

Work Item C: NOC tools, interworking/interfaces issues, and automation

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TF-NOC Meeting

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- ✓ The aim of this first official TF-NOC meeting is to discuss and set up a detailed activity plan, including:
 - Prioritisation of topics
 - Goal and/or deliverable for each topic
 - Timeline and/or deadline for each topic

NOC tools, interworking/interfaces issues and automation



- ✓ A NOC uses a wide variety of tools to manage different types of information.
- ✓ The goal of this work item is to investigate what tools are used and how they have been integrated into the NOC environment, focusing on the research and education community.

This work item is divided into 7 topics (proposed priority):

1. Survey of tools (1)
 2. Ticketing systems (5)
 3. Knowledge management (6)
 4. Monitoring tools (2)
 5. Reporting and statistics tools (3)
 6. Performance management (4)
 7. Tool development (7)
- ✓ Each topic is divided into 2-4 subtopics. There are 19 subtopics, 9 of them related to the collection of information, 6 of them can be grouped.

Survey of tools (1)

Monitoring tools (2)

Reporting and statistics tools (3)

Performance management (4)

Ticketing systems (5)

Knowledge management (6)

Tool development (7)

OK?

1. Survey of tools (1)



- a) Collect information about which tools are used by the NOCs participating in TF-NOC. **The same survey can complement D.2.c. (Efficient communication/collaboration tools and practices -> Communication tools -> Collect information about which tools NOC use for external communication and how they are used.)**
- b) Make a comparison of the above tools and what NOC functions they can support. **May overlap/interact with A.1.b. (NOC taxonomy -> NOC functions -> Create a mapping between functions and different tools usually used to support each function.)**
- c) Create a taxonomy for tools including information relevant for NOCs (e.g. technology, environment, benefits and goal.)

1. Survey of tools (1)



- a) Collect information about which tools are used by the NOCs participating in TF-NOC. (1)
 - Survey (2nd TF-NOC meeting, Jan 2011).
 - Report and statistics with the survey results (3rd meeting, May 2011).
- b) Make a comparison of the above tools and what NOC functions they can support. (2)
 - Mapping between tools and functions (4th, Sep-2011).
- c) Create a taxonomy for tools including information relevant for NOCs (e.g. technology, environment, benefits and goal) (3)
 - Taxonomy for NOC tools (5th, Jan 2012).

4. Monitoring tools (2)

- a) Collect information about which monitoring tools are used by the community. **Simultaneously with C.1.a (NOC tools, interworking/interfaces issues, and automation -> Survey of tools -> Collect information about which tools are used by the NOCs participating in TF-NOC.)**
- b) Investigate how the monitoring tools are deployed and for what purpose (e.g. faultfinding, alarming, statistics) they are used in different NOCs.
- c) Discuss and collect information about how monitoring tools can and are used to help keep track of SLAs.

4. Monitoring tools (2)

- a) Collect information about which monitoring tools are used by the community. (1)
 - Report and statistics with the survey results (3rd meeting, May 2011).
- b) Investigate how the monitoring tools are deployed and for what purpose (e.g. faultfinding, alarming, statistics) they are used in different NOCs. (2)
 - Summary of the deployment of monitoring tools and their purpose (4th, Sep 2011).
- c) Discuss and collect information about how monitoring tools can and are used to help keep track of SLAs. (3)
 - Summary of how monitoring tools are used for SLA (5th, Jan 2012).

5. Reporting and statistics tools (3)



- a) Collect information about which reporting and statistics tools or systems are used by the community.
Simultaneously with C.1.a (NOC tools, interworking/interfaces issues, and automation -> Survey of tools -> Collect information about which tools are used by the NOCs participating in TF-NOC.)
- b) Identify what information is collected by reporting and statistics tools and who (e.g. management, boards or customers) use that information.
- c) Discuss what information is seen as sensitive information and how do NOCs deal with the distribution of this information.

5. Reporting and statistics tools (3)



- a) Collect information about which reporting and statistics tools or systems are used by the community. (1)
 - Report and statistics with the survey results (3rd meeting, May 2011).
- b) Identify what information is collected by reporting and statistics tools and who (e.g. management, boards or customers) use that information. (2)
 - Report of the collected information and the role of the people that collects it (5th, Jan 2012).
- c) Discuss what information is seen as sensitive information and how do NOCs deal with the distribution of this information. (3)
 - Report on how NOCs deal with sensitive information (6th, May 2012).

6. Performance management (4)



- a) Collect information about which performance management tools or systems are used by the community.
Simultaneously with C.1.a (NOC tools, interworking/interfaces issues, and automation -> Survey of tools -> Collect information about which tools are used by the NOCs participating in TF-NOC.)
- b) Discuss what performance values for the network and services are important for NOCs.

6. Performance management (4)



- a) Collect information about which performance management tools or systems are used by the community.
 - Report and statistics with the survey results (3rd meeting, May 2011).
- b) Discuss what performance values for the network and services are important for NOCs.
 - List of important performance values (6th, May 2012).

2. Ticketing systems (5)

- a) Collect information about which ticket systems are used by the community. **Simultaneously with C.1.a (NOC tools, interworking/interfaces issues, and automation -> Survey of tools -> Collect information about which tools are used by the NOCs participating in TF-NOC.)**
- b) Discuss and investigate what can be done to harmonize ticket systems and make them work together.

2. Ticketing systems (5)



- a) Collect information about which ticket systems are used by the community. (1)
 - Report and statistics with the survey results (3rd meeting, May 2011).
- b) Discuss and investigate what can be done to harmonize ticket systems and make them work together. (2)
 - Summary of recommendations to harmonize ticket systems (7th, Sep 2012).

3. Knowledge management (6)



- a) Collect information about which knowledge management tools or systems are used by the community.
Simultaneously with C.1.a (NOC tools, interworking/interfaces issues, and automation -> Survey of tools -> Collect information about which tools are used by the NOCs participating in TF-NOC.)
- b) Discuss and identify what information can and is useful to share between NOCs.

3. Knowledge management (6)



- a) Collect information about which knowledge management tools or systems are used by the community. (1)
 - Report and statistics with the survey results (3rd meeting, May 2011).
- b) Discuss and identify what information can and is useful to share between NOCs. (2)
 - Summary and recommendations about what information is useful to share (7th, Sep 2012).

7. Tool development (7)

- a) Investigate the interest and possibility of open-source development (if appropriate) in TF-NOC.
- b) Investigate the possibility of sharing tools or specifications of tools produced by participants of TF-NOC.
- c) Collect and share experiences about developing vs acquiring tools.
- d) Collect and share information about tool integration to databases.

7. Tool development (7)



- a) Investigate the interest and possibility of open-source development (if appropriate) in TF-NOC. (4)
 - Report on the interest of open-source development and possible volunteers (9th, TNC 2013).
- b) Investigate the possibility of sharing tools or specifications of tools produced by participants of TF-NOC. (2)
 - Report of the survey for ad-hoc tools (8th, Jan 2013).
- c) Collect and share experiences about developing vs acquiring tools. (1)
 - Survey of ad-hoc tools & integration with DB (7th, Sep 2012).
 - Report and compilation of experiences (8th, Jan 2013).
- d) Collect and share information about tool integration to databases. (3)
 - Report with the different approaches to the integration of databases and other network management tools (9th, TNC 2013)

Summary: Prioritisation, deliverables & timeline for Work Item C (tentative)



Sub-item	Pri- ority	2nd TF-NOC Jan-2011	3rd TF-NOC May-2011	4th TF-NOC Sep-2011	5th TF-NOC Jan-2012	6th TF-NOC May-2012	7th TF-NOC Sep-2012	8th TF-NOC Jan-2013	9th TF-NOC TNC 2013
1.a.1	1.1	Survey							
1.a.2	1.1		Results (global)						
1.b	1.2			Tools&functions					
1.c	1.3				Taxonomy				
4.a	2.1		Results (monitoring)						
4.b	2.2			Deployment					
4.c	2.3				SLA				
5.a	3.1		Results (reporting)						
5.b	3.2				What&who				
5.c	3.3					Sensitive info			
6.a	4.1		Results (performance)						
6.b	4.2					Performance			
2.a	5.1		Results (ticketing)						
2.b	5.2						Ticket systems		
3.a	6.1		Results (knowledge)						
3.b	6.2						Sharing info		
7.c.1	7.1						Survey ad-hoc		
7.c.2	7.1							Develop&acquire	
7.d	7.2								DB integration
7.b	7.3							Report ad-hoc	
7.a	7.4								OS development
Total:		1	6	2	3	2	3	2	2

Items: 1 Survey of tools; 2 Ticketing systems; 3 Knowledge management; 4 Monitoring tools; 5 Reporting and statistics tools; 6 Performance management; 7 Tool development

✓ Some good classifying job has been done:

- RFC 1470 (<http://www.ietf.org/rfc/rfc1470.txt>)

The NOCTools Working Group of the Internet Engineering Task Force (IETF) compiled a catalog in 1989 (RFC 1147) and updated it in 1993 (RFC 1470). No more updates since then... Very outdated.

- <http://www.slac.stanford.edu/xorg/nmtf/nmtf-tools.html#public>

Built from a survey made by the ESnet Network Monitoring Task Force (NMTF) in 1995. New additions are from reader suggestions/recommendations. It's updated. (Les Cottrell)

- Other compilations:

- <http://globalnoc.iu.edu/grnoc-tool-set.html>
- <http://www.debianhelp.co.uk/monitortools.htm>
- http://nms.gdd.net/index.php/Main_Page#NMS_Tools
- ...

But...do we really need to have a list with ALL the tools???

Results from the first NMTF survey (ESnet)



10-3-95

<http://www.slac.stanford.edu/~cottrell/tcom/survey3-results.html>

Tool Type	Tool Specific	BNL	CEBAF	FNAL	GA	LANL	LBL	NERSC	OSNL	BNL	PPPL	SLAC	Total
NMP	HP OpenView		1						1	1			3
	SunNet Mgr	1		1		1	1						4
	IBM Netview/AIX											1	1
	DEC Polycenter		1	1		1					1		4
	DEC Mau							1	1	1		1	4
	Cabletron Spect 1					1		1	1		1		5
	Castle Rock				1								1
NMP+	Transcend								1				1
	C'aron Rem. LAN										1		1
	Ciscoworks			1					1				2
	NAIMonitor			1	1							1	2
	DEC-Bridge			1									1
	NetMatrix			1		1			1	1			4
Others	NetScout			1	1	1			1			1	5
	NRIManager								1				1
	EMMS			1					1			1	2
	ELMS			1					1			1	2
	SAS								1		1	1	3
	WWW Browser	1							1			1	2
	SNMP Research							1					1
	Shiva Net Manag										1		1
	Shiva InterNet										1		1
	USR Total Contr										1		1
	Procent ISDN/No										1		1
	NS Local Peak A										1		1
	Path Router							1					1
	Graceland				1				1				2
Public	Ping	1		1	1	1		1	1	1	1	1	9
	telnet	1						1	1		1	1	5
	NOOOL								1				1
	Bover								1				1
	Trickleb								1			1	2
	tbody							1	1				2
	tcpdump	1		1		1		1	1			1	6
	arpwatch	1					1		1				3
	CMU SNMP					1	1	1	1			1	5
	ghostscript	1						1	1			1	4
	GraphicConverte								1				1
	WWW Server	1							1			1	2
	Big			1	1	1	1	1					5
	FTP	1						1			1	1	4
	netstat										1		1
	traceroute										1	1	2
Total		10	2	12	6	9	4	12	25	4	14	17	115

A first “skeleton” of the survey (I)



What tools does your organization use?

✓ Monitoring tools:

- Network Monitoring platforms (HP Openview, Pandora,...)
- General monitoring (MRTG, Cacti, Nagios, ... with or without plugins)
 - Weather maps
 - Thresholds and alarms
- Infrastructure monitoring (Nagios, Ganglia, Zabbix,...)
- Diagnostic tools (ping, traceroute, mtr,..)
- Flow monitoring (Netflow, cflow, sflow,...)
- Syslog (logfile scanner, JFFNMS,...)
- Routing: route servers (zebra,...), BGPmon, looking-glass, ...
- Multicast monitoring tools: (dBeacon,...)
- Out-of-band access tools
- Network security
- Sniffing & analyzing (tcpdump, wireshark,...)
- Topology documentation (Visio,...)
- Changes in network configurations (rancid,...)
- Control of configuration files (subversion, ...)

A first “skeleton” of the survey (II)



- ✓ Reporting and statistics tools (Nagios, Zabbix,..)
 - Who uses them?
- ✓ Ticketing tools (RT, Trac, Buzilla,...)
 - Who uses them?
 - Do the users have access to the tickets?
 - Are the tickets publicly available?
- ✓ Performance management
 - Performance testing (IPerf, NDT,...)
 - Traffic generators (Bulk, Mgen,...)
- ✓ Chat/communication/coordination tools: IM, mailing lists, skype,...
- ✓ Databases: (Mysql, exchange,...)
 - What information do you store on them
 - How do you connect them to your management tools?
- ✓ Knowledge management/documentation: (Plone, Wiki, ...)
 - What kind of information do you store?
 - How do you structure it?

CENTRE DE SUPERCOMPUTACIÓ
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Thanks for your attention!
Questions? Suggestions?

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