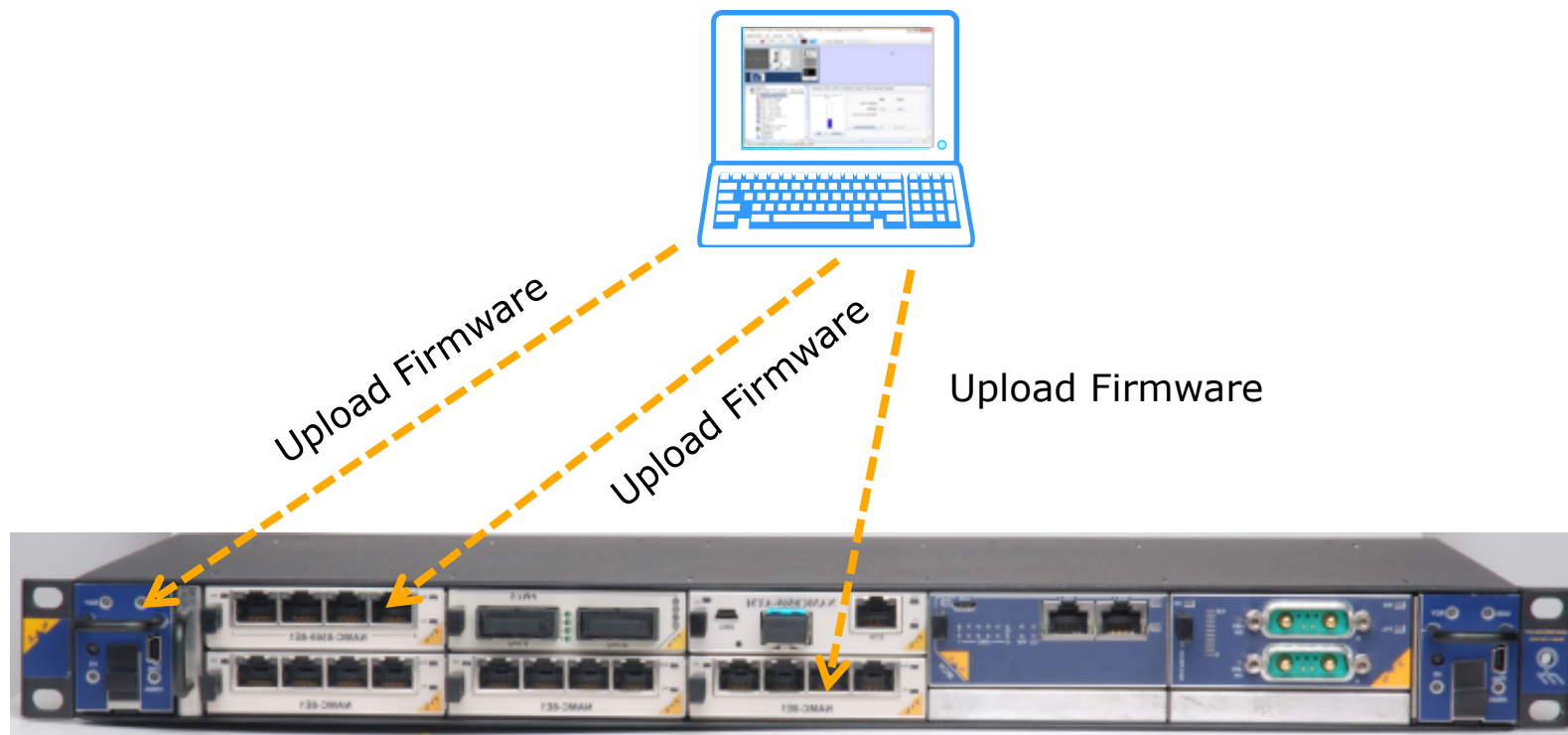
-----  
 processActionRecord() offset = 35  
 Upgrade Action Type = Upload firmware image (2)  
 Components 0  
 Upgrade Action Header CRC = 0xfd  
 Firmware  
 Version = 1.6  
 Description = AVR-firmware  
 Length = 142808 bytes  
 Checksum is valid

-----  
 Scan for devices that are potential update candiates:  
 >> [050] N.A.T. GmbH NAT-PM-AC600  
 checkCompatibleComponents: FRU #50 seems to have all necessary capabilities  
 Scan done.  
 FRU #50: status code 1

# HPM with NATview

## Multiple Card Update (1/2)

- 1. Transfer firmware to all selected targets,
  - one by one.

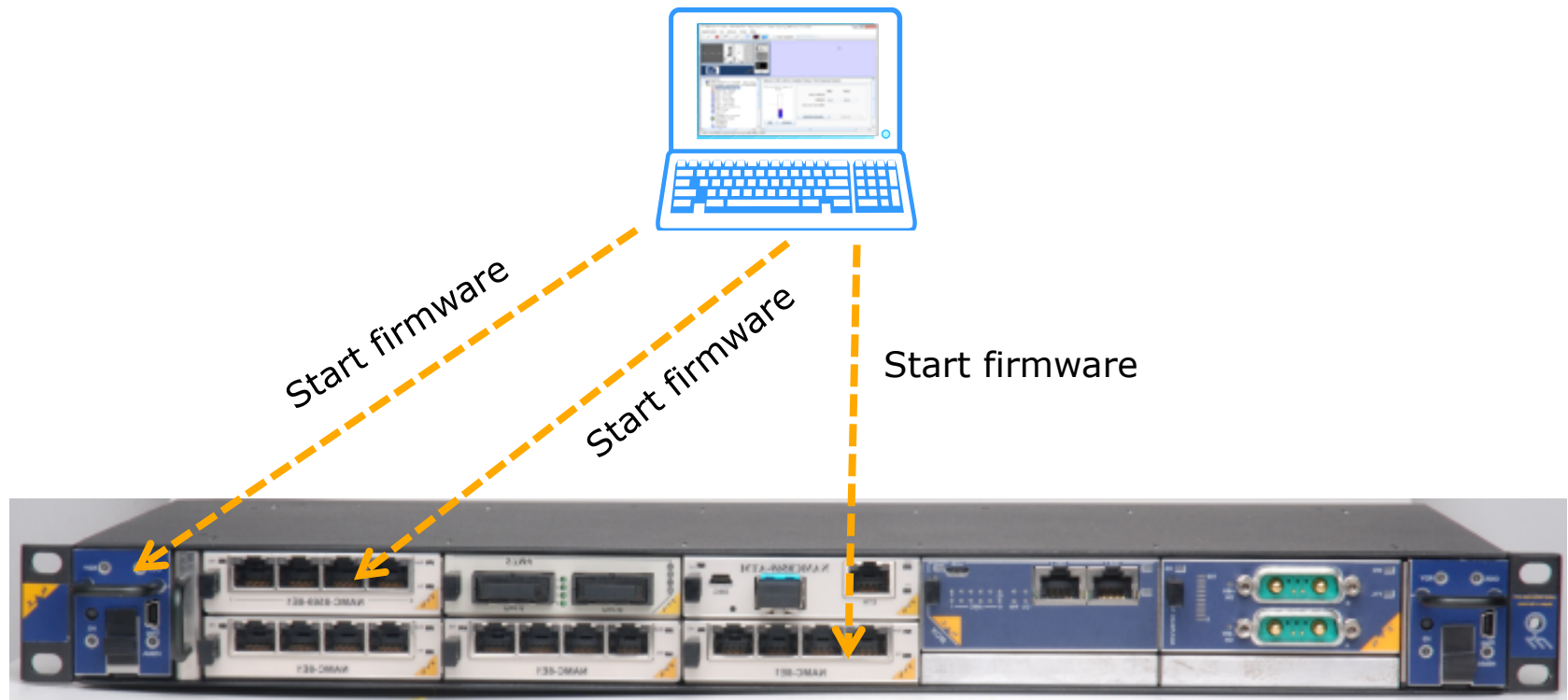


# HPM with NATview

## Multiple Card Update (2/2)



- 2. Start firmware together



=> Minimizes overall system downtime

# Thank you very much!

## Questions?

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