



DragonView

Network Management Solution

Version 2, Dec 2012



BUILDING BETTER BACKHAUL
EVERYWHERE

History

Version 1 as of Sept 26, 2012

- First issue

Version 2 as of Dec 14, 2012

- Screen dump updates

Preliminary note

- This slide set aims to present the complete DragonView NMS features-set, including available ones and planned ones
- As a general rules, features are mentioned as being already planned or for future releases
- Details about release-specific content and dates can be found in the roadmap and the Features List documents

Product highlights

Software architecture

Management functionalities overview (FCAPS)

E2E network management

Northbound interfaces and integrations

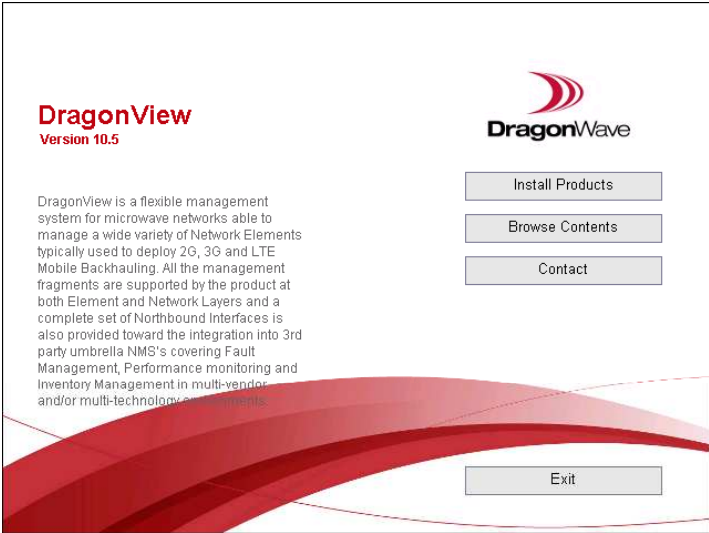
Hardware architecture and capability

Upgrade strategy

Details about NE-specific management capability

Summary

DragonView – Solution Description

- Centralized network management for Microwave products
 - Full set of FCAPS functionalities for all the managed network elements
 - E2E Ethernet services provisioning and monitoring management
- 
- Flexible and scalable hardware and architecture
 - Standard real time and batch northbound interfaces available for integration into any 3rd party OSS systems

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Summary

DragonView - Scalable and Flexible

From small to large networks

Single Server

server



clients



- 3200 NEeq*
- Up to 20 clients

* Network Element equivalent
(i.e. computationally weighted NEs)

Multiple Servers

main server



slave servers

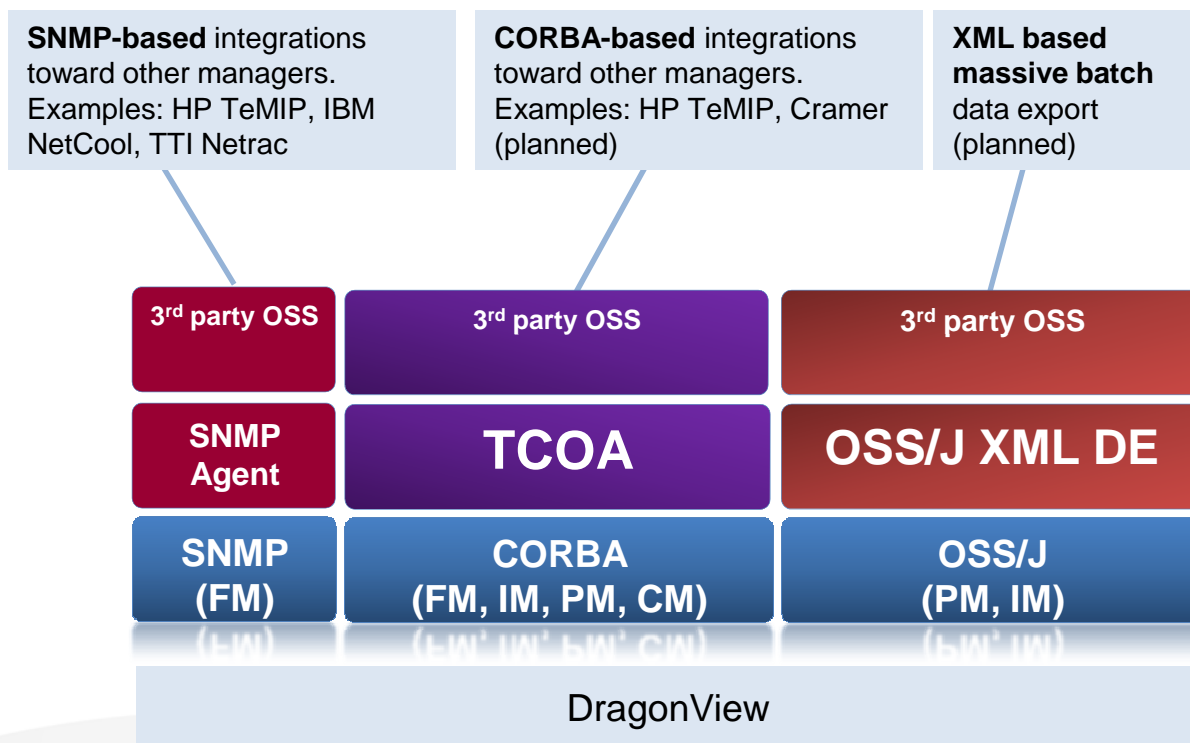


clients

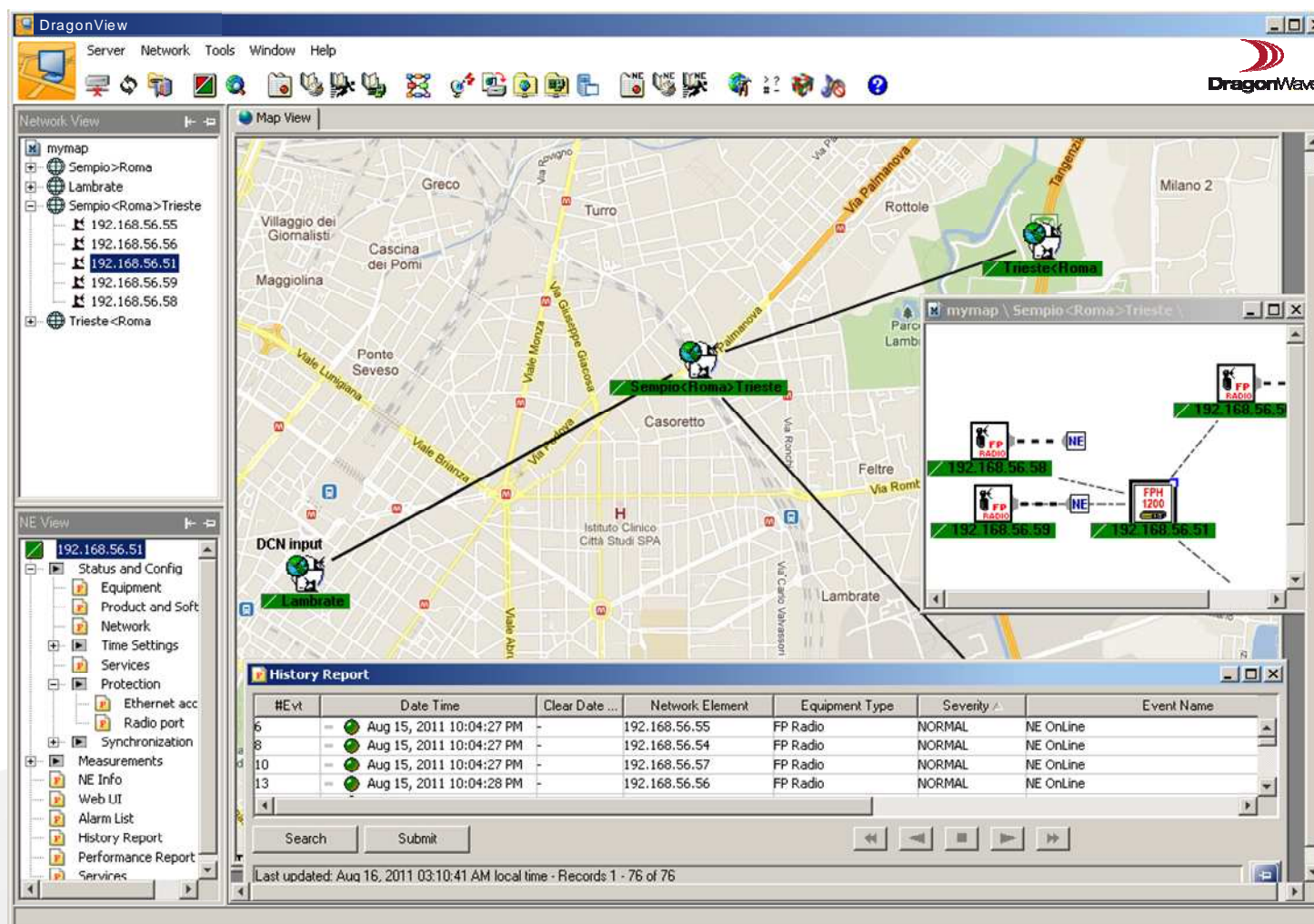


- Up to 20000+ NEeq*
- Up to 20 clients
- Up to 10 slave servers

DragonView Northbound Interfaces



Graphical User Interface



E2E Ethernet Service Management

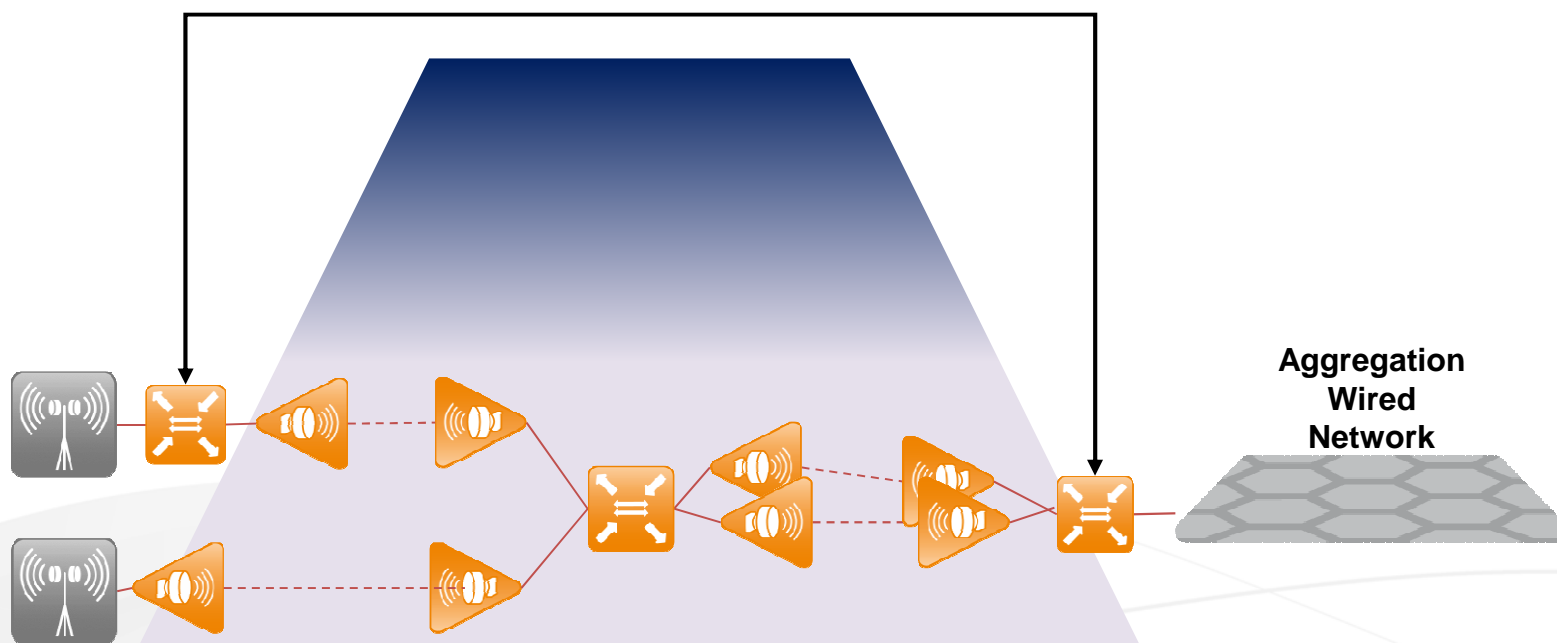


PathManager for Packet (VLAN Manager)

Service
Provisioning

VLAN
Configuration

Service
Monitoring



Product highlights

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Summary

Management Functions (FCAPS)

Security Management

Access control
Domain concept
Access rights
User classes



Performance Management

Performance monitoring
Performance reporting



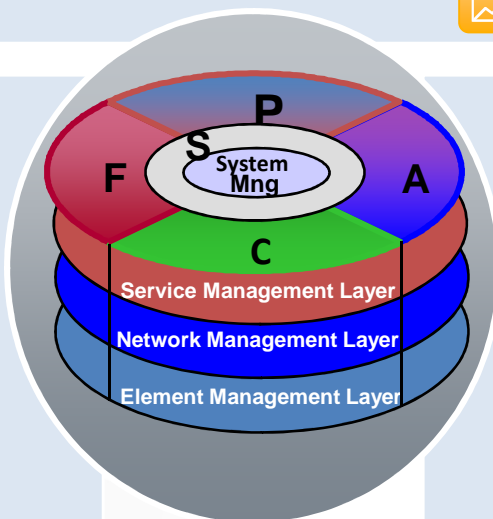
Accounting Management

User history log



Fault Management

Alarm reporting
Alarm localization in map
Alarm logging
Alarm acknowledgement



Configuration Management

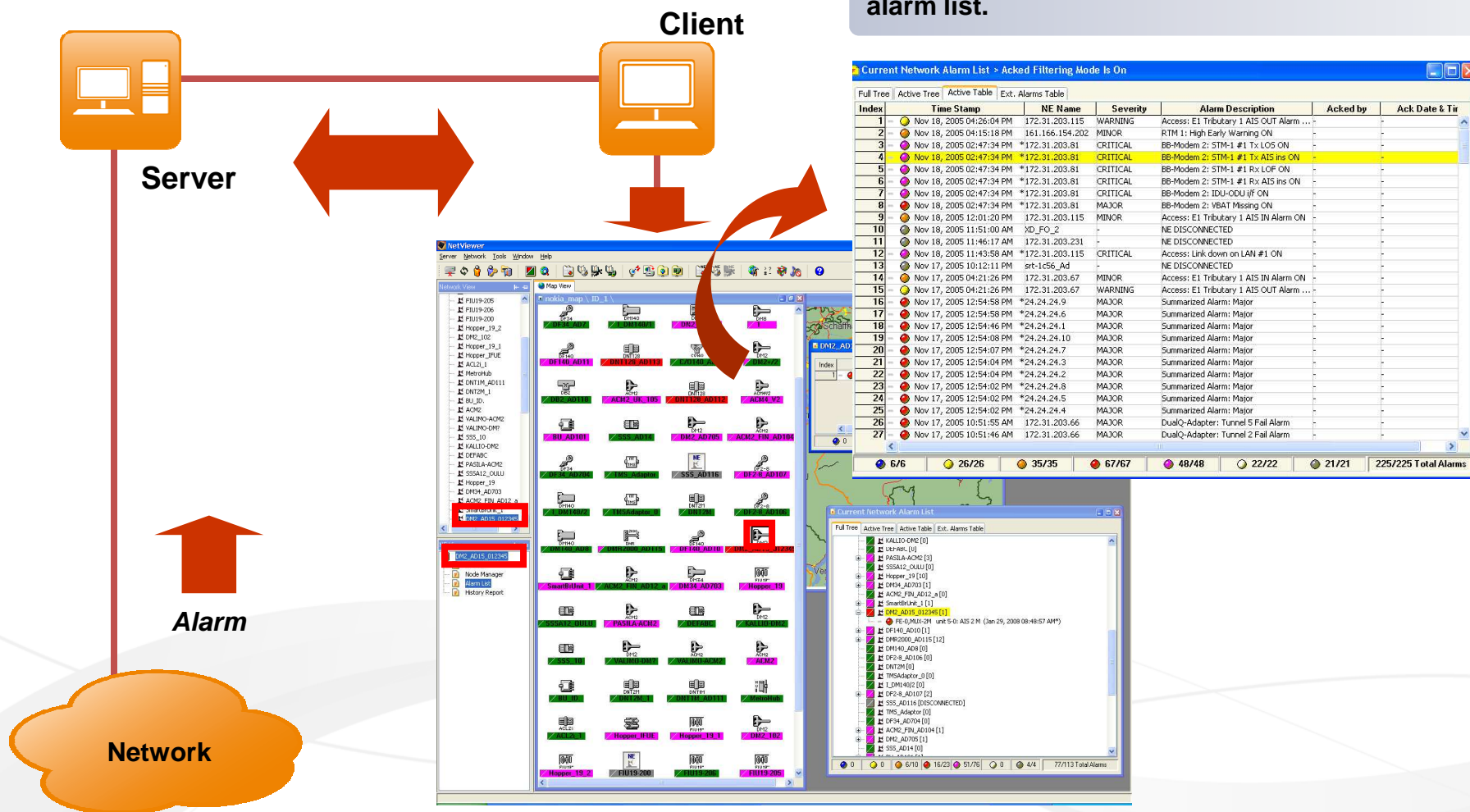
Network configuration
Path provisioning
Software download
MW Radio configuration



Fault Management (I)

Current alarm List

DragonView client provides network current alarm list.



Fault Management (II)

Alarm list

Current alarm list supplies immediate view of active alarms present in the network.

The results of the active alarm status can be performed in three ways:

- Full tree
- Active tree
- Active table
- External alarm table

Active table format

For each active alarm :

- Alarm index
- Time stamp
- NE name
- Severity
- Description
- Acknowledgement user
- Acknowledgement date

- Active alarms summary for each severity value
- Unacknowledged alarms
- Total alarms

Current Network Alarm List > Acked Filtering Mode Is On

Index	Time Stamp	NE Name	Severity	Alarm Description	Acked by	Ack Date & Time
1	Nov 18, 2005 04:15:18 PM	161.166.154.202	MINOR	RTM 1: High Early Warning ON	-	-
2	Nov 18, 2005 02:47:34 PM	*172.31.203.81	CRITICAL	BB-Modem 2: STM-1 #1 Tx LOS ON	-	-
3	Nov 18, 2005 02:47:34 PM	*172.31.203.81	CRITICAL	BB-Modem 2: STM-1 #1 Tx AIS ins ON	-	-
4	Nov 18, 2005 02:47:34 PM	*172.31.203.81	CRITICAL	BB-Modem 2: STM-1 #1 Rx LOF ON	-	-
5	Nov 18, 2005 02:47:34 PM	*172.31.203.81	CRITICAL	BB-Modem 2: STM-1 #1 Rx AIS ins ON	-	-
6	Nov 18, 2005 02:47:34 PM	*172.31.203.81	CRITICAL	BB-Modem 2: IDU-ODU i/f ON	-	-
7	Nov 18, 2005 02:47:34 PM	*172.31.203.81	MAJOR	BB-Modem 2: VBAT Missing ON	-	-
8	Nov 18, 2005 12:01:20 PM	172.31.203.115	MINOR	Access: E1 Tributary 1 AIS IN Alarm ON	-	-
9	Nov 18, 2005 11:51:00 AM	XD_FO_2	-	NE DISCONNECTED	-	-
10	Nov 18, 2005 11:46:17 AM	172.31.203.231	-	NE DISCONNECTED	-	-
11	Nov 18, 2005 11:43:58 AM	*172.31.203.115	CRITICAL	Access: Link down on LAN #1 ON	-	-
12	Nov 17, 2005 10:12:11 PM	srt-1c56_Ad	-	NE DISCONNECTED	-	-
13	Nov 17, 2005 04:21:26 PM	172.31.203.67	MINOR	Access: E1 Tributary 1 AIS IN Alarm ON	-	-
14	Nov 17, 2005 04:21:26 PM	172.31.203.67	WARNING	Access: E1 Tributary 1 AIS OUT Alarm ...	-	-
15	Nov 17, 2005 12:54:58 PM	*24.24.24.9	MAJOR	Summarized Alarm: Major	-	-
16	Nov 17, 2005 12:54:58 PM	*24.24.24.6	MAJOR	Summarized Alarm: Major	-	-
17	Nov 17, 2005 12:54:46 PM	*24.24.24.1	MAJOR	Summarized Alarm: Major	-	-
18	Nov 17, 2005 12:54:08 PM	*24.24.24.10	MAJOR	Summarized Alarm: Major	-	-
19	Nov 17, 2005 12:54:07 PM	*24.24.24.7	MAJOR	Summarized Alarm: Major	-	-
20	Nov 17, 2005 12:54:04 PM	*24.24.24.3	MAJOR	Summarized Alarm: Major	-	-
21	Nov 17, 2005 12:54:04 PM	*24.24.24.2	MAJOR	Summarized Alarm: Major	-	-
22	Nov 17, 2005 12:54:02 PM	*24.24.24.8	MAJOR	Summarized Alarm: Major	-	-
23	Nov 17, 2005 12:54:02 PM	*24.24.24.5	MAJOR	Summarized Alarm: Major	-	-
24	Nov 17, 2005 12:54:02 PM	*24.24.24.4	MAJOR	Summarized Alarm: Major	-	-
25	Nov 17, 2005 10:51:55 AM	172.31.203.66	MAJOR	DualQ-Adapter: Tunnel 5 Fail Alarm	-	-
26	Nov 17, 2005 10:51:46 AM	172.31.203.66	MAJOR	DualQ-Adapter: Tunnel 2 Fail Alarm	-	-
27						

6/6 26/26 35/35 67/67 48/48 22/22 21/21 225/225 Total Alarms

Performance Management (I)

Support of Standard Measurements data:

- ITU-T G.821, G.826
- ETSI EN 301129 (RSPI, RPS).
- ACM (Adaptive Coded Modulation)
- Ethernet counters statistics per each interface
- Ethernet service statistics for E-Line and Pseudo-wires

Measurement data storage into central database

Graphical chart representation

- Received RF power
- Ethernet counters

Performance measure reporting

Measurement data exporting through OSS/J XML open interface (opt. functionality)

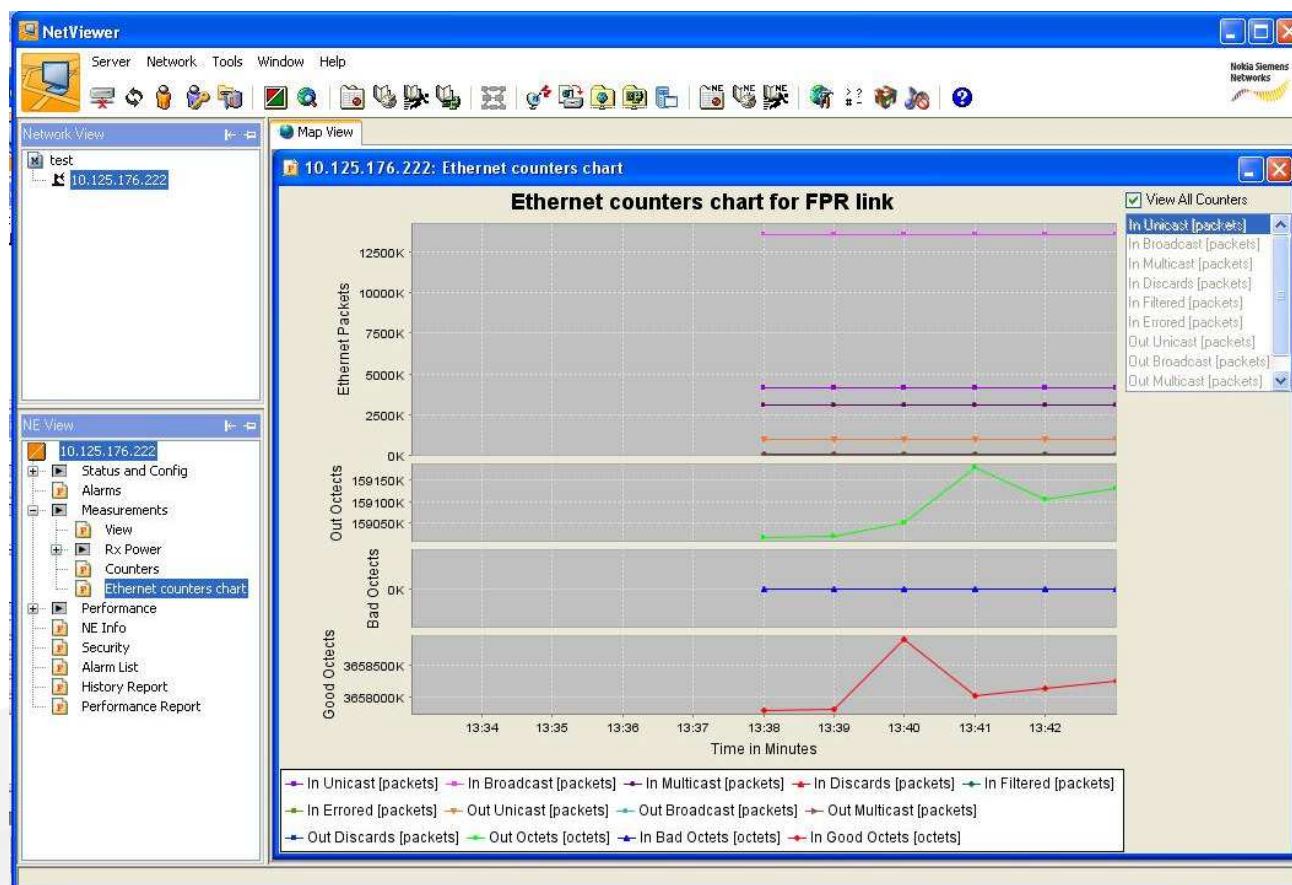
Performance Management (II)

- Performance data are accessible via report applications
- Standard 15min or 24h measurement periods reports
- Filtering criteria for measurement type, NE family, interval period
- Export of performance Logs
Manual export/print
Export format: txt, csv

[illegible]

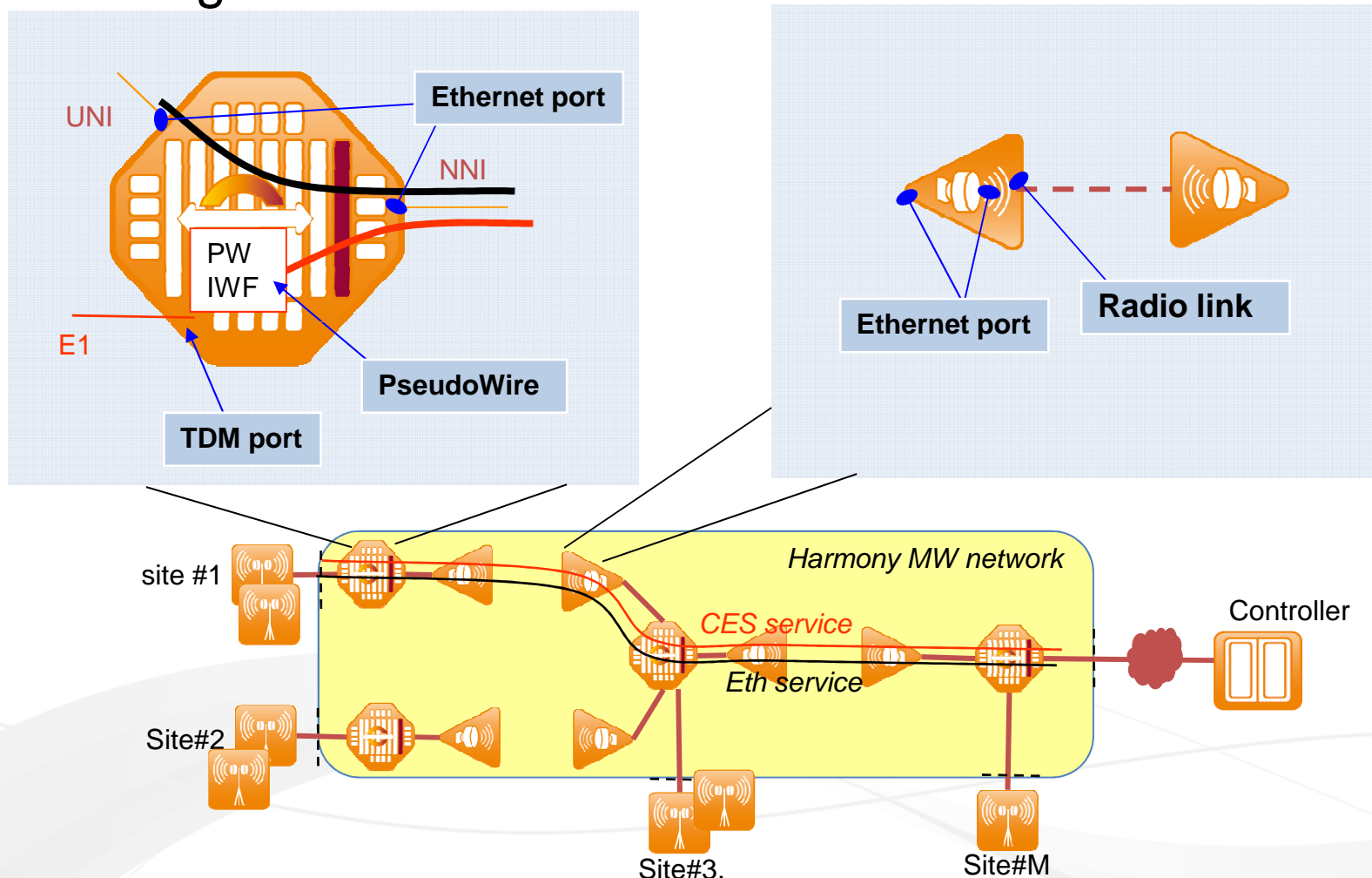
Performance Management (III)

Graphical representation of Ethernet counters for Harmony and Horizon product families



Harmony PM Data Collection (I)

Monitoring Points



Harmony PM Data Collection (II)

TDM ports (G.826 PDH/SDH)

Harmony FirstMile 200, Harmony Hub 800

- Massive collection network wise
- Via XML file over FTP
- Retrieval interval 15min and 24h data

DragonView functionalities

- Counters stored in DragonView server database
- Export available via northbound interface XML DE compliant to 3GPP format

G.826 Counters
Errored Seconds
Severely Errored Seconds
Unavailability Seconds

Harmony PM Data Collection (III)

Ethernet counters per port - IEEE802.3

Harmony FirstMile 200

Harmony Hub 800

Harmony Hub 800 Hybrid

Harmony Radio

Harmony Radio Hybrid

- Massive collection network wise
- Via XML file over FTP
- Retrieval interval 15min and 24h data

DragonView functionalities

- Graphical chart for real time running data
- Counters stored in DragonView server database

RMON Counters
InDroppedPkts
InGoodPkts
InPackets
OutDroppedPkts
OutGoodPkts
OutPackets

Harmony PM Data Collection (III)

Ethernet counters per port - IEEE802.3 (con'd)

Harmony Radio

- Massive collection network wise
- Via XML file over FTP
- Retrieval interval 15min and 24h data

DragonView functionalities

- Graphical chart for real time running data
- Counters stored in DragonView server database

RMON Counters
InDroppedPkts
InGoodPkts
InPackets
OutDroppedPkts
OutGoodPkts
OutPackets

Harmony PM Data Collection (IV)

RSPI and ACM

Harmony Radio

Harmony MultiRadio

- Massive collection network wise
- Via XML file over FTP
- Retrieval interval 15min and 24h data

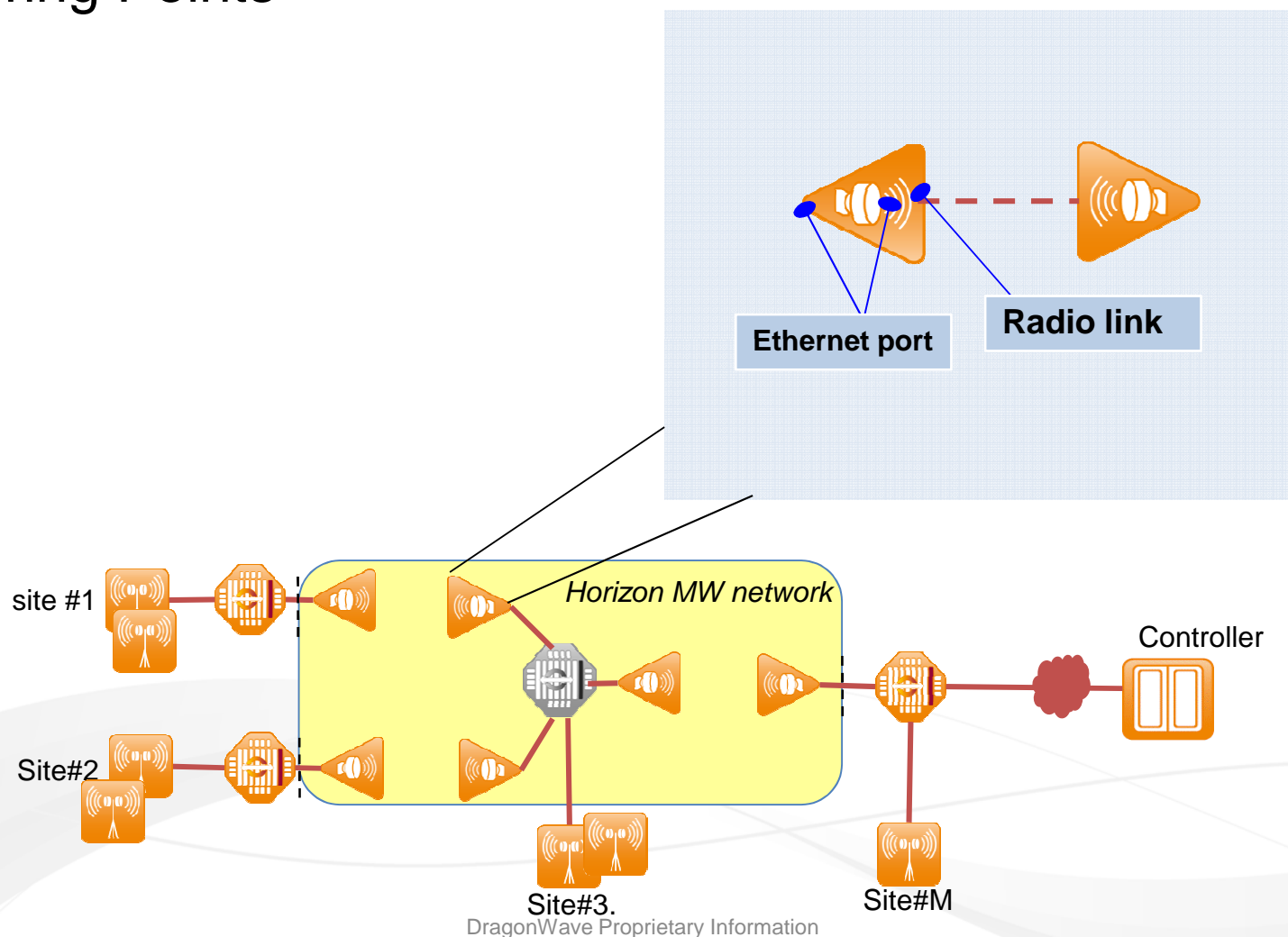
DragonView functionalities

- Counters stored in DragonView server database
- Export available via northbound interface

RSPI/ACM
ETSI RSPI
ACM secs per profile

Horizon PM Data Collection (I)

Monitoring Points



Horizon PM Data Collection (I)

Ethernet counters per port - IEEE802.3

Horizon Compact Plus

- Massive collection network wise
- Granularity interval 15min and 24h data

DragonView functionalities

- Graphical chart for real time running data
- Counters stored in DragonView server database

RMON Counters
InDroppedPkts
InGoodPkts
InOutOctets

Horizon PM Data Collection (II)

Ethernet counters per port - IEEE802.3

Horizon Quantum

- Massive collection network wise
- Granularity interval 15min and 24h data

DragonView functionalities

- Graphical chart for real time running data
- Counters stored in DragonView server database

RMON Counters
InDroppedPkts
InGoodPkts
InOctets
OutDroppedPkts
OutGoodPkts
OutOctets

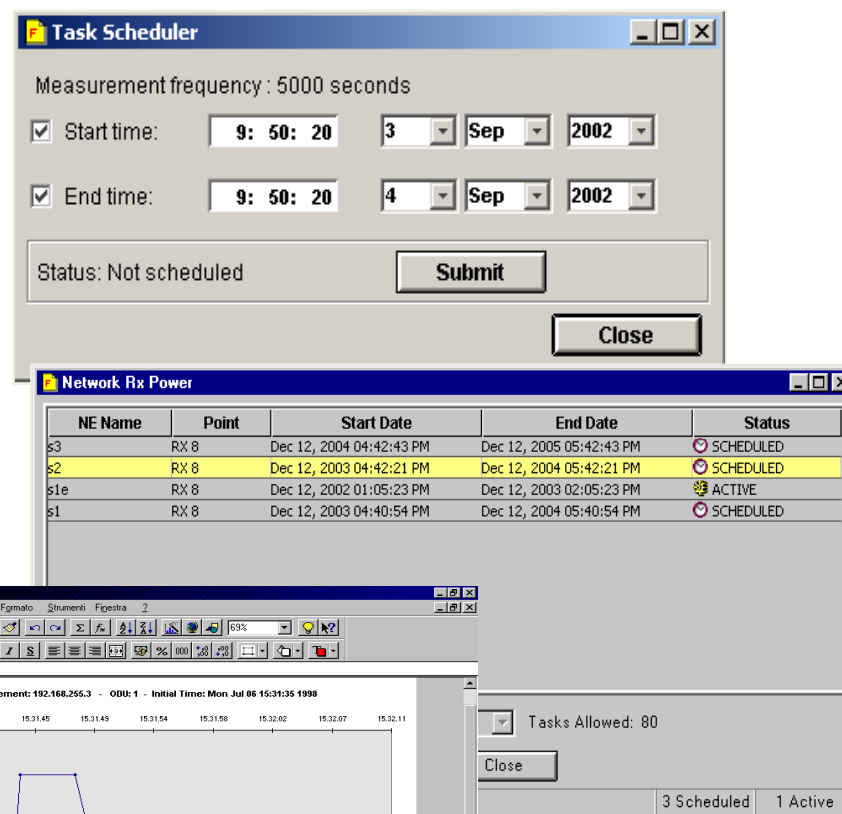
RF Power Scheduled Measurements

RF Power signal real time collection

- Up to 80 Received RF Power measurement can be scheduled through a scheduler

All Active measurements are shown in the network Rx Power window

All measurements are reported into the Database and graphically presented as chart



Task Scheduler

Measurement frequency : 5000 seconds

☒ Start time: 9: 50: 20 3 Sep 2002

☒ End time: 9: 50: 20 4 Sep 2002

Status: Not scheduled **Submit**

Close

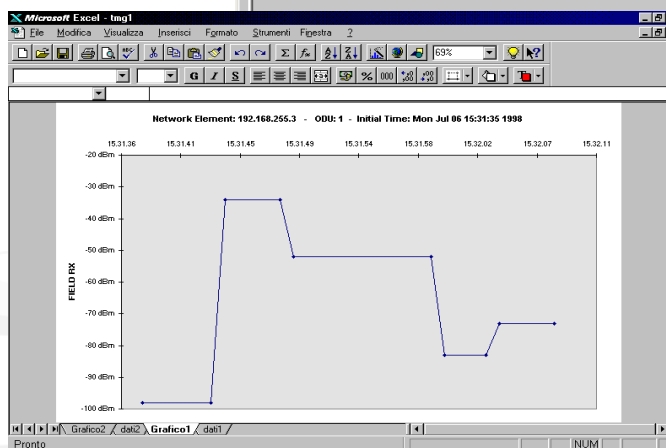
Network Rx Power

NE Name	Point	Start Date	End Date	Status
s3	RX 8	Dec 12, 2004 04:42:43 PM	Dec 12, 2005 05:42:43 PM	SCHEDULED
s2	RX 8	Dec 12, 2003 04:42:21 PM	Dec 12, 2004 05:42:21 PM	SCHEDULED
s1e	RX 8	Dec 12, 2002 01:05:23 PM	Dec 12, 2003 02:05:23 PM	ACTIVE
s1	RX 8	Dec 12, 2003 04:40:54 PM	Dec 12, 2004 05:40:54 PM	SCHEDULED

Tasks Allowed: 80

Close

3 Scheduled 1 Active



Configuration Management

NMS configuration:

- Network map administration:
 - NE discovery and links discovery
 - NE description and comments
 - Import/Export lists of NE's
- Users management
- Database Configuration

Network element configuration

- Through specific DragonView NE plug-in or
- Via remote launch of NE WebCT

FirstMile 200 R1.2 - 10.44.219.71
10.44.219.71

Connection Help

FirstMile 200

System Base

- Properties
- NTP Setting
- System Command
- Dry Contact
- Inventory

System name:

System contact:

System up time: 21:41:15.24

System type:

Temperature: 42 Celsigrade

System location:

System description: firstMilePackerFirstMile

Alarms: 8

Show:

Time Stamp	Type	Source	Severity
2009-01-01	LinkDown	0E4(11832)	Critical
2009-01-01	LinkDown	0E4(PWR01104)	Critical
2009-01-01	LinkDown	SFP1(1105)	Critical
2009-01-01	LinkDown	SFP2(1109)	Critical
2009-01-01	LOS	E1(11447)	Critical
2009-01-01	LOS	E1-21402	Critical
2010-05-04	SNTP Server	SNTP Server	Minor
2010-05-04	mini	Station Alarm IN2	Warning

Hardware

System Base

System Command

System Inventory

System name:

System contact:

System up time: 21:41:15.24

System type:

Temperature: 42 Celsigrade

System location:

System description: firstMilePackerFirstMile

Alarms: 8

Show:

Time Stamp	Type	Source	Severity
2009-01-01	LinkDown	0E4(11832)	Critical
2009-01-01	LinkDown	0E4(PWR01104)	Critical
2009-01-01	LinkDown	SFP1(1105)	Critical
2009-01-01	LinkDown	SFP2(1109)	Critical
2009-01-01	LOS	E1(11447)	Critical
2009-01-01	LOS	E1-21402	Critical
2010-05-04	SNTP Server	SNTP Server	Minor
2010-05-04	mini	Station Alarm IN2	Warning

Hardware

System Base

System Command

System Inventory

System name:

System contact:

System up time: 21:41:15.24

System type:

Temperature: 42 Celsigrade

System location:

System description: firstMilePackerFirstMile

Alarms: 8

Show:

Time Stamp	Type	Source	Severity
2009-01-01	LinkDown	0E4(11832)	Critical
2009-01-01	LinkDown	0E4(PWR01104)	Critical
2009-01-01	LinkDown	SFP1(1105)	Critical
2009-01-01	LinkDown	SFP2(1109)	Critical
2009-01-01	LOS	E1(11447)	Critical
2009-01-01	LOS	E1-21402	Critical
2010-05-04	SNTP Server	SNTP Server	Minor
2010-05-04	mini	Station Alarm IN2	Warning

Hardware

System Base

System Command

System Inventory

System name:

System contact:

System up time: 21:41:15.24

System type:

Temperature: 42 Celsigrade

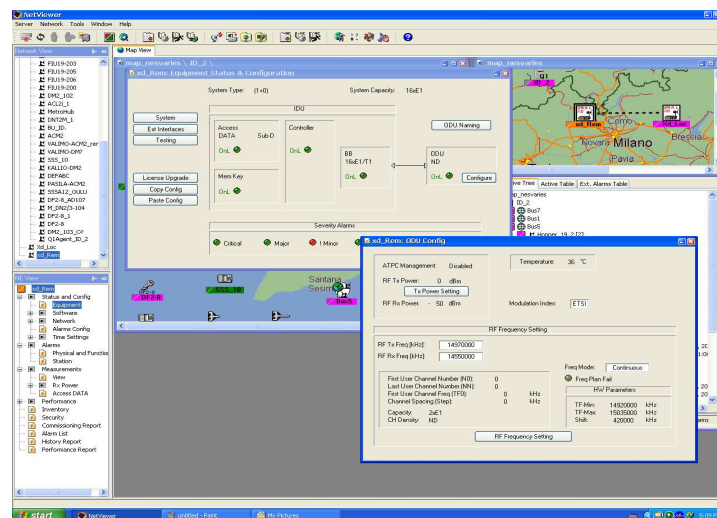
System location:

System description: firstMilePackerFirstMile

Alarms: 8

Show:

Time Stamp	Type	Source</
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DragonWave Proprietary Information

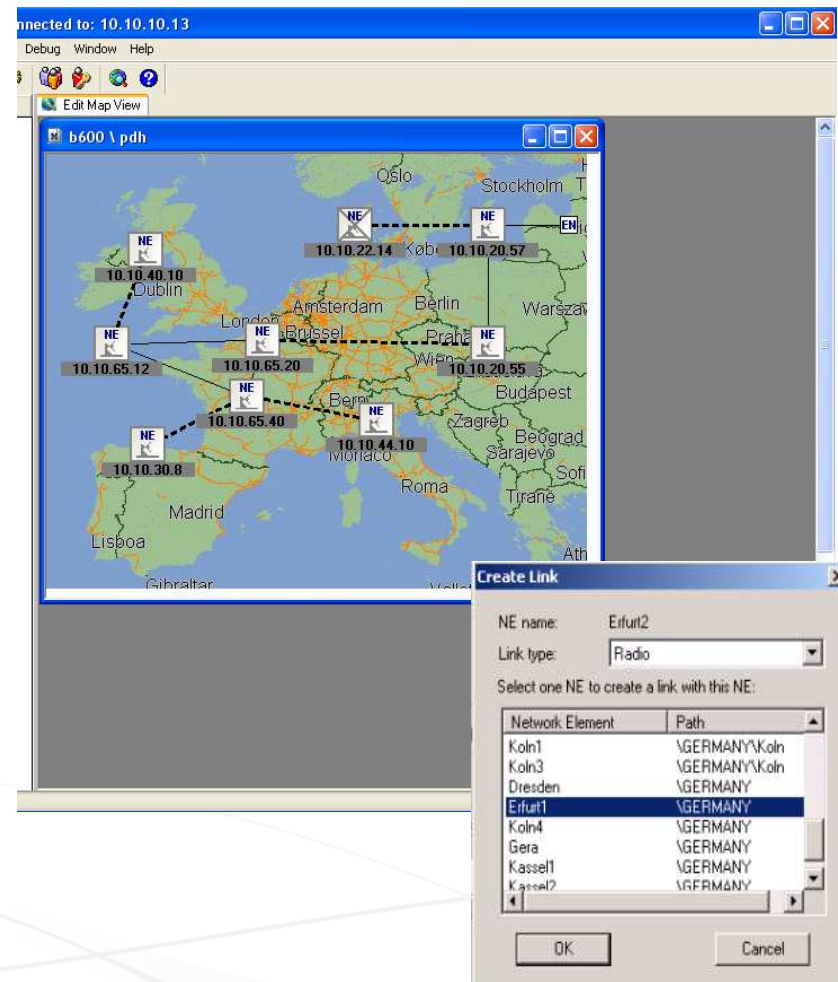
Configuration Management

Automatic procedures are available to speed up with the map creation:

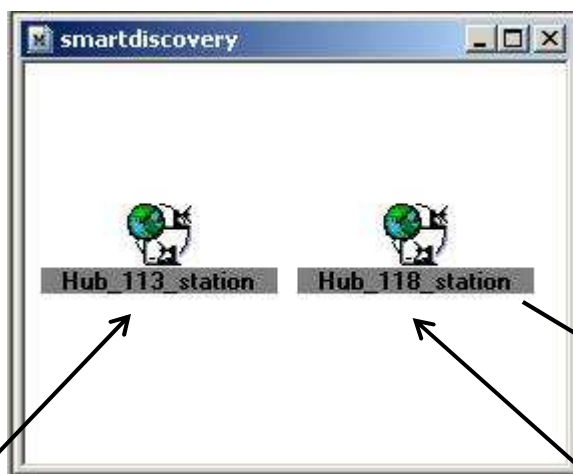
- NE Auto discovery
- Harmony station auto discovery
- Harmony radio link auto discovery

Topological links can be manually created:

- Ethernet cable link
- Tributary cable link
- E1/STM-1 cable link
- Microwave link

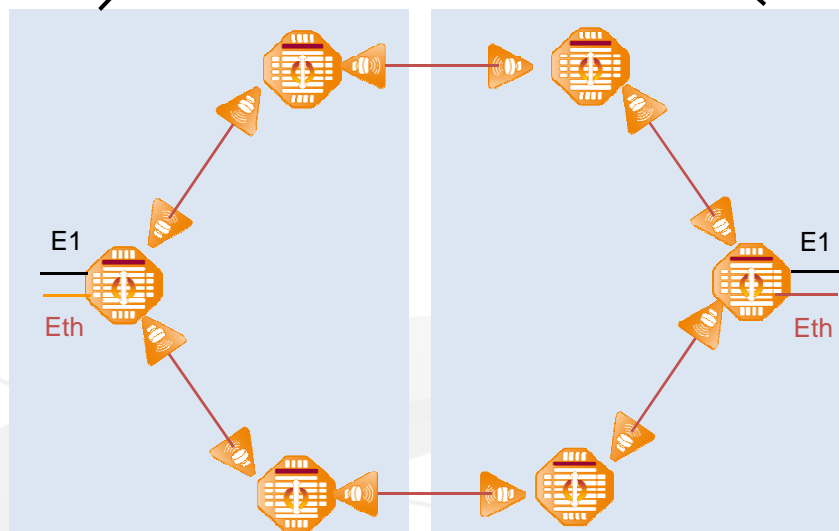
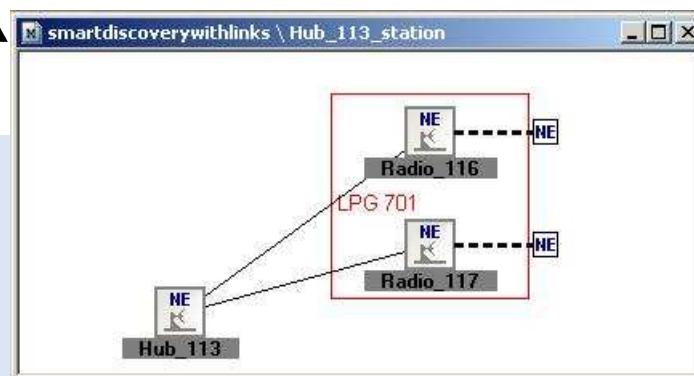


Harmony Station: Automatic Discovery



Harmony station are automatically discovered into DragonView Sub-map

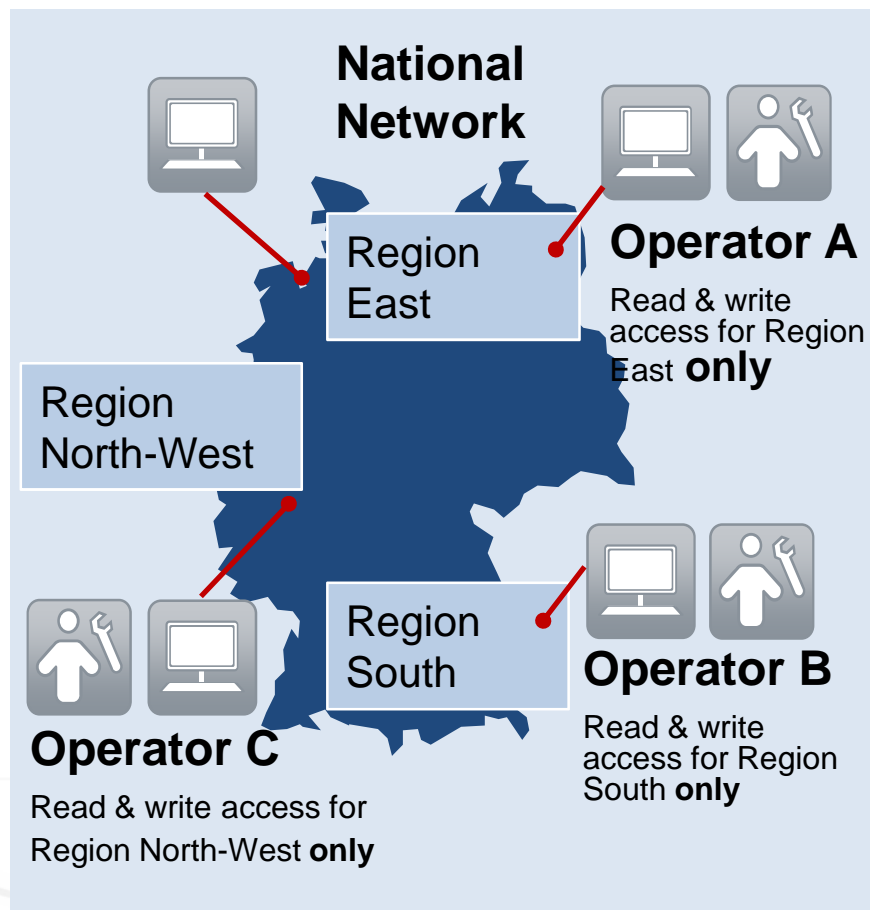
- Automatic creation of topology link
- Topology map ready for PathManager for Packet
- Easy understanding of network



Sub-domain Management

Central Operation Center:

- Complete network supervision
- Full access to complete (sub) networks



Database Configuration

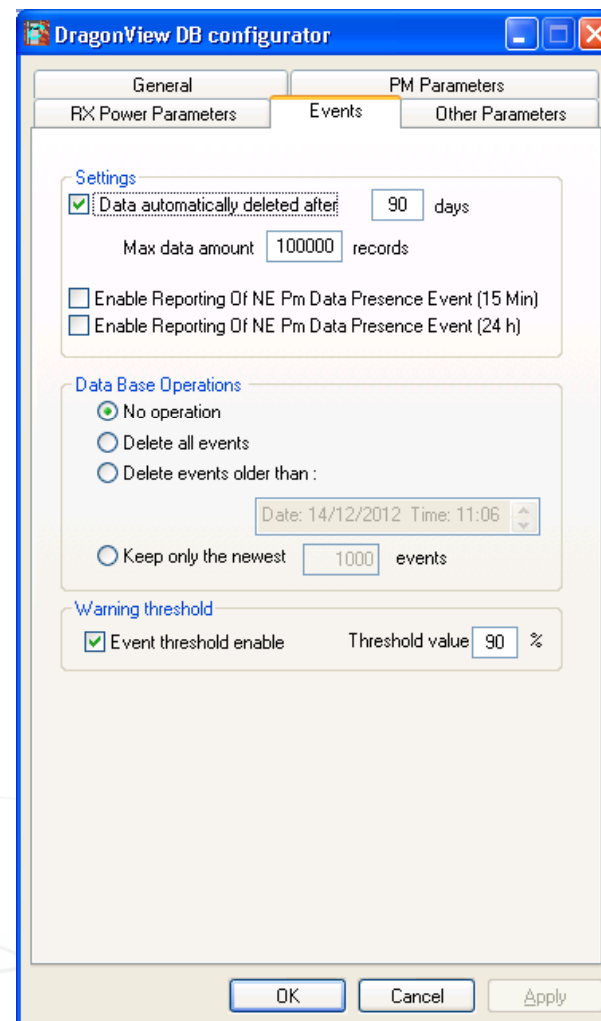
Database parameters are configurable for:

- Max data amount storable
- Up to 800000 records
- Data deleted automatically after N days
- Ageing mechanism
- Enable event threshold

Database Configuration

Database parameters are configurable for:

- Max data amount storable
- Up to 800000 records
- Data deleted automatically after N days
- Ageing mechanism
- Enable event threshold



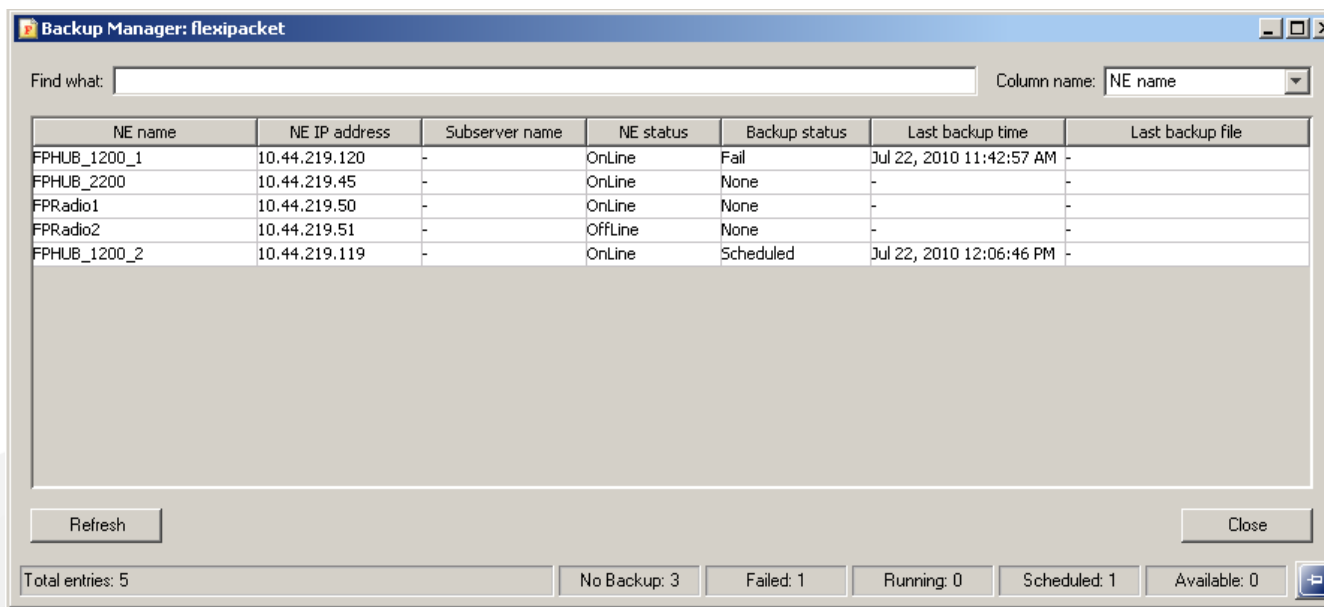
The screenshot shows the 'DragonView DB configurator' window with the 'Events' tab selected under the 'PM Parameters' section. The 'Settings' group contains a checked checkbox for 'Data automatically deleted after' set to 90 days, and a text box for 'Max data amount' set to 100000 records. Below these are two unchecked checkboxes for 'Enable Reporting Of NE Pm Data Presence Event' with durations of 15 Min and 24 h. The 'Data Base Operations' group has three radio button options: 'No operation' (selected), 'Delete all events', and 'Delete events older than :'. The 'Delete events older than :' option is expanded, showing a date and time picker set to 'Date: 14/12/2012 Time: 11:06'. Below this is a radio button for 'Keep only the newest' set to 1000 events. The 'Warning threshold' group has a checked checkbox for 'Event threshold enable' and a 'Threshold value' set to 90 %.

Automatic Backup Manager (I)

Backup manager application allows centralized and automatic management of backup operations.

Equipment supported are:

- Harmony Radio and MultiRadio
- Harmony FirstMile 200
- Harmony Hub 800



NE name	NE IP address	Subserver name	NE status	Backup status	Last backup time	Last backup file
FPHUB_1200_1	10.44.219.120	-	OnLine	Fail	Jul 22, 2010 11:42:57 AM	-
FPHUB_2200	10.44.219.45	-	OnLine	None	-	-
FPRadio1	10.44.219.50	-	OnLine	None	-	-
FPRadio2	10.44.219.51	-	OffLine	None	-	-
FPHUB_1200_2	10.44.219.119	-	OnLine	Scheduled	Jul 22, 2010 12:06:46 PM	-

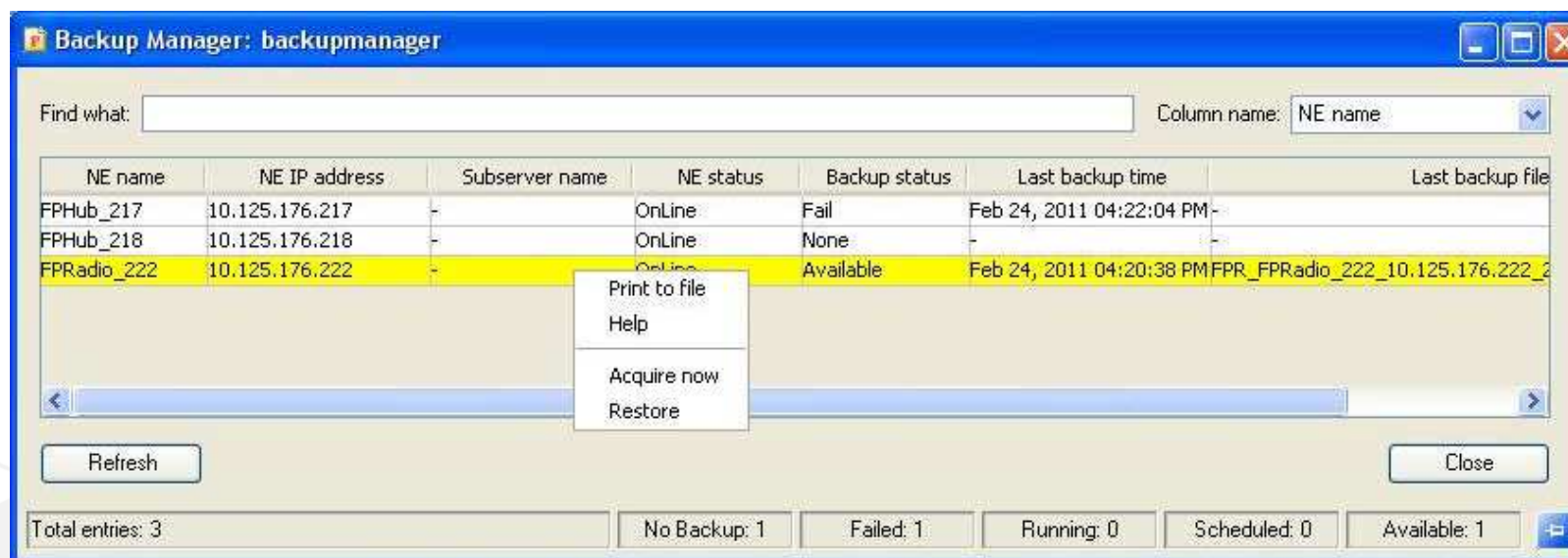
Refresh Close

Total entries: 5 No Backup: 3 Failed: 1 Running: 0 Scheduled: 1 Available: 0

Automatic Backup Manager (II)

Backup file acquisition is scheduled when:

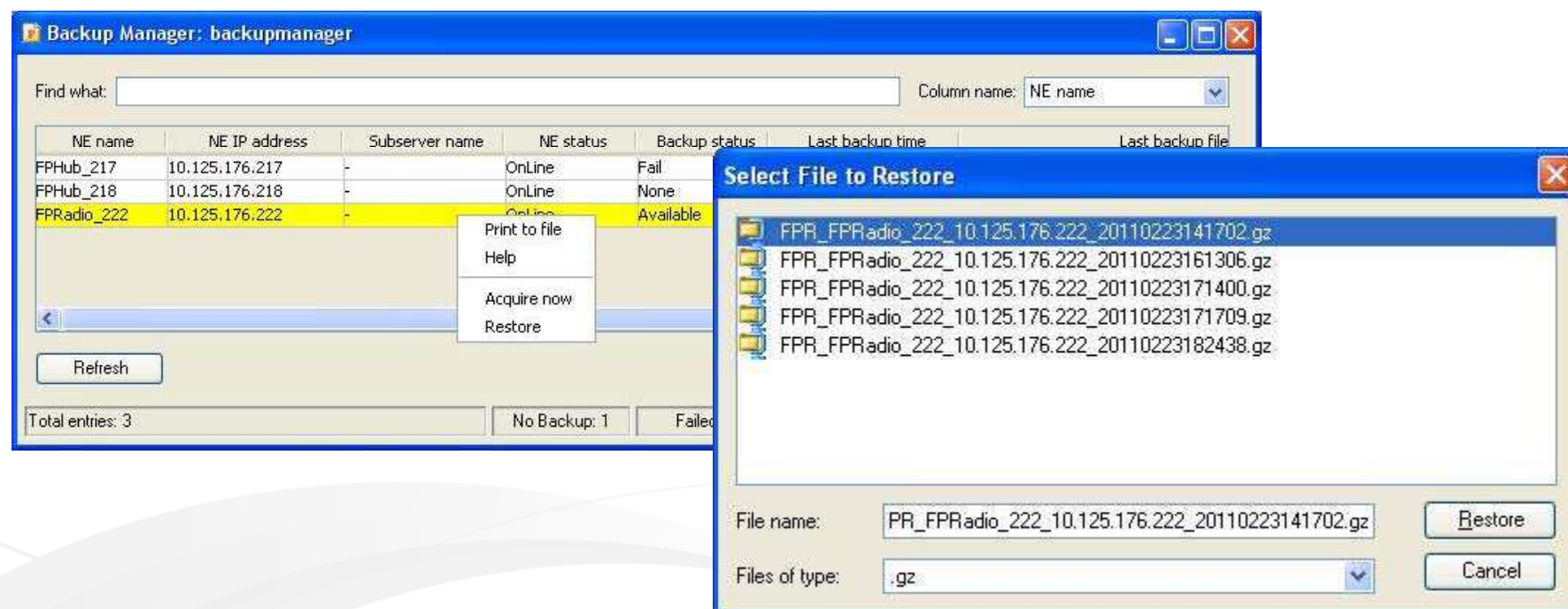
- New NE is inserted in topology map and the map is reloaded
- After modification of NE configuration done by user logged to DragonView
- Every time the NE is selected as eligible for backup from system scheduler
- Manually forced by user



Automatic Backup Manager (III)

Backup manager interface allows command providing:

- Restore function from DragonView user
- Up to 5 configuration files available for the selected NE



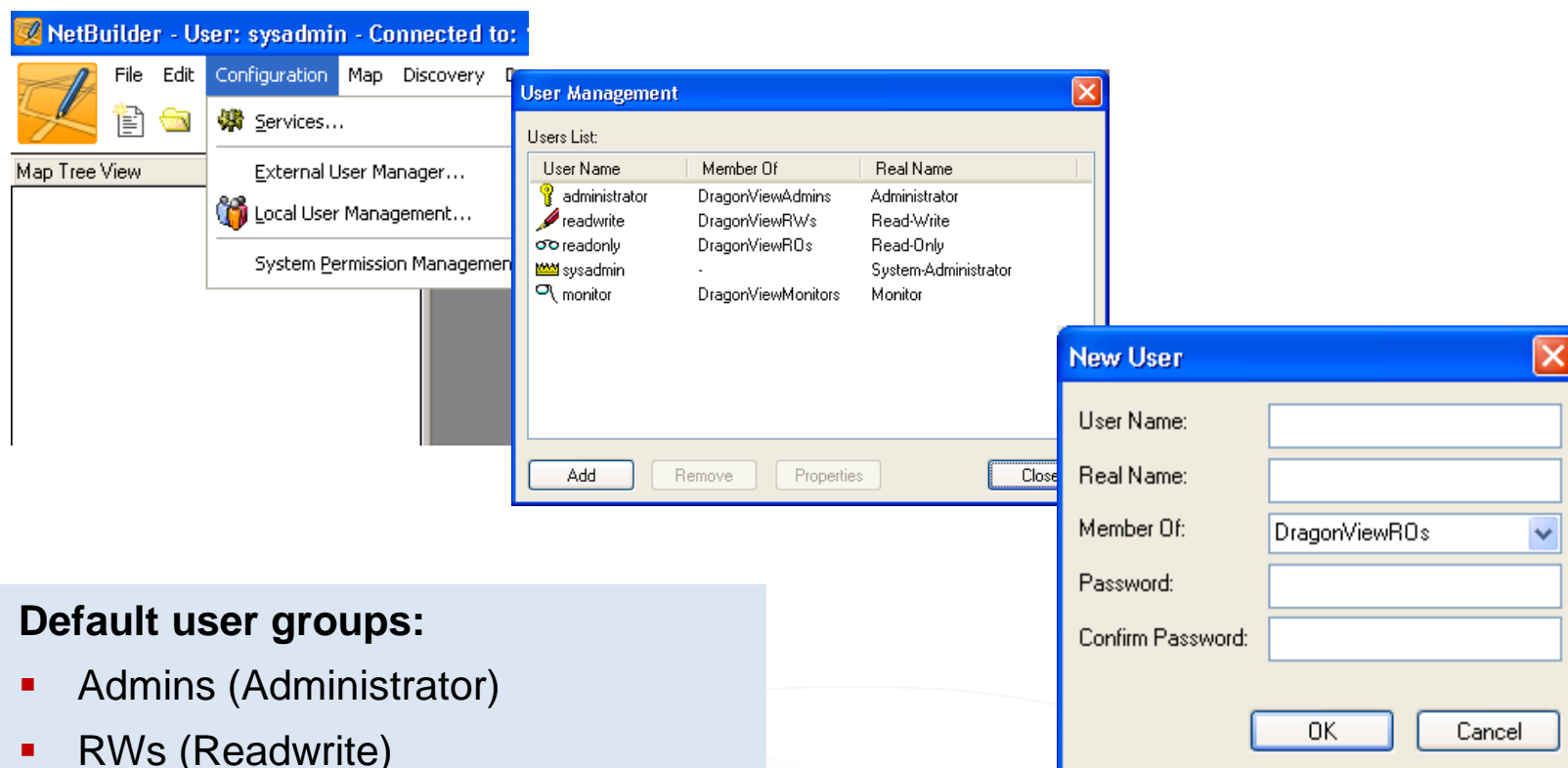
Security Management

Major security management functionalities:

- Account management via ID, Password
- Users management: user classes and groups
- Domain management
- External users management:
 - Microsoft Windows identity management (Active Directory)
 - Customer's identity manager (Active Directory)
- Operator log

Users Management and User Groups

Local user management tool



Default user groups:

- Admins (Administrator)
- RWs (Readwrite)
- ROs (Readonly)

Product highlights

Software architecture

Management functionalities overview (FCAPS)

E2E network management

Northbound interfaces and integrations

Hardware architecture and capability

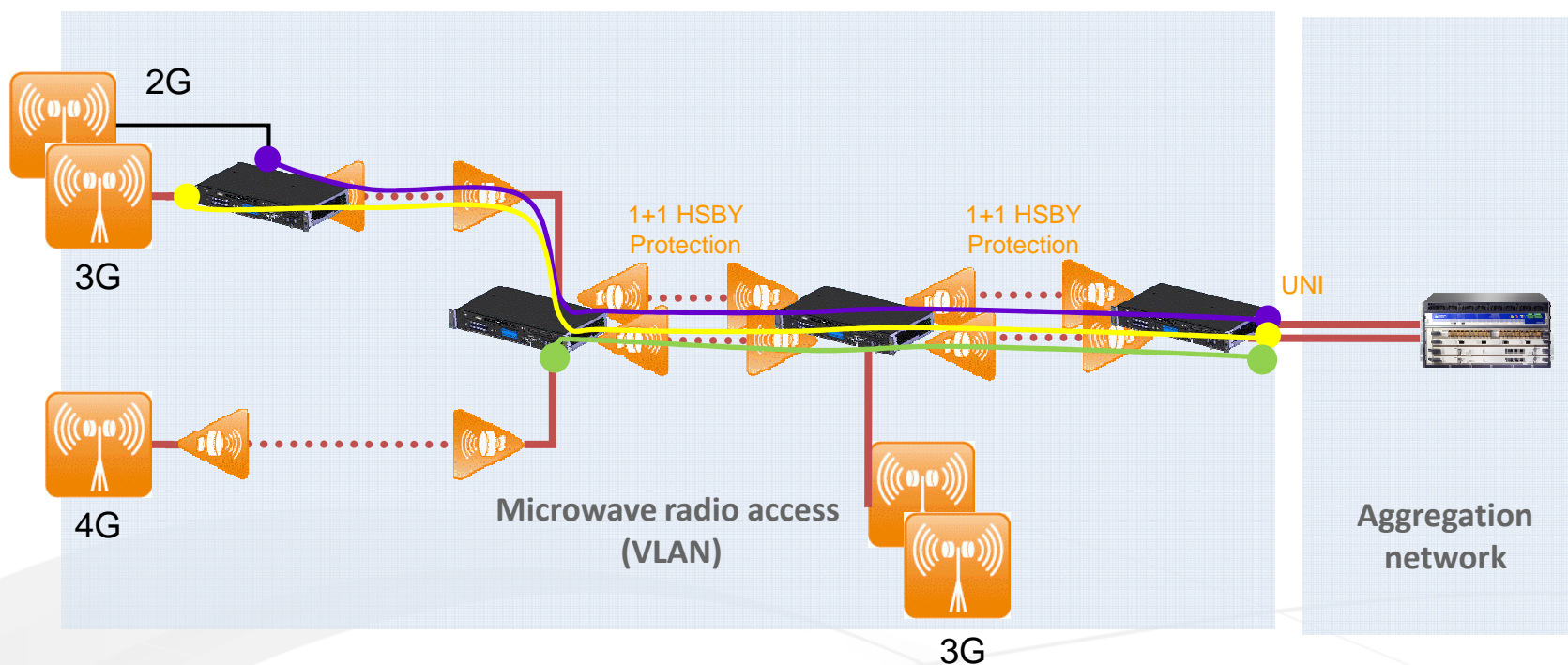
Upgrade strategy

Details about NE-specific management capability

Summary

PathManager for Packet (I)

DragonView PathManager for Packet feature provides network management layer capability to easy E2E monitoring and provisioning of Ethernet services and VLAN in Harmony network

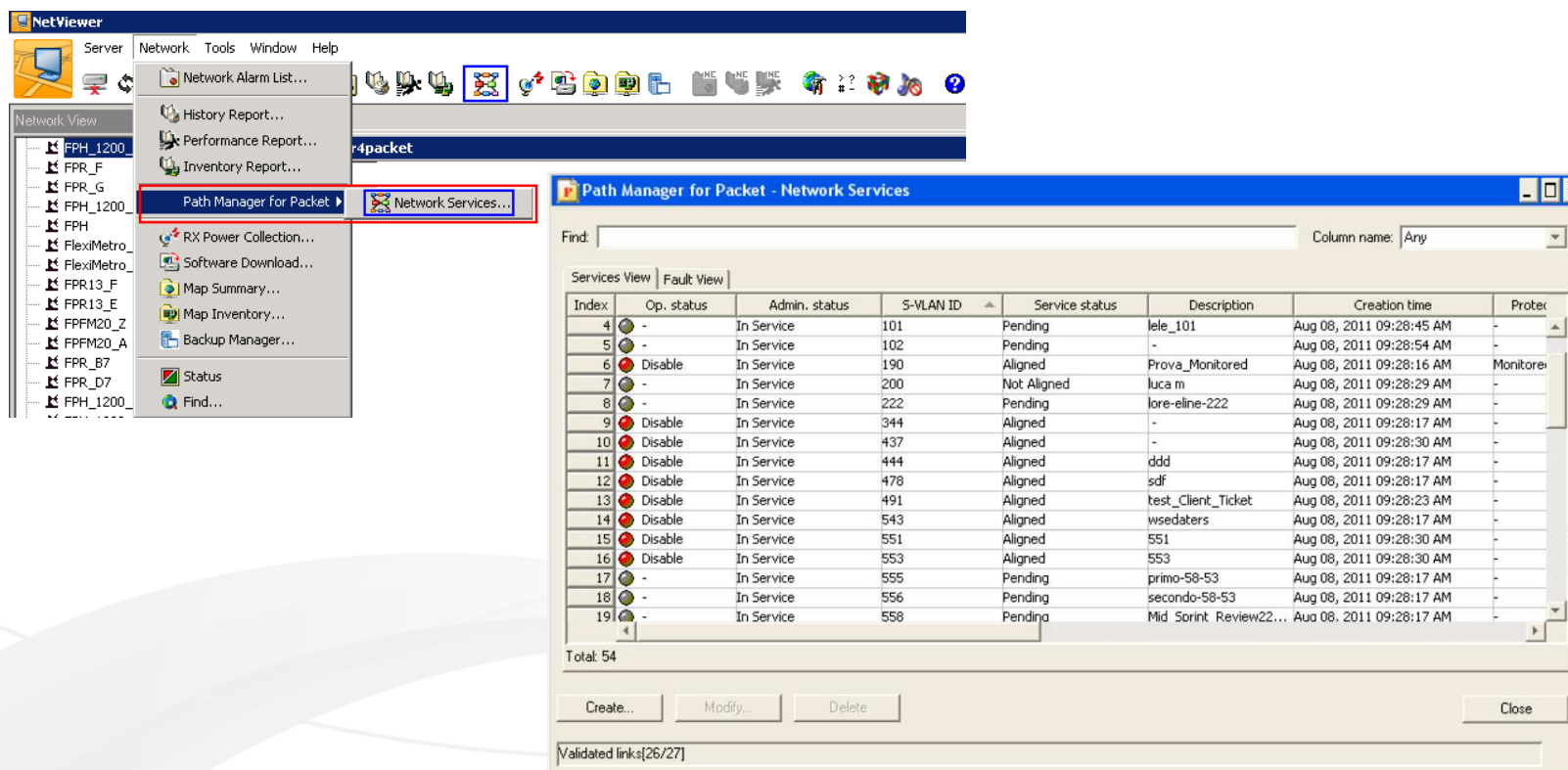


PathManager for Packet (II)

Network services list window

PathManager for Packet introduces network wise services view:

- one single table that show E-Line and CES (CESoP, SAToP, MEF8) provisioned in all network.



Path Manager for Packet - Network Services

Find: Column name: Any

Index	Op. status	Admin. status	S-VLAN ID	Service status	Description	Creation time	Protection
4	-	In Service	101	Pending	lele_101	Aug 08, 2011 09:28:45 AM	-
5	-	In Service	102	Pending	-	Aug 08, 2011 09:28:54 AM	-
6	Disable	In Service	190	Aligned	Prova_Monitored	Aug 08, 2011 09:28:16 AM	Monitored
7	-	In Service	200	Not Aligned	luca m	Aug 08, 2011 09:28:29 AM	-
8	-	In Service	222	Pending	lore-eline-222	Aug 08, 2011 09:28:29 AM	-
9	Disable	In Service	344	Aligned	-	Aug 08, 2011 09:28:17 AM	-
10	Disable	In Service	437	Aligned	-	Aug 08, 2011 09:28:30 AM	-
11	Disable	In Service	444	Aligned	ddd	Aug 08, 2011 09:28:17 AM	-
12	Disable	In Service	478	Aligned	sdf	Aug 08, 2011 09:28:17 AM	-
13	Disable	In Service	491	Aligned	test_Client_Ticket	Aug 08, 2011 09:28:23 AM	-
14	Disable	In Service	543	Aligned	wsedaters	Aug 08, 2011 09:28:17 AM	-
15	Disable	In Service	551	Aligned	551	Aug 08, 2011 09:28:30 AM	-
16	Disable	In Service	553	Aligned	553	Aug 08, 2011 09:28:30 AM	-
17	-	In Service	555	Pending	primo-58-53	Aug 08, 2011 09:28:17 AM	-
18	-	In Service	556	Pending	secondo-58-53	Aug 08, 2011 09:28:17 AM	-
19	-	In Service	558	Pending	Mid Sorint Review22...	Aug 08, 2011 09:28:17 AM	-

Total: 54

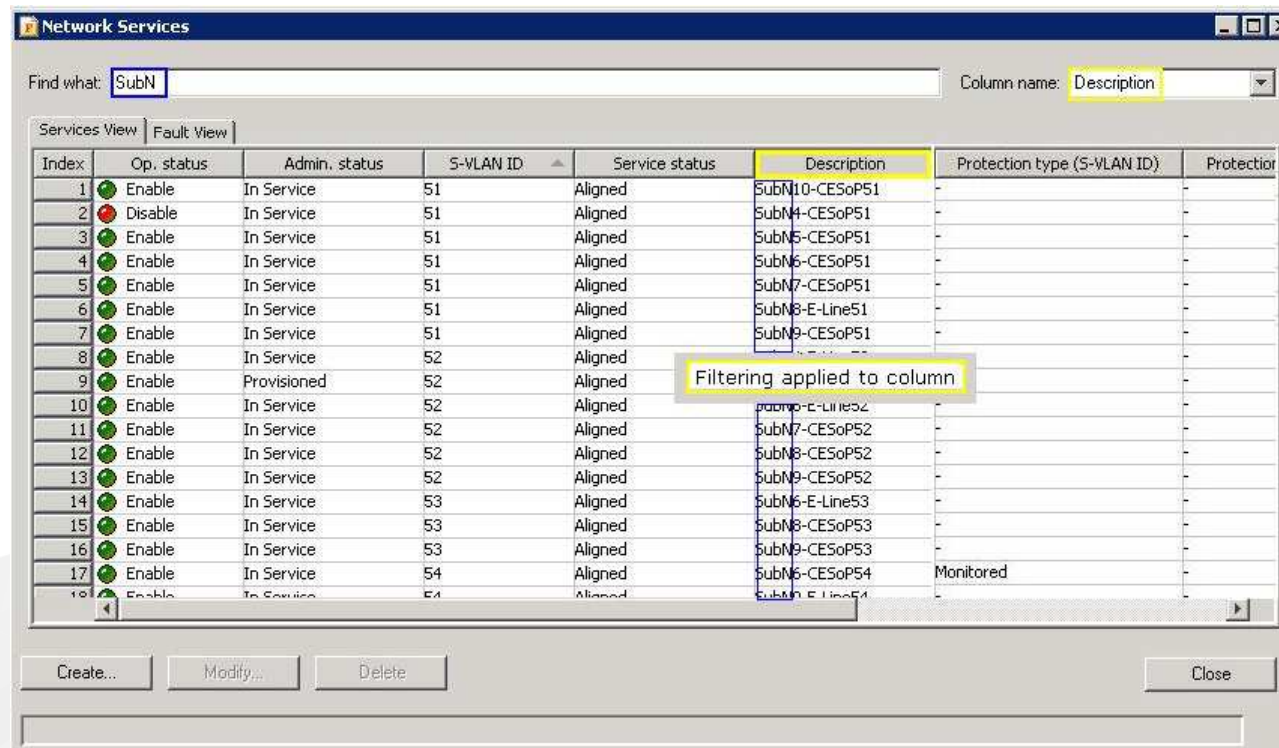
Create... Modify... Delete Close

Validated links[26/27]

PathManager for Packet (III)

Search and filtering capabilities

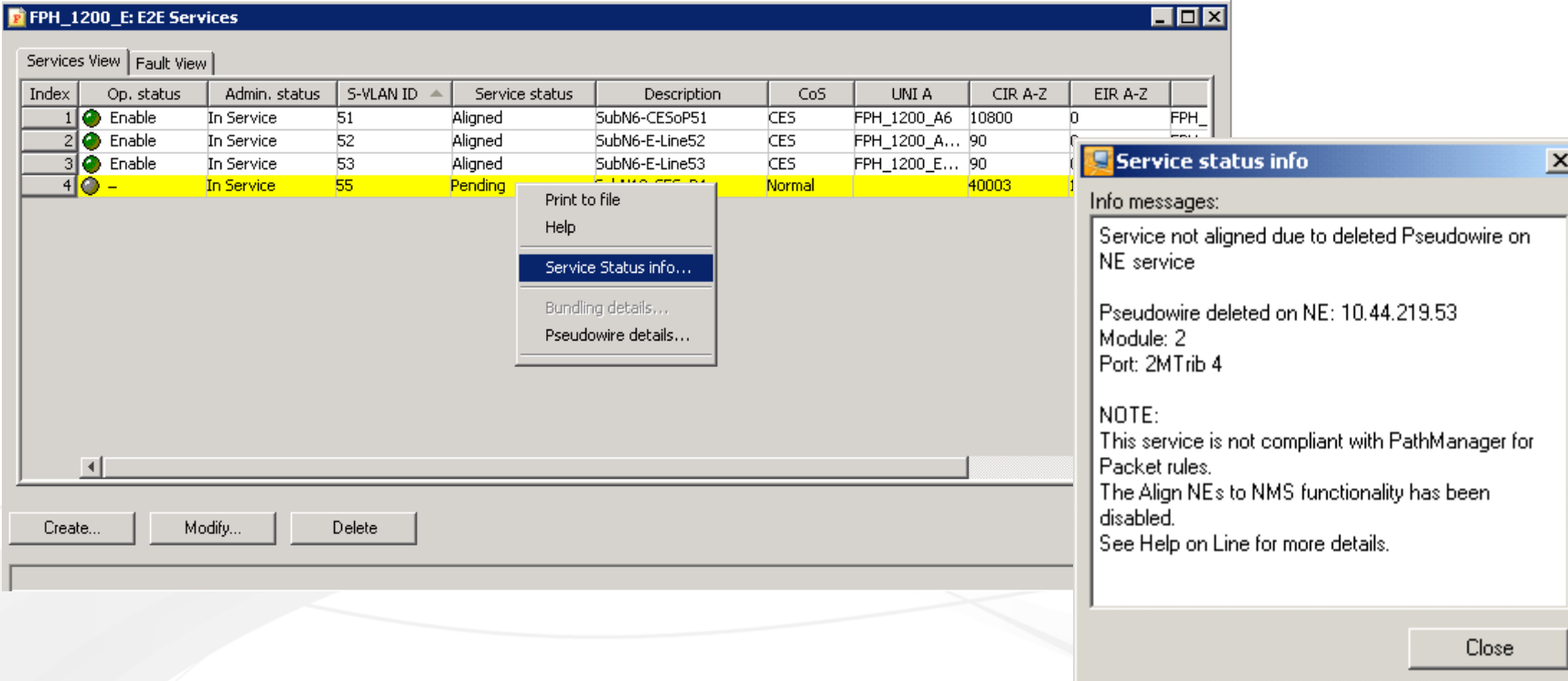
- Network service list can be easily filtered, ordered and searched by content in each column: services are filtered while user is typing search key.
- After first filtering, it's possible to order all the columns to refine search.



PathManager for Packet (IV)

Information about service status

- PathManager for Packet provides service configuration status information, showing to operator details about reason of partial or wrong E2E configuration



The screenshot shows the 'FPH_1200_E: E2E Services' window with a table of services. A context menu is open over the fourth row, and a 'Service status info' dialog box is displayed on the right.

Index	Op. status	Admin. status	S-VLAN ID	Service status	Description	CoS	UNI A	CIR A-Z	EIR A-Z
1	Enable	In Service	51	Aligned	SubN6-CESoP51	CES	FPH_1200_A6	10800	0
2	Enable	In Service	52	Aligned	SubN6-E-Line52	CES	FPH_1200_A...	90	
3	Enable	In Service	53	Aligned	SubN6-E-Line53	CES	FPH_1200_E...	90	
4	—	In Service	55	Pending	SubN6-E-Line54	Normal	FPH_1200_E...	40003	

Service status info

Info messages:

Service not aligned due to deleted Pseudowire on NE service

Pseudowire deleted on NE: 10.44.219.53

Module: 2

Port: 2MTrib 4

NOTE:

This service is not compliant with PathManager for Packet rules.

The Align NEs to NMS functionality has been disabled.

See Help on Line for more details.

Close

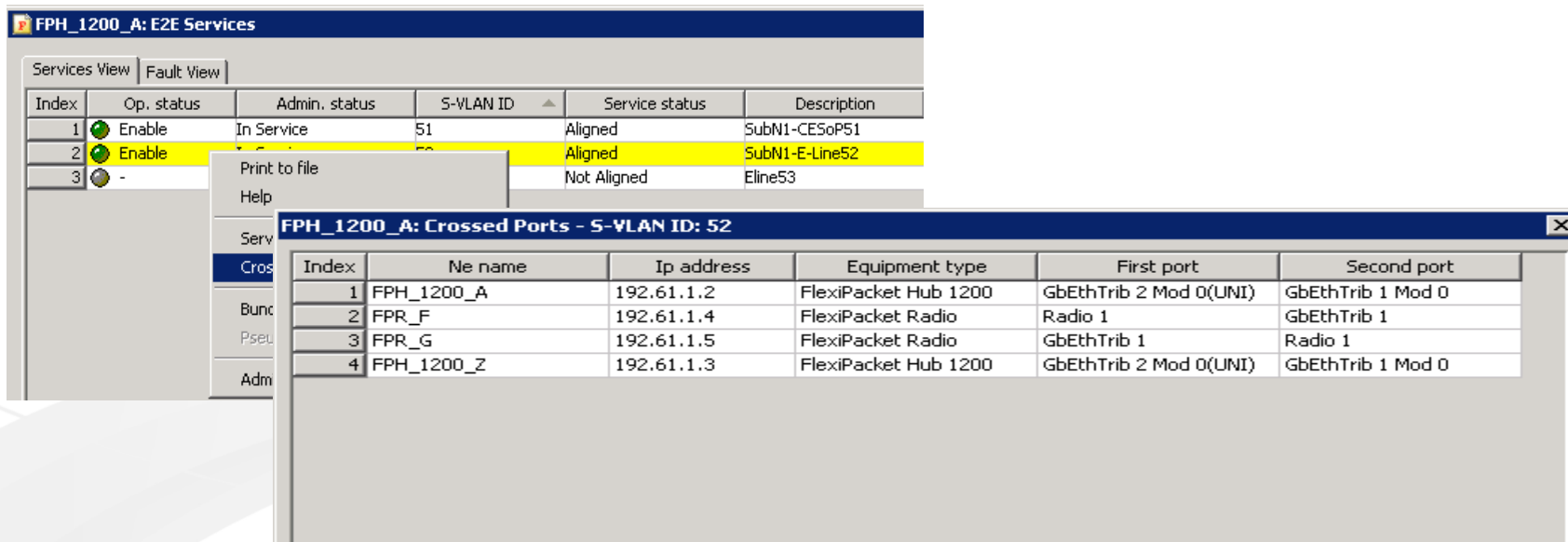
PathManager for Packet (V)

Service path details

PathManager for Packet display every network element name and ports involved in a service.

For each Network element are available the following data:

- Network element name
- IP address
- Equipment type
- First port (A-end), Second port (Z-end)



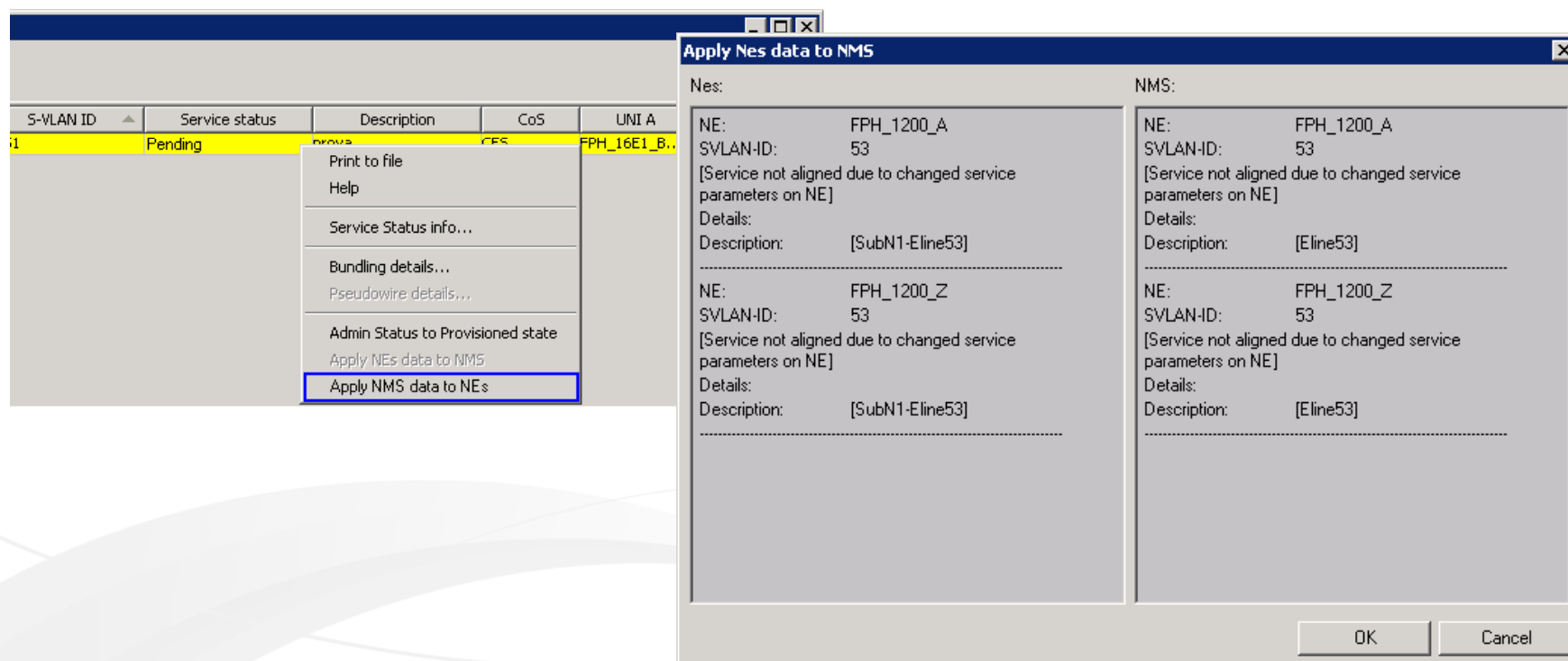
The screenshot displays the 'FPH_1200_A: E2E Services' window with the 'Services View' tab selected. It shows a table of services with columns: Index, Op. status, Admin. status, S-VLAN ID, Service status, and Description. Service 2, 'SubN1-E-Line52', is highlighted in yellow. A context menu is open over this service, showing options like 'Print to file', 'Help', 'Serv', 'Cros', 'Bunc', 'Pseu', and 'Adm'. The 'Cros' option is selected, opening a sub-window titled 'FPH_1200_A: Crossed Ports - S-VLAN ID: 52'. This sub-window contains a table with the following data:

Index	Ne name	Ip address	Equipment type	First port	Second port
1	FPH_1200_A	192.61.1.2	FlexiPacket Hub 1200	GbEthTrib 2 Mod 0(UNI)	GbEthTrib 1 Mod 0
2	FPR_F	192.61.1.4	FlexiPacket Radio	Radio 1	GbEthTrib 1
3	FPR_G	192.61.1.5	FlexiPacket Radio	GbEthTrib 1	Radio 1
4	FPH_1200_Z	192.61.1.3	FlexiPacket Hub 1200	GbEthTrib 2 Mod 0(UNI)	GbEthTrib 1 Mod 0

PathManager for Packet (VI)

Service alignment between database and network

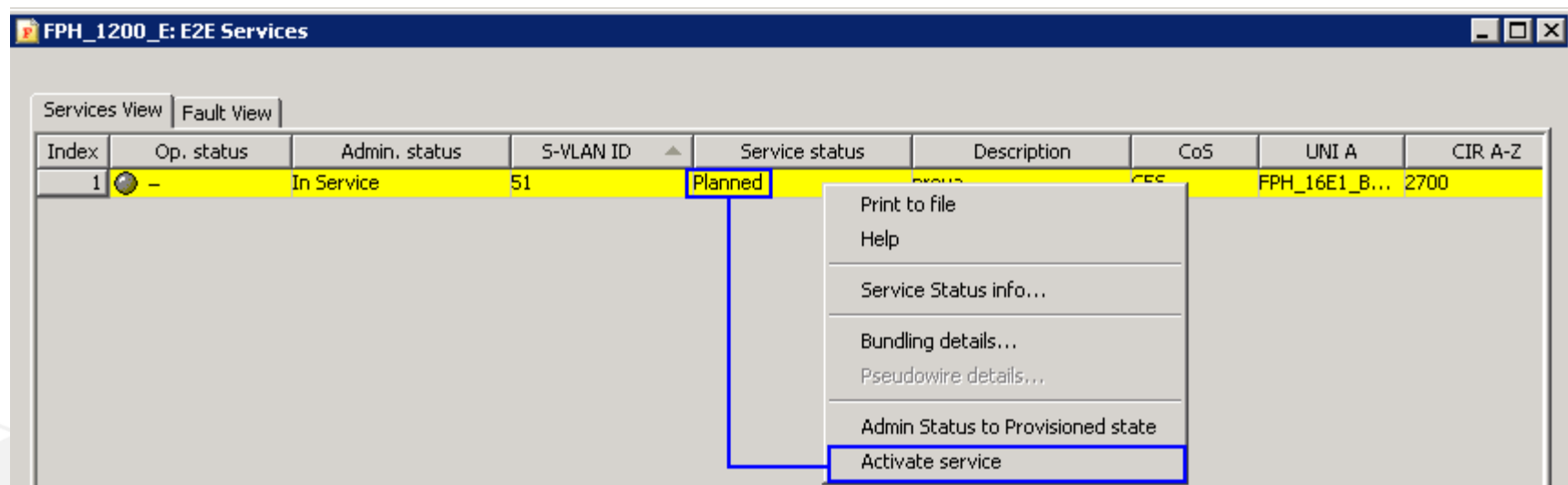
- PathManager for Packet stores into database E2E services configuration.
- In case of accidental modification of single NE, impacting E2E service traffic, operator can apply database stored configuration to network, re-establishing correctness of service



PathManager for Packet (VII)

Service provisioning in planned state

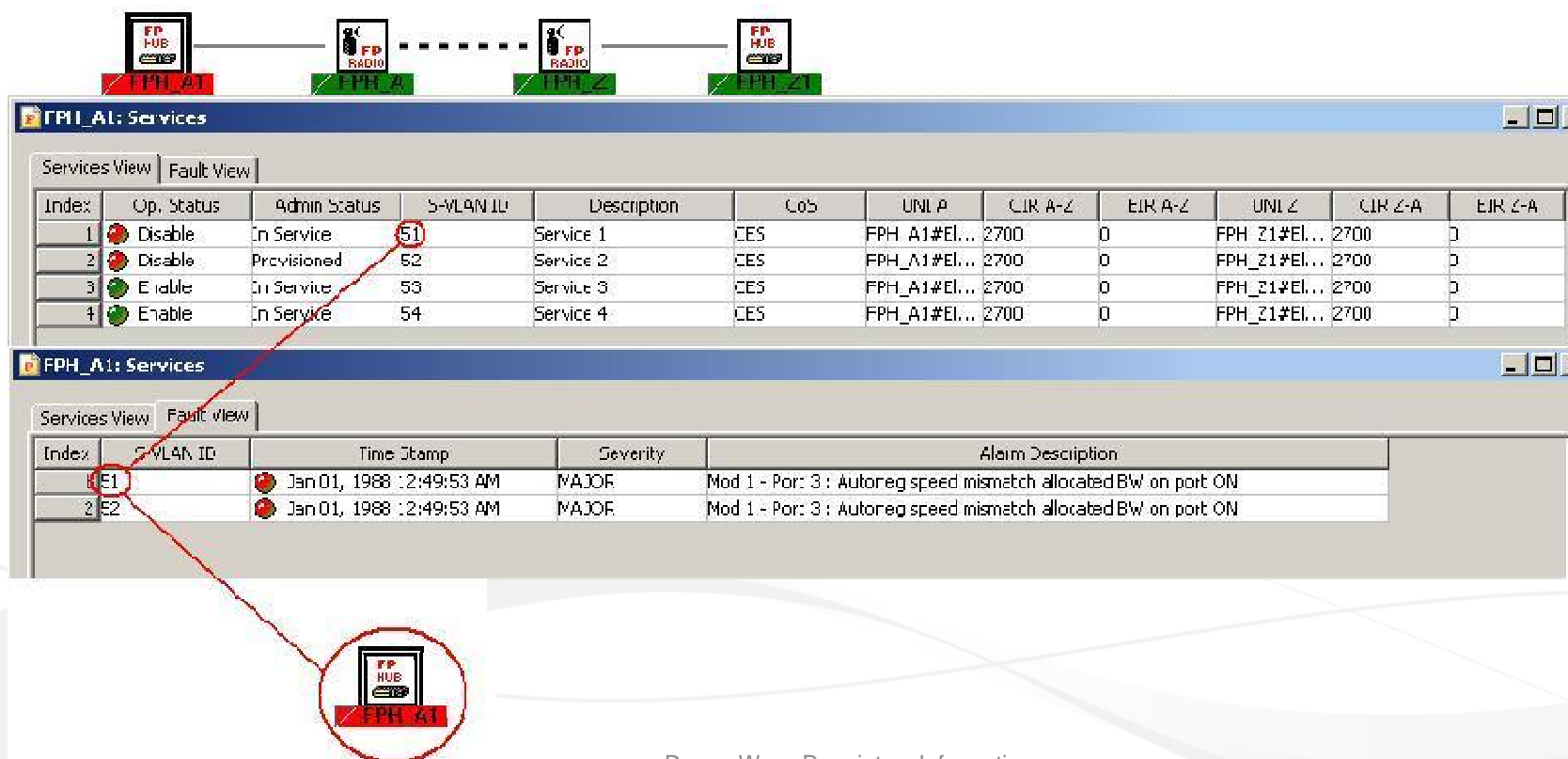
- Operator can create E2E service configuration at NMS level only, activating the service in second stage.
- PathManager for Packet stores into database the planned service configuration and it shows the service with specific status: planned



PathManager – Status of Monitored Services

Severity status of service:

- Root cause identification of service fault
- Highest severity and timestamp of the fault



FPH_A1: Services

Services View | Fault View

Index	Op. Status	Admin Status	S-VLAN ID	Description	CoS	UNI A	CIR A-Z	EIR A-Z	UNI Z	CIR Z-A	EIR Z-A
1	Disable	In Service	51	Service 1	CES	FPH_A1#EL...	2700	0	FPH_Z1#EL...	2700	0
2	Disable	Provisioned	52	Service 2	CES	FPH_A1#EL...	2700	0	FPH_Z1#EL...	2700	0
3	Enable	In Service	53	Service 3	CES	FPH_A1#EL...	2700	0	FPH_Z1#EL...	2700	0
4	Enable	In Service	54	Service 4	CES	FPH_A1#EL...	2700	0	FPH_Z1#EL...	2700	0

FPH_A1: Services

Services View | Fault View

Index	S-VLAN ID	Time Stamp	Severity	Alarm Description
1	51	Jan 01, 1988 :2:49:53 AM	MAJOR	Mod 1 - Port 3 : Autoreg speed mismatch allocated BW on port ON
2	52	Jan 01, 1988 :2:49:53 AM	MAJOR	Mod 1 - Port 3 : Autoreg speed mismatch allocated BW on port ON

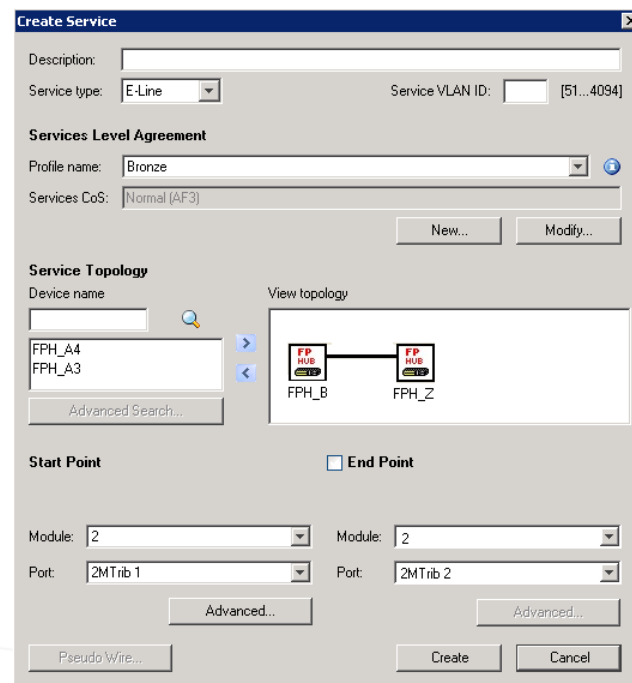
FPH HUB
FPH_A1

PathManager – E2E Provisioning Capability (I)

E2E Service provisioning feature

PM4P provides an easy procedure to create new Ethernet services over Harmony :

- Easy and simplified interface to create service
- E-LINE and CESoP provisioned in same way
- Guided path selection through sites connected in NetBuilder
- No need to open each node



Create Service

Description:

Service type: **E-Line** Service VLAN ID:

Services Level Agreement

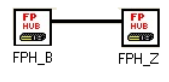
Profile name: **Bronze**

Services CoS: **Normal (AF3)**

Service Topology

Device name:

View topology



Start Point ☐ **End Point**

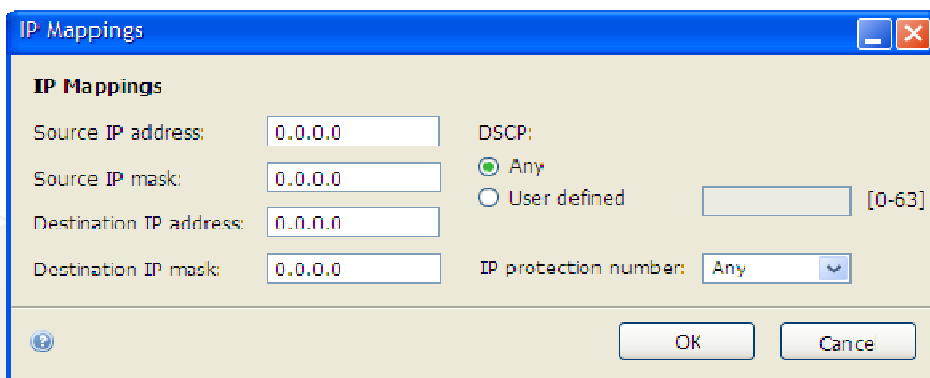
Module: **2** Module: **2**
Port: **2MTrib 1** Port: **2MTrib 2**

PathManager – E2E Provisioning Capability (II)

E2E Service provisioning feature

It provides all mappings criteria available in pseudo-wires services created in the Harmony network:

- Ethernet packets filtered and managed by:
- VLAN-ID (tagged, not-tagged, specific tag)
- Ethernet type (IP, ARP, custom Ethertype)
- IP address mapping
- IP payload protocol mapping (TCP, UDP, ICMP, IGMP)
- Differentiated Services Code Point (DSCP)



IP Mappings

Source IP address: 0.0.0.0

Source IP mask: 0.0.0.0

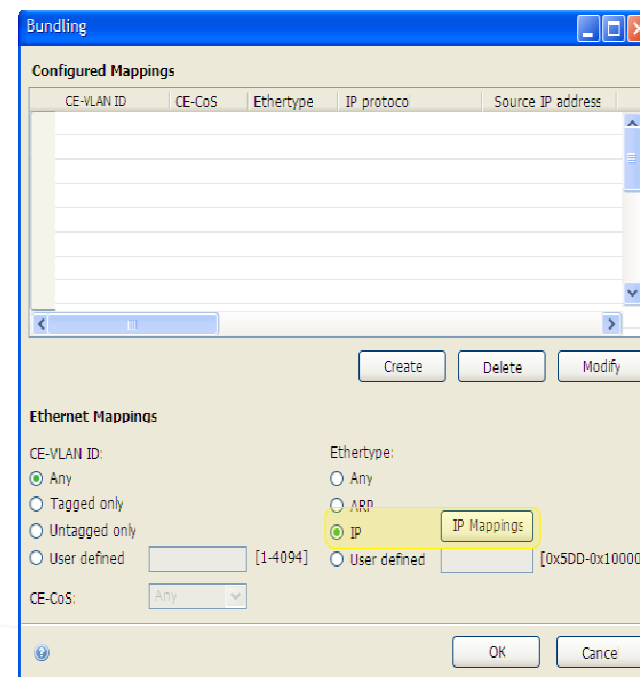
Destination IP address: 0.0.0.0

Destination IP mask: 0.0.0.0

DSCP: ☒ Any ☐ User defined [0-63]

IP protection number: Any

OK Cancel



Bundling

Configured Mappings

CE-VLAN ID	CE-CoS	Ethertype	IP protocol	Source IP address

Create Delete Modify

Ethernet Mappings

CE-VLAN ID: ☒ Any ☐ Tagged only ☐ Untagged only ☐ User defined [1-4094]

Ethertype: ☐ Any ☒ ARP ☒ IP ☐ User defined [0x5DD-0x10000]

CE-CoS: Any

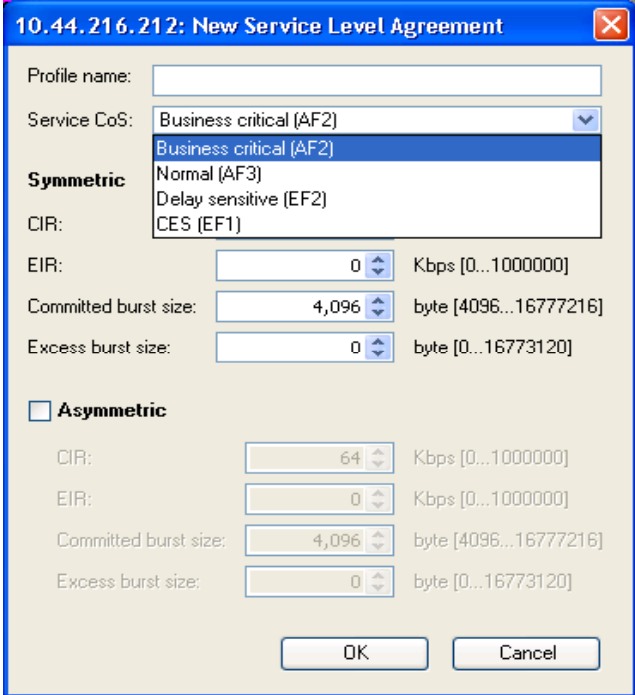
OK Cancel

PathManager – E2E Provisioning Capability (III)

E2E Service provisioning feature

It provides profiles management:

- Network priority (Harmony Radio scheduler **QoS/CoS**)
- Bandwidth parameters for each service
- Committed Information Rate (**CIR**)
- Committed Burst Size (**CBS**)
- Excess Information Rate (**EIR**)
- Excess Burst Size (**EBS**)



10.44.216.212: New Service Level Agreement

Profile name:

Service CoS:

- Business critical (AF2)
- Normal (AF3)
- Delay sensitive (EF2)
- CES (EF1)

Symmetric

CIR: Kbps [0...1000000]

EIR: Kbps [0...1000000]

Committed burst size: byte [4096...16777216]

Excess burst size: byte [0...16773120]

☐ **Asymmetric**

CIR: Kbps [0...1000000]

EIR: Kbps [0...1000000]

Committed burst size: byte [4096...16777216]

Excess burst size: byte [0...16773120]

PathManager – Network Scenarios (I)

Network Topologies

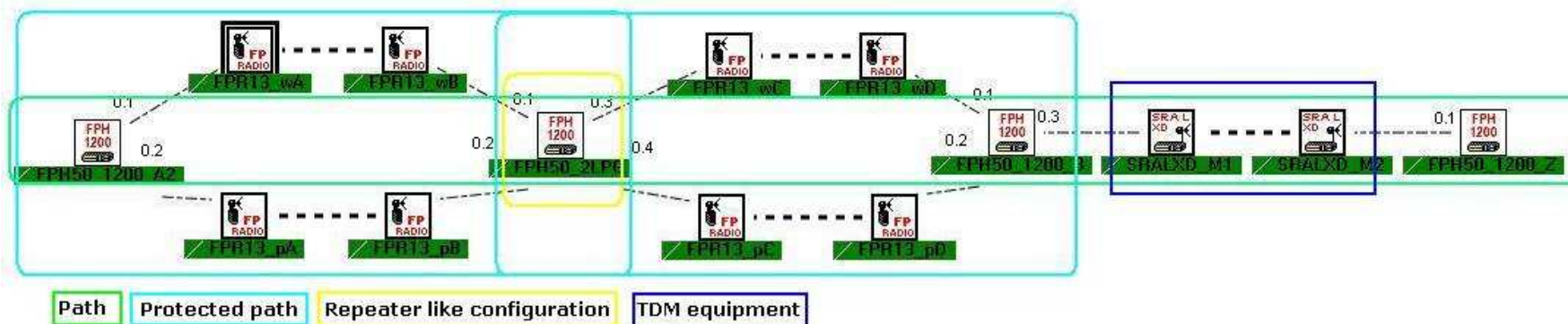
The following cases and relevant combinations are managed:

- Service End Points on Harmony Hub 800 and Harmony FirstMile 200
- 1+0 microwave links through Harmony Radio
- 1+1 FD, 1+1 HF, 1+1 Hot Stand-by, 2+0 XPIC microwave links through Harmony Radio
- Chain / linear topology
- Tree / Y topology
- Ring topology

PathManager – Network Scenarios (II)

Network Topology

Mixed FlexiPacket Family and TDM equipment Topology with a FPHub configured as a Repeater (2 LPG connected NNI to NNI)



The diagram illustrates a network topology with two main paths, Path 1 (red) and Path 2 (green), connecting various nodes. The nodes are categorized into FPH 1200 (green boxes) and FPH RADIO (black boxes with antenna icons). The connections are labeled with numerical values (0.1, 0.2, 0.3).

Legend:

- Tree topology (Black box)
- Protected path (Red box for Path 1, Green box for Path 2)

Nodes and Connections:

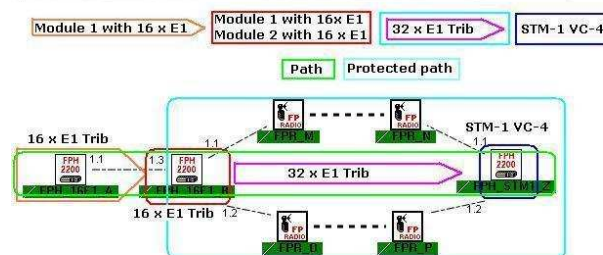
- Path 1 (Red):**
 - Starts at FPH 1200 A6.
 - Connects to FPH RADIO B6 (0.1) and FPH RADIO C6 (0.2).
 - Connects to FPH 1200 C6 (0.3) and FPH 1200 D6 (0.1).
 - Connects to FPH 1200 E (0.2).
 - Connects to FPH RADIO E3 (0.1) and FPH RADIO F3 (0.1).
 - Ends at FPH 1200 Z (0.1).
- Path 2 (Green):**
 - Starts at FPH 1200 A5.
 - Connects to FPH RADIO B8 (0.1) and FPH RADIO C8 (0.2).
 - Connects to FPH 1200 C5 (0.3) and FPH 1200 D5 (0.1).
 - Connects to FPH 1200 E (0.1).
 - Connects to FPH RADIO E3 (0.1) and FPH RADIO F3 (0.1).
 - Ends at FPH 1200 Z (0.1).



PathManager – Network Scenarios (IV)

Network Topology

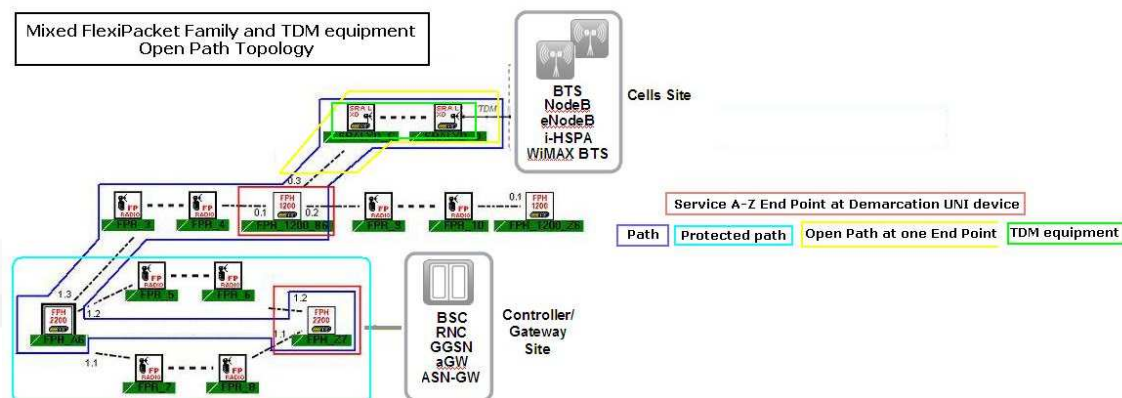
Topology for augmentation of E1 transport capacity



Mixed FlexiPacket Family and TDM equipment Topology 1+0



Mixed FlexiPacket Family and TDM equipment Open Path Topology

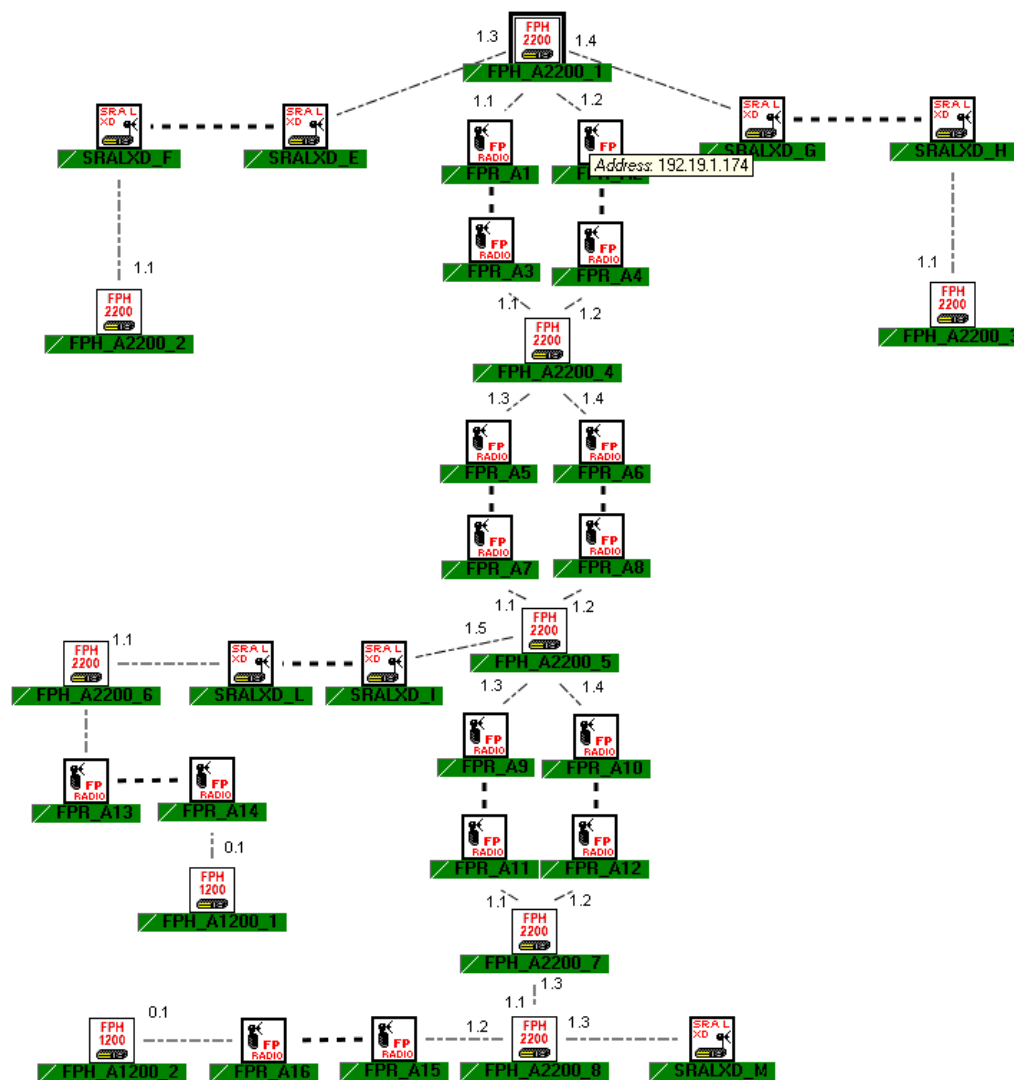


PathManager – Network Scenarios (V)

Network Topology

Star configurations

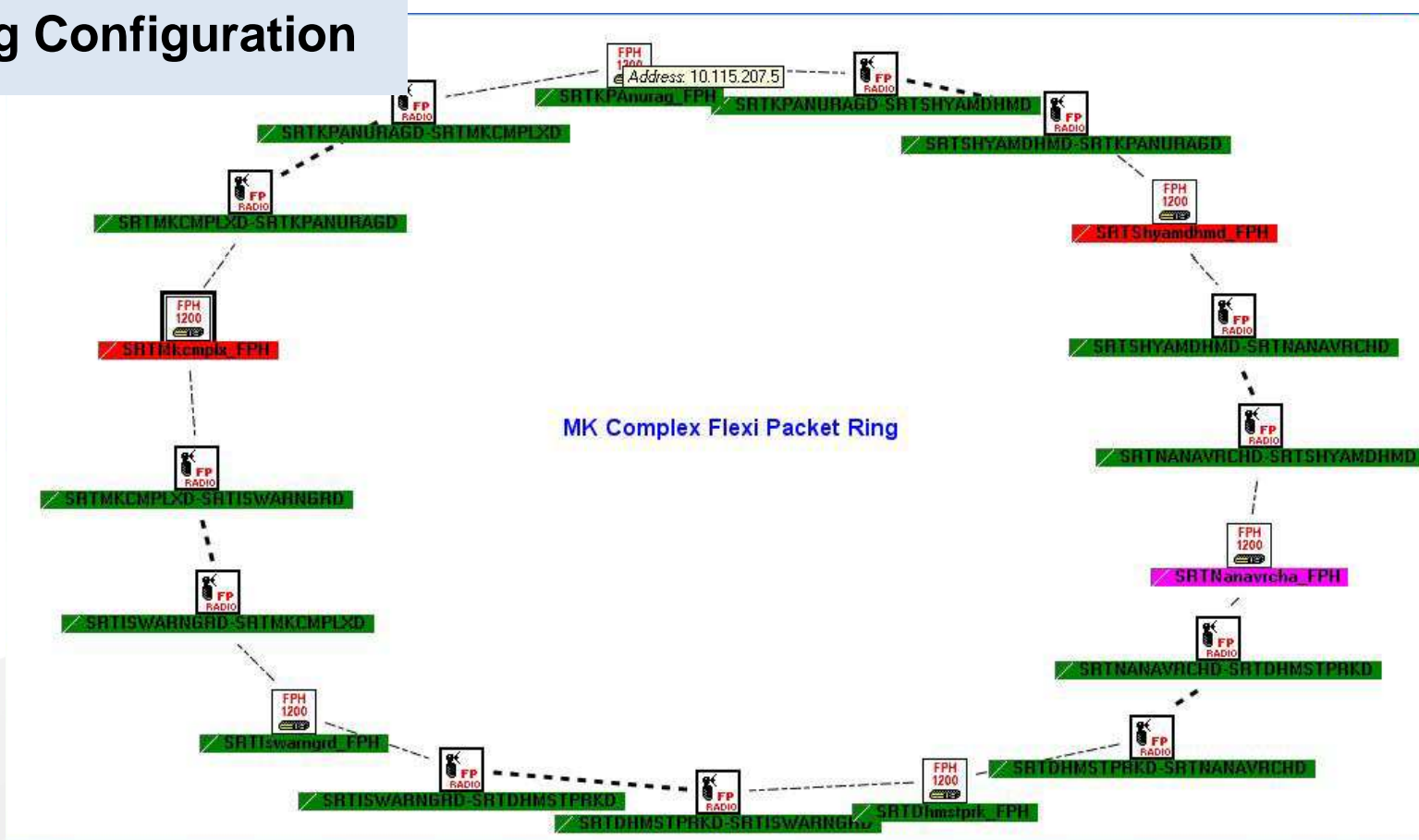
- $N \times (1+0) + M \times (1+1)$



PathManager – Network Scenarios (VI)

Network Topology

Ring Configuration



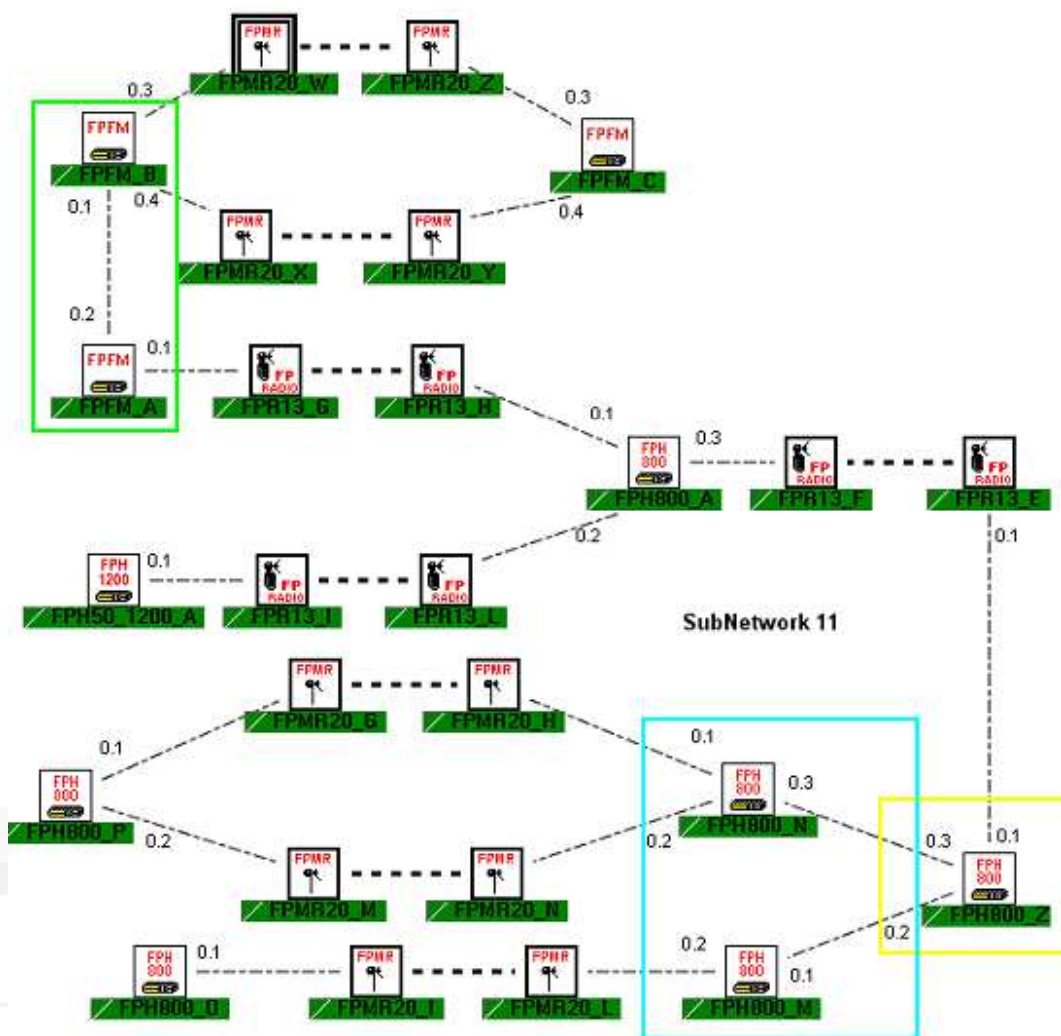
PathManager – Network Scenarios (VII)

Network Topology

Harmony Hub 800

Harmony FirstMile 200

Interconnected via
Ethernet interface



Product highlights

Software architecture

Management functionalities overview (FCAPS)

E2E network management

Northbound interfaces and integrations

Hardware architecture and capability

Upgrade strategy

Details about NE-specific management capability

Summary

SNMP Northbound Interface

Northbound interface for fault management

Real time interface

SNMP interface based on SNMP V2c

Alarm format compliant to X.733

Alarm filtering configurable:

- Filtering per trap family
- Filtering per alarm description

Alarm acknowledgment:

- Acknowledgment from upper layer manager

3rd party OSS

SNMP Agent

SNMP (FM)

OSS/J XML Data Exporter Interface

Massive batch Data Exporter interface for:

- Network resources inventory data
- Performance measurements data

Data export in XML format

XML file format compliant to 3GPP standard:

- Performance data compliant to TS32.401 V6.2.0 standard
- Inventory data compliant to TS32.625 V6.2.0 standard

Data transfer over HTTP and FTP

3rd party OSS

OSS/J XML DE

OSS/J (PM, IM)

TMF 814 CORBA Agent (TCOA)

Compliance to TMF (Telecommunication Management Forum) standardization

- CORBA Agent based on TMF 814 v2.1
- Network resources information model based on TMF 608 v2.1
- interface management based on TMF 513

Management functionality supported (availability depending on equipment type)

- Fault notification forwarding
- Network inventory data export
- Performance data export

3rd party OSS

TCOA

**CORBA
(FM, IM, PM, CM)**

Product highlights

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Summary

Hardware Configurations

DragonView is available/planned in the following configurations.

Entry Notebook

- Managed NE's: up to 100
- Client and server in the same notebook
- No additional software modules

Entry

- Managed NE's: up to 200
- Client and server applications in the same PC
- No additional software modules

Single Server

- Managed NE's: up to 3.200 (weighted), up to 1.250 (real, in rel. 10.5), up to 2.500 (real, beyond rel. 10.5)
- One server and Up to 20 clients
- Disk mirroring and Warm Stand-by

Multi Server (planned in release 11.0)

- Managed NE's: up to 22.250 (weighted), up to 7.500 (real, in rel. 11.0), up to 20.000 (real, beyond rel. 11.0)
- One master server and up to 10 slave servers
- Up to 20 clients
- Disk mirroring, Warm Stand-by (for Master Server) and Enhanced Warm Stand-by (for Slave Servers)

Entry Configuration

Entry Notebook



Entry Notebook

- Managed NE's: up to 100
- Client and Server in the same Notebook
- No additional software modules

Entry

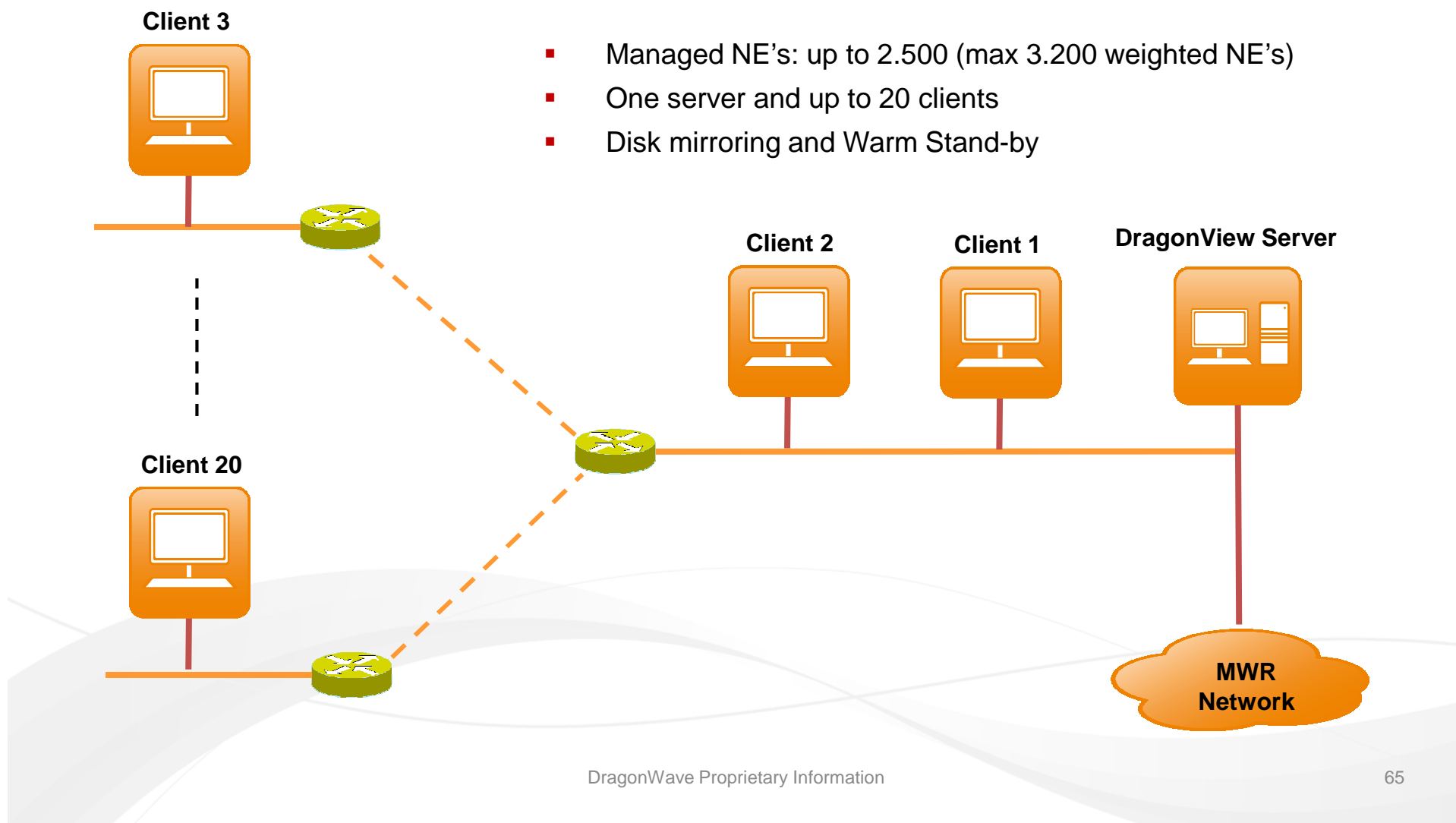


Entry

- Managed NE's: up to 200
- Client and Server in the same Notebook
- No additional software modules

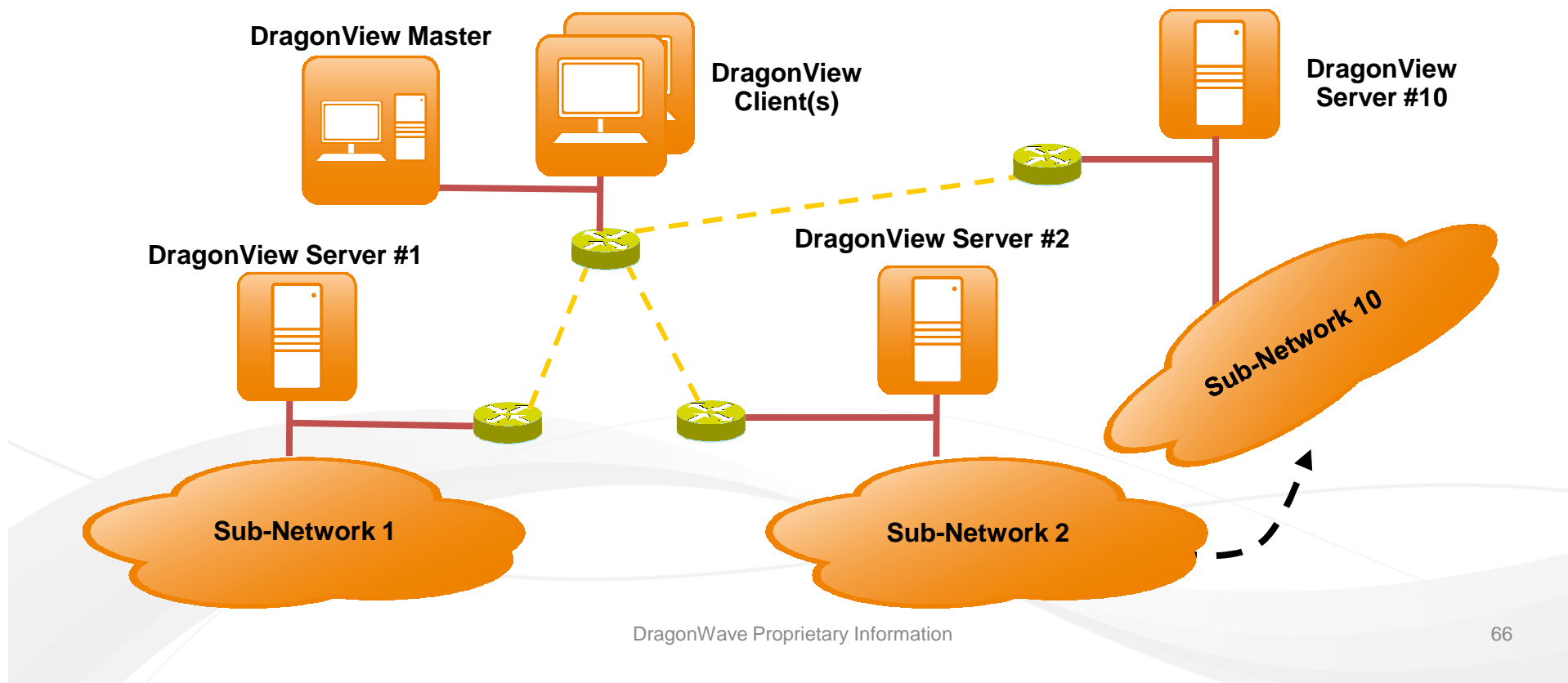
Single Server Configuration

- Managed NE's: up to 2.500 (max 3.200 weighted NE's)
- One server and up to 20 clients
- Disk mirroring and Warm Stand-by



Multi-Server Configuration (planned for future rels.)

- Managed NE's: up to 7.500 (min) to 20.000 (planned) real NE's
- One master server and up to 10 slave servers
- Up to 20 clients
- Disk mirroring, 1:1 Warm Stand-by and Enhanced N:M Stand-by HA deployments

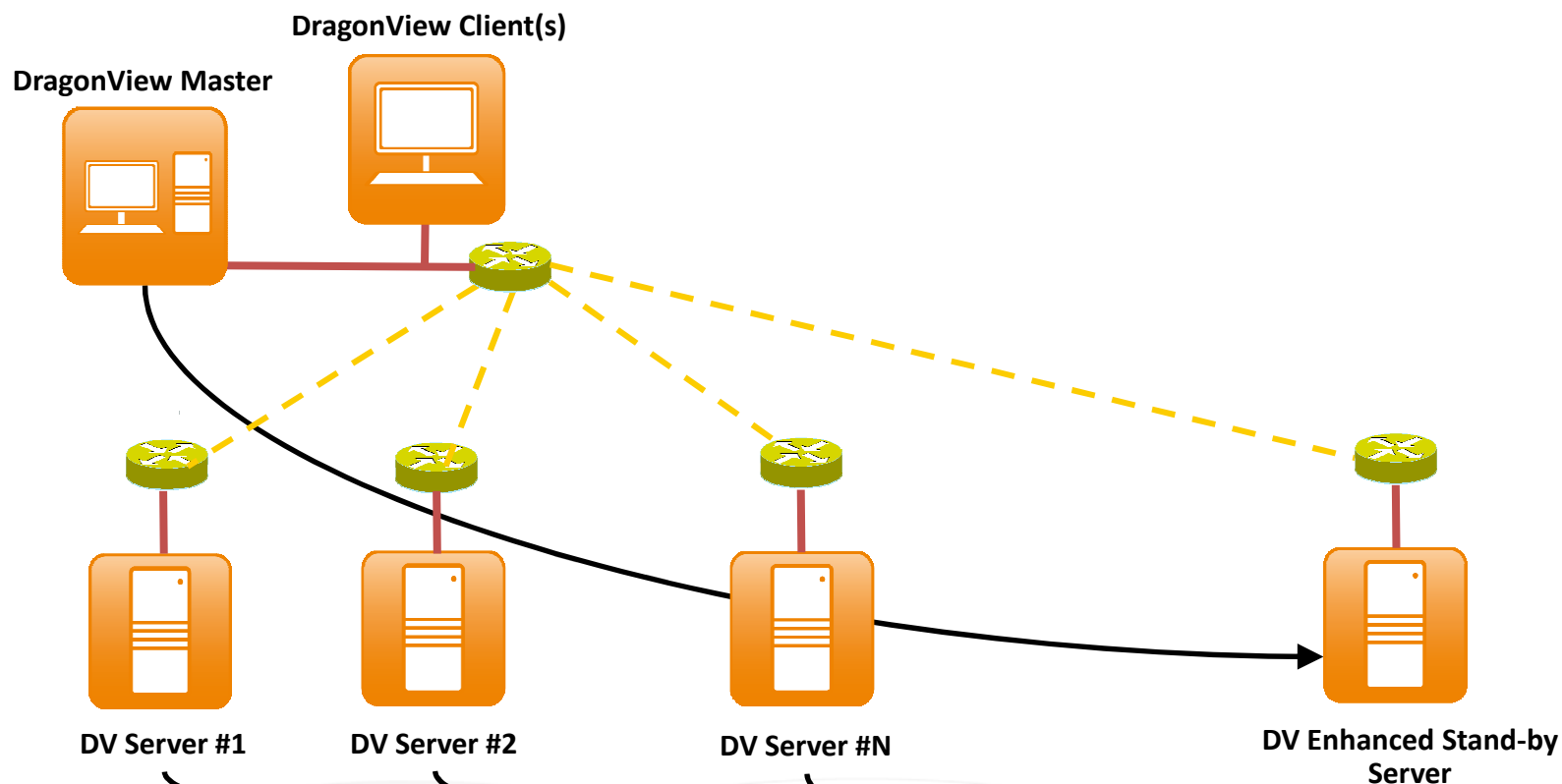


System Availability

Protection methods to increase the system availability

- Warm Stand-by protection for single server
- 1:1 Warm Stand-by protection for Single Server and Master Server
- N:M Enhanced Stand-by protection for multi server configuration
- Database back-up and restore
- Database auto archive
- Disk mirroring support
- UPS units

Enhanced N:M Stand-by configuration



Automatic alignment procedure applies to:

Maps, server configuration, user profiles, server database

DragonView: Data Base and Operating Systems

Support of

- MS Windows 7 32bit and 64bit for Client
- MS Windows Server 2008 R2 64bit for Server
- MS SQL Server 2008 SE
- Compatibility with Citrix multi-release and XenApp 5.0

DragonView: HW

Compatibility with standard x86 Servers

- FSC TX 300 (as an example)

Compatibility with HP HW Blade servers in rack

- HP ProLiant BL460c G6



Product highlights

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Upgrade Procedure (not applicable to release 10.5)

Table of data that is planned to be imported once upgrading DragonView

DragonView Database	NO
Network Maps	YES
User Data	YES

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Details about NE-specific management capability

DragonView 10.5

Horizon Compact+ (I)

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management (to be confirmed)
1.1	Detailed alarms displayed into NE alarm list and Network Alarm List	Configuration via dedicated DragonView Plug-in	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	Ethernet counters: <ul style="list-style-type: none"> • graphical representation • data stored into NetViewer Database Ethernet statistics <ul style="list-style-type: none"> • Data at 15' and 24h collected into NetViewer Database

Horizon Compact+ (II)

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
1.1	Fault management	Not supported	Not supported	Not supported

PathManager for Packet

Managed Releases	Service Fault Management	Service configuration Management
1.1	Not supported	Not supported

Horizon Quantum (I)

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management (to be confirmed)
1.2	Detailed alarms displayed into NE alarm list and Network Alarm List	Configuration via dedicated DragonView Plug-in	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	Ethernet counters: <ul style="list-style-type: none"> • graphical representation • data stored into NetViewer Database Ethernet statistics <ul style="list-style-type: none"> • Data at 15' and 24h collected into NetViewer Database

Horizon Quantum (II)

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
1.2	Fault management	Not supported	Not supported	Not supported

PathManager for Packet

Managed Releases	Service Fault Management	Service configuration Management
1.2	Not supported	Not supported

Horizon Compact (I)

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management (to be confirmed)
1.4.7	Detailed alarms displayed into NE alarm list and Network Alarm List	Configuration via dedicated DragonView Plug-in	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	Ethernet counters: <ul style="list-style-type: none"> • graphical representation • data stored into NetViewer Database Ethernet statistics <ul style="list-style-type: none"> • Data at 15' and 24h collected into NetViewer Database

Horizon Compact (II)

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
1.4.7	Fault management	Not supported	Not supported	Not supported

PathManager for Packet

Managed Releases	Service Fault Management	Service configuration Management
1.4.7	Not supported	Not supported

Harmony MultiRadio (I) – Planned for future releases

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management
2.1 SU2	Detailed alarms displayed into NE alarm list and Network Alarm List	Via equipment WebLCT remote launch	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	Performance data availability via Equipment WebLCT Ethernet counters: <ul style="list-style-type: none"> • graphical representation RX power: <ul style="list-style-type: none"> • Data recording into DragonView Database • RX power graphical representation

Harmony MultiRadio (II) – Planned for future releases

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
2.1 SU2	Fault management	<ul style="list-style-type: none"> • Fault management • HW/SW Inventory 	<ul style="list-style-type: none"> • HW/SW Inventory • Performance 	<ul style="list-style-type: none"> • Fault management • Performance • Topology data export

PathManager for Packet

Managed Releases	Service Fault Management	Service configuration Management
2.1 SU2	Alarm Correlation	Service pass through

Harmony Radio Hybrid (I) – Planned for future rels.

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management
H2.1 SU1	Detailed alarms displayed into NE alarm list and Network Alarm List	Via equipment WebLCT remote launch	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	Performance data availability via Equipment WebLCT Ethernet counters: <ul style="list-style-type: none"> • graphical representation RX power: <ul style="list-style-type: none"> • Data recording into DragonView Database • RX power graphical representation

Harmony Radio Hybrid (II) – Planned for future rels.

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
H2.1 SU1	Fault management	Not supported	Not supported	<ul style="list-style-type: none">• Fault management• Performance• Topology data export

Harmony First Mile 200 (I) – Planned for future rels.

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management
2.0	Detailed alarms displayed into NE alarm list and Network Alarm List	Via equipment WebLCT remote launch	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	Availability via Equipment WebLCT

Harmony First Mile 200 (II) – Planned for future rels.

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
2.0	Fault management	<ul style="list-style-type: none"> • Fault management • HW/SW Inventory 	<ul style="list-style-type: none"> • HW/SW Inventory • Performance 	<ul style="list-style-type: none"> • Fault management • Performance • Topology data export

PathManager for Packet

Managed Releases	Service Fault Management	Service configuration on Management
2.0	Alarm Correlation	<ul style="list-style-type: none"> • E-line • CESoP • SAToP

Harmony Hub 800 (I) – Planned for future rels.

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management
2.0 SU1	Detailed alarms displayed into NE alarm list and Network Alarm List	Via equipment WebLCT remote launch	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	Availability via Equipment WebLCT

Harmony Hub 800 (II) – Planned for future rels.

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
2.0 SU1	Fault management	<ul style="list-style-type: none"> • Fault management • HW/SW Inventory 	<ul style="list-style-type: none"> • HW/SW Inventory • Performance 	<ul style="list-style-type: none"> • Fault management • Performance • Topology data export

PathManager for Packet

Managed Releases	Service Fault Management	Service configuration Management
2.0 SU1	Alarm Correlation	<ul style="list-style-type: none"> • E-line • CESoP • SAToP

Harmony Hub 800H (I) – Planned for future rels.

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management
H1.0 SU1	Detailed alarms displayed into NE alarm list and Network Alarm List	Via equipment WebLCT remote launch	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	Availability via equipment WebLCT remote launch

Harmony Hub 800H (II) – Planned for future rels.

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
H1.0 SU1	Fault management	Not supported	Not supported	<ul style="list-style-type: none">• Fault management• Performance• Topology data export

Harmony Trunk (I) – Planned for future rels.

Basic FCAPS

Managed Releases	Fault Management	Configuration Management	Inventory Management	Performance Management
4.1 4.2 4.2.3 4.3 4.4	Detailed alarms displayed into NE alarm list and Network Alarm List	Configuration via dedicated DragonView Plug-in	HW and SW Data: <ul style="list-style-type: none"> • displayed via dedicated DragonView Plug-in • data stored in to inventory log • Data collected in to DragonView Database 	G.826 Statistics <ul style="list-style-type: none"> • Data at 15' and 24h collected into DragonView Database ETSI RSP1 <ul style="list-style-type: none"> • Data at 15' and 24h collected into DragonView Database

Harmony Trunk (II) – Planned for future rels.

Northbound Interfaces

Managed Releases	SNMP Agent	TCOA	OSS/J Data Exporter	NetAct-NV Connector
4.1 4.2 4.2.3 4.3 4.4	Fault management	Not supported	Not supported	<ul style="list-style-type: none">• Fault management• Performance• Topology data export