

# NOC Tools / TL1 Toolkit

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Utrecht



# Introduction

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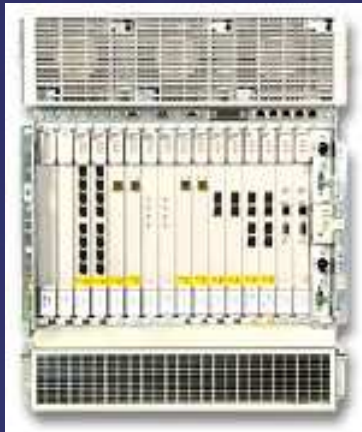
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- **Nortel Experience until now**
- **Preside Network monitoring**
- **Shortcomings**
- **TL1**
- **Example applications**

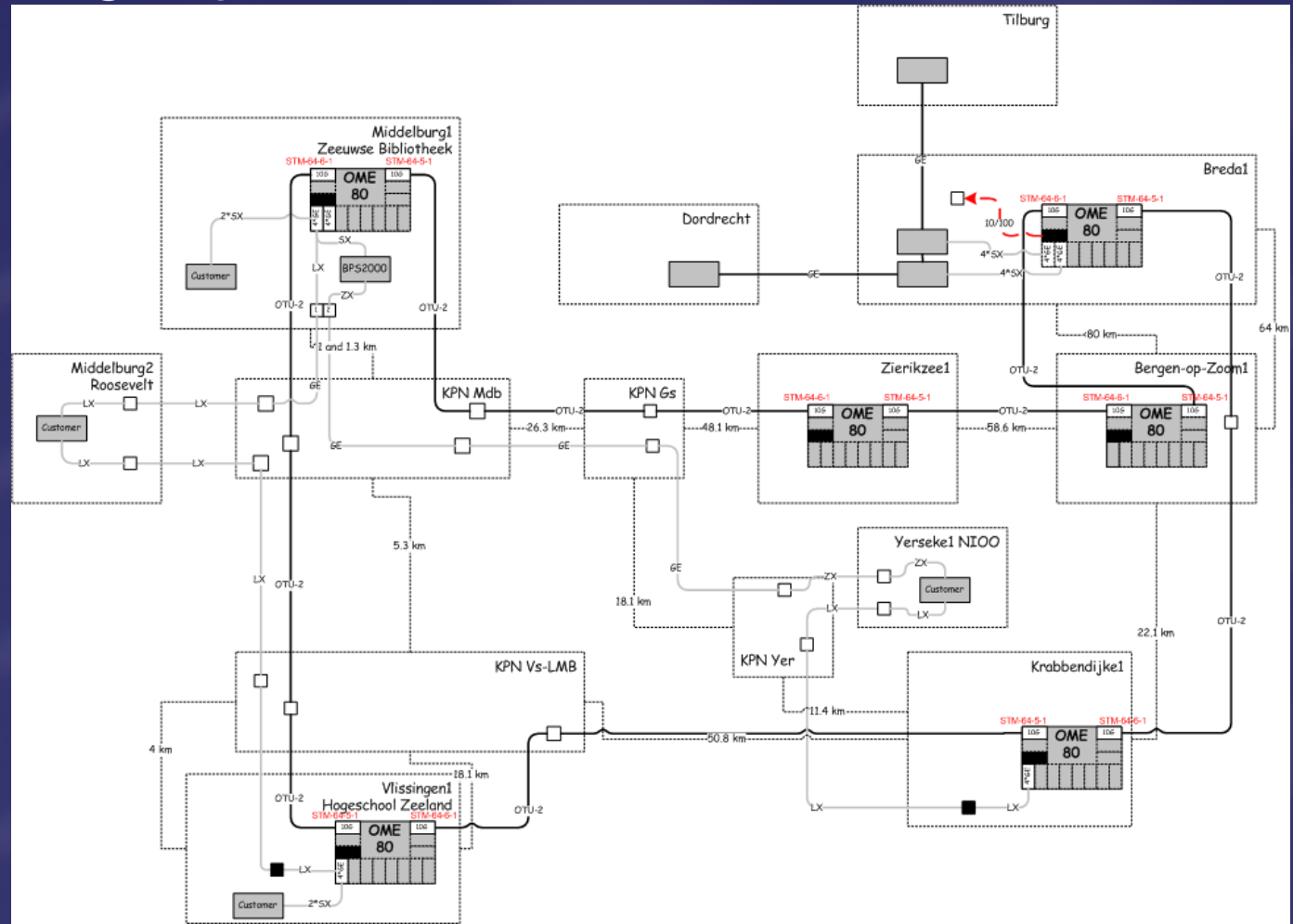


# Nortel Experience until now

## Zeeland ring September 2004



Nortel OME6500





# Nortel Experience until now

## Configuration with SiteManager

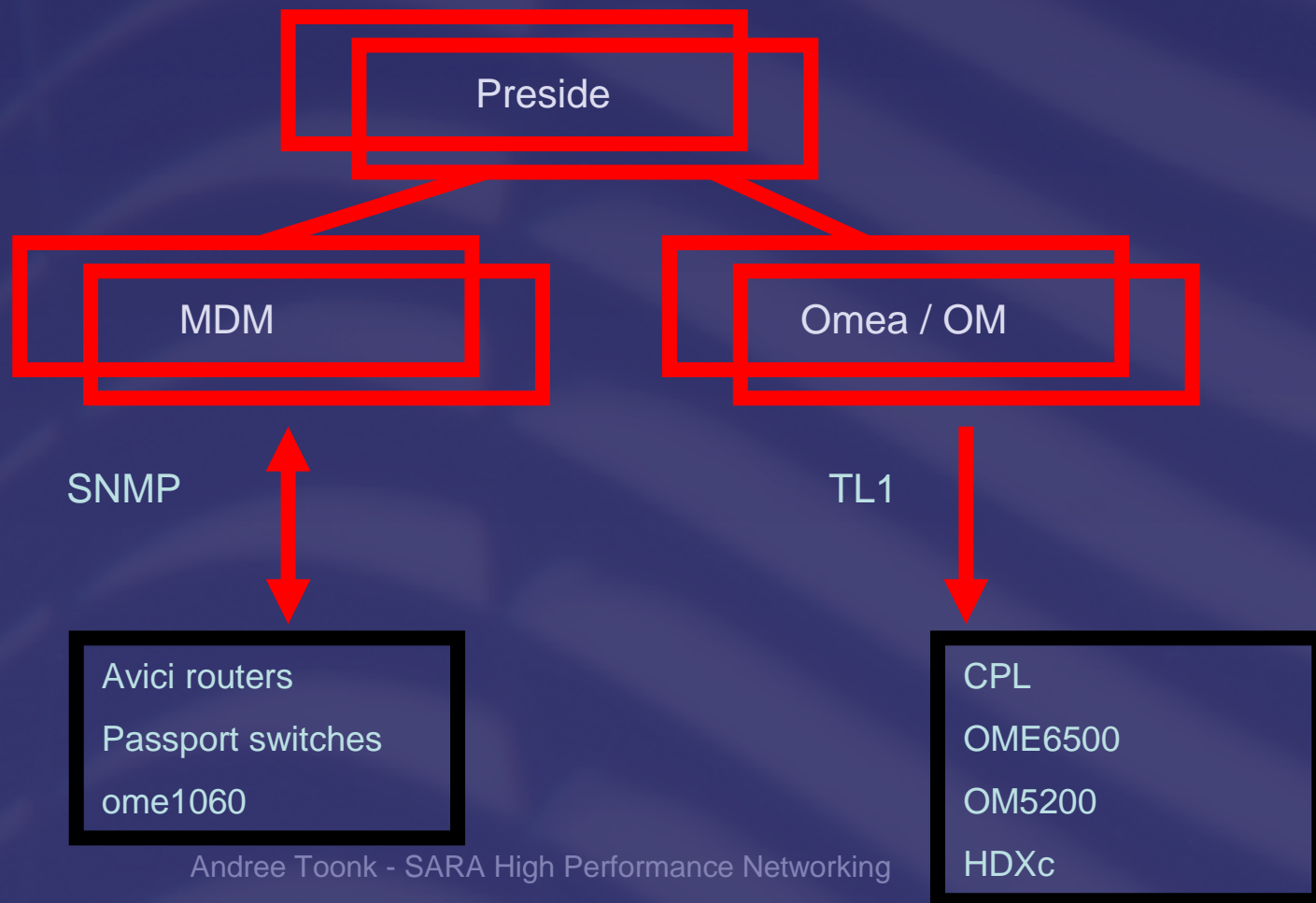
- Provisioning circuits
- Retrieving alarms
- Changing user accounts
- Etc...
- Only on per node basis

The screenshot shows the Site Manager interface with the 'Active Alarms' tab selected for node Lw001A\_OME01. The interface includes a navigation pane on the left, a main table of active alarms, and a status bar at the bottom.

Net.	Unit	C...	Severity	S...	Description	Date, Ti...	Loc...	Dire...	Cor
Lw001A_...	ETH-3-1	ETH	m	NSA	Link Down	2005-10-12, 1...	Near end	Receive	LOSS
Lw001A_...	ETH-3-3	ETH	m	NSA	Link Down	2005-10-12, 1...	Near end	Receive	LOSS
Lw001A_...	ETH-3-4	ETH	m	NSA	Loss Of Signal	2005-10-12, 1...	Near end	Receive	LOS
Lw001A_...	ETH-3-2	ETH	m	NSA	Link Down	2005-10-12, 1...	Near end	Receive	LOSS
Lw001A_...	ETH-3-3	ETH	m	NSA	Loss Of Signal	2005-10-12, 1...	Near end	Receive	LOS
Lw001A_...	ETH-3-2	ETH	m	NSA	Loss Of Signal	2005-10-12, 1...	Near end	Receive	LOS
Lw001A_...	ETH-3-4	ETH	m	NSA	Link Down	2005-10-12, 1...	Near end	Receive	LOSS
Lw001A_...	ETH-3-1	ETH	m	NSA	Loss Of Signal	2005-10-12, 1...	Near end	Receive	LOS
Lw001A_...	STM16-1-1	STM16	m	NSA	Loss Of Signal	2005-10-12, 1...	Near end	Receive	LOS
Lw001A_...	STM16-1-1	STM16	m	NSA	Line/MS DCC Link Failure	2005-10-12, 1...	Near end	Receive	DCC_
Lw001A_...	LAN-15	COM	m	NSA	LAN-15 Port Failure	2005-10-12, 1...	Near end	Not applica...	NET

# Preside Network monitoring

- Preside network management system
  - Relies heavily on MDM and OMEA



# Transaction Language 1 (TL1)

- set of ASCII-based instructions, or "messages"
- TL1 is the dominant management protocol for controlling telecommunications networks
- Not really human friendly
- Let's look at an example



# Human Friendly?

```
< ACT-USER:"Asd001A_OME4T":xxx:120253:;IP 120253
<
"Asd001A_OME4T" 05-10-13 12:21:00
M 120253 COMPLD
;
< RTRV-ALM-ALL:"Asd001A_OME4T":;ANDREE:;;IP ANDREE
<
"Asd001A_OME4T" 05-10-13 12:21:11
M ANDREE COMPLD
"LAN-1-15,COM:MN,NET,NSA,09-29,09-42-38,NEND,NA:\"LAN-15 Port
Failure\":0100000033-5003-0536,:YEAR=2005,MODE=NONE"
"OC192-1-12-1,OC192:MN,LOS,NSA,09-30,08-33-09,NEND,RCV:\"Loss Of
Signal\":0100001888-0008-0279,:YEAR=2005,MODE=SDH"
"L2SS-1-3,EQPT:MN,EQPT_MISMATCH,NSA,09-30,12-27-04,NEND,NA:\"Circuit
Pack Mismatch\":0100002318-0063-0036,:YEAR=2005,MODE=NONE"
;
< CANC-USER:"Asd001A_OME4T":xxx:1;IP 1
<
"Asd001A_OME4T" 05-10-13 12:22:00
M 1 COMPLD
;
<
```



# Shortcomings

- In the beginning there was no preside/omea
- Preside only shows active alarms
- Not a good possibility to add comment to a specific alarm
- Provides only performance monitoring and alarms.

We want to:

- Correlate alarms with possible solutions
- “Do things” with this data
- Scenario: add new user, check software level, execute specific commands..., in current situation we need to login to > 100 NE manually and check.

# TL1 framework

- September 2004 first scripts were written to retrieve alarms from the ome6500 in Zeeland
- Netherlight: Nortel HDXc and Cisco ONS15454
- May 2005 First subnetworks ready, no adequate monitoring
  
- Scripts were extended
- TL1 framework
  - ▶ Easy Parsable output
  - ▶ Easy to add new commands to a library

retr-all-alarms()

add-new-user()


Retr-power-level()

# TL1 framework

- First scripts: bash and perl
- Perl Net::TL1
- Perl Net::TL1::Alcatel (same author)
- Perl Net::TL1::Nortel
- Goal is to have one interface for all NE's

Circuits in SURFnet6 Page - Mozilla Firefox

http://achilles.sara.nl/hpn/circuits.php?hostname=NONE&circuitname=ZeBi+-Rt&active=yes



## SARA NOC - SN6 Optical circuits


HOST FILTER: ALL circuit FILTER: ZeBi - Rt

SHOW ONLY ACTIVE?  yes  no

host	circuit	bandwidth	begin	end	firstseen	lastseen	uptime (hours)
tdm01.middelburg1.surf.net	ZeBi - Rt STS3C	STS3C	1-11-1	1-1-3	2005-08-02 05:17:19	2005-10-13 12:11:48	1734.9080555556
tdm01.vlissingen1.surf.net	ZeBi - Rt STS3C	STS3C	1-11-1	1-4-1	2005-08-02 06:05:47	2005-10-13 12:10:03	1734.0711111111
TDM01.Krabbendijke1.surf.net	ZeBi - Rt STS3C	STS3C	1-11-1	1-4-1	2005-08-02 06:24:37	2005-10-13 12:14:22	1733.8291666667
tdm01.breda1.surf.net	ZeBi - Rt STS3C	STS3C	1-4-1	1-1-3	2005-08-02 06:53:56	2005-10-13 12:10:54	1733.2827777778

**SURFnet6 circuit Page (beta-version 20050418)** Copyright ©2005 Questions or remarks: [Andree Toonk](#)

Last updated on 13-Oct-2005 18:10



Done



# Example applications

alarm: Loss Of Signal

Probable cause

This alarm is raised when:

- a module with a VOA or OPTMON facility is not detecting an input signal
- optical power transmitted (OPT) or optical power received (OPR) have fallen below the provisioned threshold level

The condition:

- a disconnected
- a dirty opt
- a defective
- the transmi
- a provision
- a reflectiv

(542)

or Low Optica

pre-amplifier

Impact

major, sa (se

Requirements

To perform th

- must have a (UPC)
- must be log
- element,
- see Craft Use
- may require

edit

http://145.145.64.17 - Optical Network Alarm Page - Mozilla Firefox

NOC monitorings event-ID is: 6068

**Event description:**  
 Network Element ASD002A-CPL08 has an alarm: OSC Loss Of Signal on interface OSC-2-4-21  
 Alarm raised on Network Element at: 2005-08-10 08:06:36  
 Alarm first seen by NOC monitorings application at: 2005-08-10 13:47:02

Andree:  
 this is because of that the GMD of ASD001A-CPL07 is broke. This was original ASD001A-CPL07, so 7 and 6 are swapped. ASD001A-CPL07 is not really used now. ASD001A-CPL07 and ASD002A-CPL08 will interconnect ams1 and ams2 in the future.

We'll have to wait for a new GMD

ARS-S#018871

Optical Network Alarm Page - Mozilla Firefox

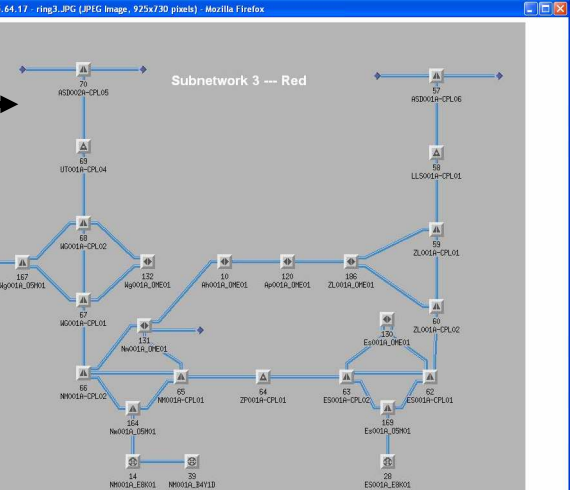
http://145.145.64.17/alarms.php?hostname=NONE&active=no&orderby=description&last\_orderby=description&ascDesc=asc

### SURFnet6 NOC Optical Network Alarm Page

HOST FILTER: ALL

SHOW ONLY ACTIVE?  no  Description

host	alarm	alarm-date	firstseen	last-seen	interface	active	severity	impact	comment	device Type	ring-id
Dt001A_OME01	device unreachable	2005-07-21 12:27:26	2005-07-21 12:27:26	2005-07-21 12:35:26	145.145.74.18	no	CR	SA	Yes	ome6500	ring1
Asd001A_0SM03	Loss of Signal	2005-06-27 13:28:24	2005-06-27 23:22:33	2005-06-28 10:35:17	1-1	no	CR	SA	Yes	om5200	ring3
SPL002A-CPLU1	Power Failure - B	2005-06-27 09:23:15	2005-06-27 09:31:07	2005-06-27 11:10:20	DOSC-1-4	no	MN	NSA	Yes	CPL	ring2
SPL002A-CPL01	Power Failure - B	2005-06-27 09:23:29	2005-07-18 09:31:08	2005-08-02 11:10:20	LIM-1-2	no	MN	NSA	Yes	CPL	ring2
SPL002A-CPL01	Power Failure - B	2005-06-27 09:23:30	2005-07-18 09:31:08	2005-08-02 11:10:20	LIM-1-1	no	MN	NSA	Yes	CPL	ring2
Dgl001A_OME01	Craft Load Missing	2005-07-13 17:38:23	2005-07-20 12:11:21	2005-07-22 18:18:17	SP-1-15	no	MN	NSA	Yes	ome6500	ring4
Asd001A_CPL06	DOC Invalid Photonic Domain	2005-06-27 10:15:15	2005-06-27 12:30:13	2005-06-27 13:00:13	DOC-2-4	no	MN	NSA	Yes	CPL	ring3
Ut001A_CPL04	Unable to Synchronize TOD	2005-06-27 09:20:07	2005-06-27 11:37:24	2005-06-27 11:37:44	DOSC-2-4	no	MJ	NSA	Yes	CPL	ring3
Zl001A_CPL01	Low Optical Return Loss	2005-06-16 23:16:48	2005-06-27 10:19:15	2005-06-27 11:25:37	AMP-1-2-8	no	MN	NSA	Yes	CPL	ring3
Asd001A_CPL06	Duplicate IP Address	2005-06-27 14:00:46	2005-06-27 16:15:13	2005-06-27 16:20:14	GMD-2-4	no	MN	NSA	Yes	CPL	ring3
Es001A_CPL01	Loss Of Signal	2005-06-22 19:08:41	2005-06-27 10:19:39	2005-06-29 18:41:02	VOA-1-4-3	no	MJ	SA	Yes	CPL	ring3
Asd001A_CPL06	DOC Auto-Action Failed	0000-00-00 00:00:00	2005-06-27 11:40:13	2005-08-03 21:42:17	DOC-2-4	no	MN	NSA	Yes	CPL	ring3
ASD002A-CPL08	OSC Loss Of Signal	2005-08-10 08:06:36	2005-08-10 13:47:02	2005-08-10 21:59:02	OSC-2-4-21	no	MJ	NSA	Yes	CPL	ring4
ASD002A-CPL08	Adjacency Far End Not Discovered	2005-08-10 08:08:45	2005-08-10 13:47:02	2005-08-10 21:59:03	ADJ-2-2-5	no	MN	NSA	Yes	CPL	ring4
ASD001A-CPL07	device unreachable	2005-08-10 13:50:11	2005-08-10 13:50:11	2005-08-11 21:59:25	145.145.69.253	no	CR	SA	Yes	CPL	ring4



That's all Folks!

