



Domen Šetar  
Sistemska podpora

KONFERENCA COBISS 2014

**Nagios za nadzor sistemov in storitev IZUM-a**

IZUM

UNESCO

COBISS



# Razlogi za nadzor delovanja okolja IT

- Poslovne zahteve – delovanje 24/ 7
- Kompleksnost
- Velik obseg zadolžitev skrbnikov okolja IT

- Pregled trendov
- Pravočasno zaznavanje odklonov v delovanju
- Hitro odkrivanje napak in okvar

# Zahteve za nadzorni program

- Vidik nadzora:
  - Nadzor različnih komponent sistema IT
  - Zbiranje podatkov o delovanju komponent sistema IT
  - Izdelava poročil o delovanju komponent sistema IT
  - Različni načini obveščanja o težavah
  - Različni pogledi na sistem IT

# Zahteve za nadzorni program

- Splošni programski vidik:
  - Modularnost
  - Enostavnost dostopa in rabe
  - Dobra podpora
  - Cenovna ugodnost

- Nagios je programsko **ogrodje** za nadzor sistemov IT
- Dve različici:
  - **Nagios XI:**
    - Paket, pri katerem so vključeni najpogosteje uporabljeni funkcijski moduli
    - namenjen manj zahtevnim uporabnikom
    - plačljiv
  - **Nagios Open Source:**
    - osnovno ogrodje
    - uporabniki po želji dograjujejo funkcijske module
    - namenjen zahtevnejšim uporabnikom
    - brezplačen



- Dostopen je preko
  - spletnega vmesnika
  - aplikacij, prilagojenih za tablične računalnike in pametne telefone
- Spletna podpora – brezplačni dostop do:
  - distribucije ogrodja Nagios
  - dokumentacije Nagios
  - funkcijskih modulov
  - uporabniško definiranih testov

- Funkcije ogrodja:
  - Definiranje in izvajanje osnovnih testov
  - Definiranje ostalih elementov:
    - servisne skupine
    - strežniške skupine
    - skupine za obveščanje
  - Taktični pogled na delovanje sistema IT
  - Obveščanje v primeru težav
  - Izdelava poročil:
    - dostopnost naprav
    - dostopnost posameznih testov na napravi
    - obveščanje v primeru napake



- Funkcionalnosti, ki jih dobimo z moduli:
  - definiranje komponent v grafičnem vmesniku
  - izvajanje zahtevnejših testov (oddaljeno izvajanje testov, pasivni testi)
  - izdelava grafov testov performančnih podatkov
  - vizualizacija sistema IT
  - poslovni pogled na delovanje sistema IT
  - izdelava zahtevnejših poročil (poročilo SLA )

# Nagios – uporaba v IZUM-u

- 219 nadzorovanih naprav
- 3651 nadzornih testov
- 26 nadzorovanih lokacij (Libroam – 23, COBISS.Net – 3)
- 1 test/sekundo

# Nagios – uporaba v IZUM-u

- Nadzor na vseh nivojih sistema IT
  - komponente omrežja LAN (usmerjevalniki, stikala)

Host --	Service --	Status --	Last Check --	Duration --	Attempt --	Status Information
izumfw1	SNMP Status Uptime	OK	10-11-2014 14:37:59	186d 8h 51m 36s	1/3	SNMP OK - TimeTicks: (538904578) 62 days, 8:57:25.78
	check_fw_interfaces	OK	10-11-2014 14:36:29	62d 8h 52m 10s	1/3	OK : if=lo Status=up(1) Adr=10.1.0.4, if=tun0 Status=4 Adr=10.2.0.2, if=eth0 Status=up(1) Adr=10.100.0.1, if=eth1 Status=up(1) Adr=127.0.0.1, if=eth2 Status=up(1) Adr=172.16.0.2, if=eth3 Status=up(1) Adr=193.2.126.2, if=eth4 Status=up(1) Adr=193.2.127.254, if=eth5 Status=down(2) Adr=11, if=eth6 Status=down(2) Adr=7, if=eth7 Status=down(2) Adr=12, if=eth2.10 Status=up(1) Adr=6
	check_interface_table_v3	OK	10-11-2014 14:37:05	247d 7h 42m 28s	1/3	OK - 11 port(s), 4 free, 0 AdminUp and free, 12 graphed [details]
	check_stonewall	OK	10-11-2014 14:38:44	62d 8h 52m 10s	1/3	OK : izumFW_node_1, 62 days, 8 hours, 58 minutes, 10.6399999996647 seconds, Stonesoft Security Engine version 5.7.4.11047.

- komponente omrežja SAN (stikala, diskovna polja, tračne enote)

USP-VM IZUM	Storage battery status	OK	10-11-2014 14:36:37	13d 22h 54m 56s	1/3	Storage battery status - OK
	Storage cache status	OK	10-11-2014 14:36:37	13d 22h 18m 21s	1/3	Storage cache status - OK
	Storage drive status	OK	10-11-2014 14:36:39	13d 22h 18m 21s	1/3	Storage drive status - OK
	Storage environment status	OK	10-11-2014 14:39:47	13d 22h 17m 44s	1/3	Storage environment status - OK
	Storage fan status	OK	10-11-2014 14:36:37	13d 22h 54m 56s	1/3	Storage fan status - OK
	Storage internal bus status	OK	10-11-2014 14:36:39	13d 22h 54m 56s	1/3	Internal bus status - OK
	Storage power supply status	OK	10-11-2014 14:36:39	13d 22h 54m 56s	1/3	Storage power supply status - OK
	Storage processor status	OK	10-11-2014 14:36:39	13d 22h 54m 56s	1/3	Storage processor status - OK

# Nagios – uporaba v IZUM-u

- ohišje za strežniške rezine

C7IZUM1	SNMP Status Uptime	OK	10-11-2014 14:37:59	257d 4h 32m 34s	1/3	SNMP OK - Timeticks: (352475411) 40 days, 19:05:54.11
	check_hp_blade	OK	10-11-2014 14:42:16	40d 19h 5m 18s	1/3	OK - System: 'BladeSystem c7000 Enclosure G2', SN: 'GB8930XBEO', Firmware: '4.30', hardware working fine, 9 blades, 4 i/o modules

- strežniki (samostojni in strežniške rezine)

- virtualna infrastruktura (ESX, Vmware, HP-UX VM)

bIESX-2	SNMP Status Uptime	OK	10-11-2014 14:44:19	0d 4h 12m 59s	1/3	SNMP OK - Timeticks: (180221083) 20 days, 20:36:50.83
	check_cpu	OK	10-11-2014 14:42:56	733d 22h 57m 17s	1/5	CHECK_ESX3.PL OK - cpu usage=3004.34 MHz(7.52%)
	check_esx_hardware	OK	10-11-2014 14:43:56	469d 15h 57m 33s	1/3	OK - Server: HP ProLiant BL685c G6 s/n: GB8930XBEO System BIOS: A17 2009-05-07
	check_guest_status	OK	10-11-2014 14:42:18	469d 16h 8m 22s	1/3	CHECK_ESX3.PL OK - 16/16 VMs up, overall status=green, connection state=connected, maintenance=no, no issues
	check_mem	OK	10-11-2014 14:42:18	469d 16h 8m 23s	1/3	CHECK_ESX3.PL OK - mem usage=102374.13 MB(78.11%), overhead=3451.29 MB, swapped=0.00 MB
	list_guests	OK	10-11-2014 14:13:33	733d 22h 57m 17s	1/5	CHECK_ESX3.PL OK - 16/16 VMs up: EDGE5(UP), web4sik(UP), vbbghome(UP), LEARNDC(UP), INTDC5(UP), IZUMC3-3(UP), IZUMC3-CAT2(UP), vbRSC3app1(UP), MOBIZUM-TST(UP), IZUMC3-1(UP), TLDAP(UP), TIZUMC3-9(UP), EDI(UP), vbAlhome(UP), web4sikIPv6(UP), TERMINAL(UP)

# Nagios – uporaba v IZUM-u

- strežniški sistemski viri (procesor, pomnilnik, diski, čakalne vrste)

IZUM	+ System information	OK	10-11-2014 14:31:59	7d 21h 8m 3s	1/3	Server type: HP rx6600 (1.59GHz/12.0MB) OS: OpenVMS V8.4 CPU: 8 Memory: 98303 MB Cluster member: TRUE IP: 193.2.126.17 Uptime: 180 17:04:02.46
	Buffered I/O rate	OK	10-11-2014 14:35:39	0d 9h 0m 25s	1/3	OK:I/O OK - [635 Buffered I/O rate on IZUM]
	CPU	OK	10-11-2014 14:32:19	7d 21h 5m 49s	1/3	OK:CPU OK - [5% CPU Usage of 8 CPUs on IZUM]

- sistemski servisi TCP/IP na strežnikih

check_ssh	OK	10-11-2014 14:43:55	28d 2h 16m 38s	1/3	SSH OK - SSH OpenVMS V5.5 VMS_ssh_version 3 (protocol 2.0)
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- programske komponente (Oracle tablespace, aplikativni procesi, aplikativni servisi TCP/IP)

check_cimsd04_process	OK	10-11-2014 14:45:29	5d 11h 45m 0s	1/3	All processes OK:
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# Nagios – uporaba v IZUM-u

- Nadzor periodičnih postopkov (varovanje podatkov, aplikativne obdelave)

check_ucp_restart		OK	10-11-2014 04:03:52	28d 11h 49m 44s	1/1	OK: no messages in the logfile (warnings not checked!)
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- Končni testi (E2E)- preverjanje delovanja sistema in servisov COBISS s stališča končnega uporabnika

COBISS.SI		OK	10-11-2014 14:43:55	0d 2h 18m 14s	1/3	WI OK, All tests OK in 11.167 sec
LogCobissAgent		OK	10-11-2014 14:43:55	0d 14h 30m 51s	1/3	WI OK, All tests OK in 2.172 sec
COBISS.SI Z39.50		OK	10-11-2014 14:43:55	0d 14h 30m 51s	1/3	WI OK, All tests OK in 2.172 sec
COBISS.SI domaca stran		OK	10-11-2014 14:47:18	19d 3h 38m 34s	1/3	WI OK, All tests OK in 0.189 sec
COBISS.SR		OK	10-11-2014 14:42:56	4d 12h 37m 58s	1/3	WI OK, All tests OK in 14.466 sec
LogCobissAgent		OK	10-11-2014 14:42:56	1d 11h 41m 52s	1/3	OK! Login COBISSTST, Host COBISLizum.si, User NAGIOS, Local 2 hit(s) LastError
COBISS2 iskanje COBISL		OK	10-11-2014 14:42:56	2d 11h 34m 24s	1/3	OK! Login COBISSTST, Host LJGW.izum.si, User NAGIOS, Local 0 hit(s) LastError
COBISS2 iskanje LJGW		OK	10-11-2014 14:42:56	2d 11h 34m 24s	1/3	OK! Login COBISSTST, Host LJGW.izum.si, User NAGIOS, Local 0 hit(s) LastError
Casopis OZ - dinamicna postavitev		OK	10-11-2014 14:47:18	10d 7h 20m 17s	1/3	WI OK, All tests OK in 0.183 sec



# Nagios – uporaba v IZUM-u

- Pregled stanja sistema IT
  - taktični pogled – osnovni pogled v Nagiosu
  - vizualizacija podatkov
  - poslovni pogled
  - performančni podatki

# Nagios – taktični pogled

Monitoring

Tactical Overview

Host Detail

Service Detail

Hostgroup Overview

Servicegroup Overview

Status Map

Service Problems

Host Problems

Network Outages

Comments

Downtime

Process Info

Performance Info

Scheduling Queue

Reporting

Trends

Availability

Alert Histogram

Alert History

Alert Summary

Notifications

Event Log

Advanced

NAVODILA

DCIM

THRUK

Visualization

Performance reports

Business Process Intelligence

Configuration

View Config

Tactical Monitoring Overview

Last Updated: Thu May 15 15:55:30 CEST 2014

Updated every 90 seconds

Nagios® Core™ 3.4.1 - www.nagios.org

Logged in as domen

Network Outages

0 Outages

Hosts

0 Down

0 Unreachable

212 Up

0 Pending

2 Disabled

Services

8 Critical

33 Warning

3 Unknown

3495 Ok

5 Pending

7 Unhandled Problems

29 Unhandled Problems

2 Unhandled Problems

385 Disabled

5 Disabled

1 Disabled

1 Acknowledged

1 Disabled

3 Disabled

Monitoring Features

Flap Detection

Notifications

Event Handlers

Active Checks

Passive Checks

ENABLED

72 Services Disabled

17 Services Flapping

1 Host Disabled

No Hosts Flapping

ENABLED

921 Services Disabled

17 Hosts Disabled

ENABLED

All Services Enabled

All Hosts Enabled

ENABLED

395 Services Disabled

2 Hosts Disabled

ENABLED

4 Services Disabled

All Hosts Enabled

Monitoring Performance

Service Check Execution Time: 0.00 / 53.46 / 1.751 sec

Service Check Latency: 0.00 / 11.98 / 1.085 sec

Host Check Execution Time: 0.02 / 4.10 / 3.766 sec

Host Check Latency: 0.00 / 8.51 / 3.877 sec

# Active Host / Service Checks: 210 / 3203

# Passive Host / Service Checks: 2 / 341

Network Health

Host Health:

Service Health:

IZUM

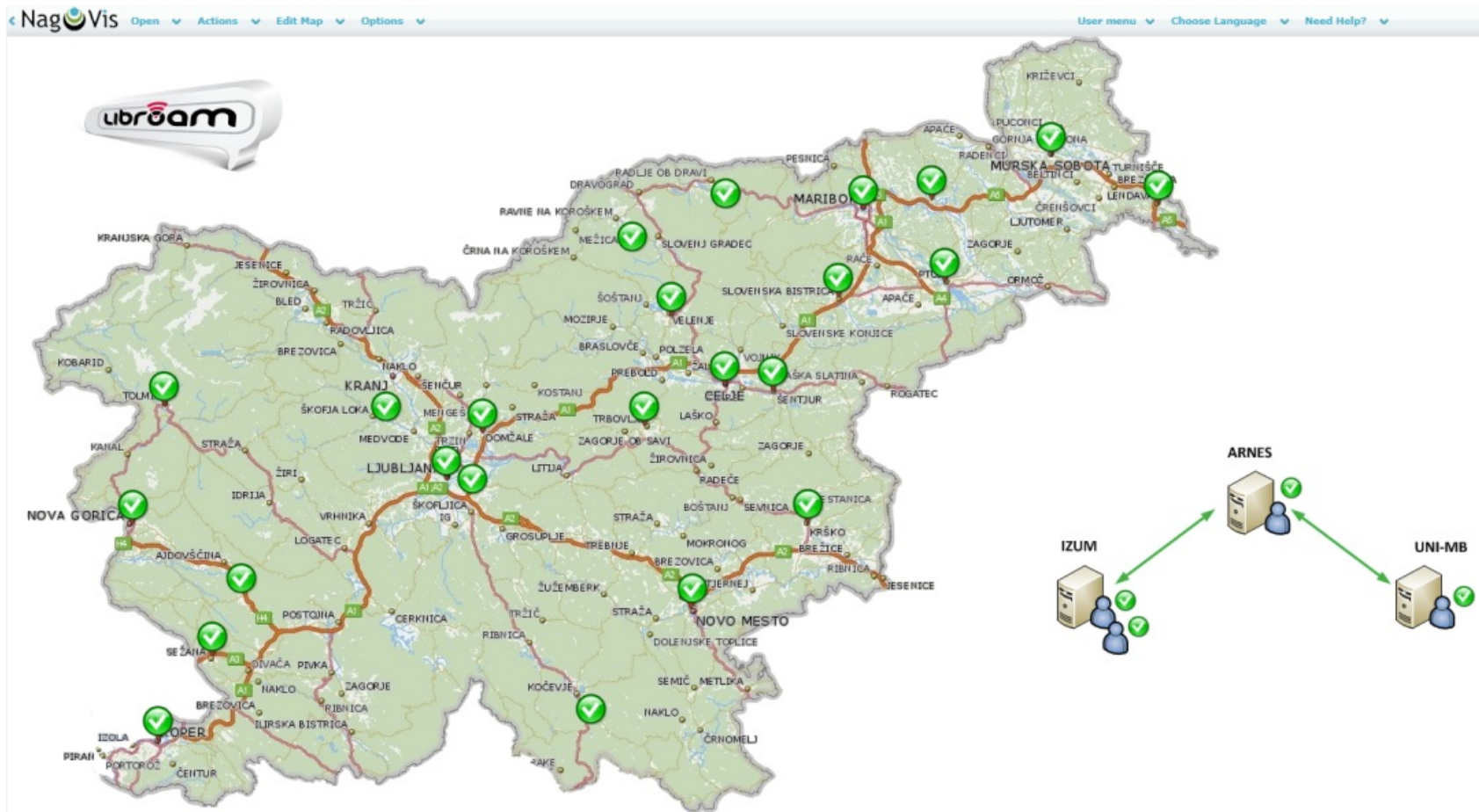
16

COBISS

# Vizualizacija – elegantni pogled

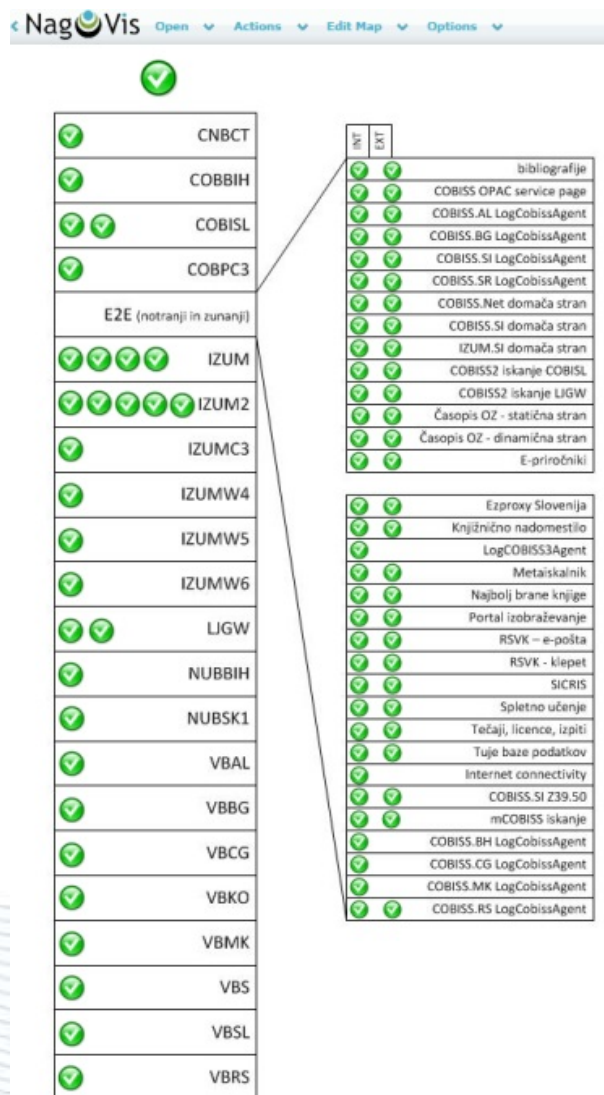


# Vizualizacija – geografski pogled

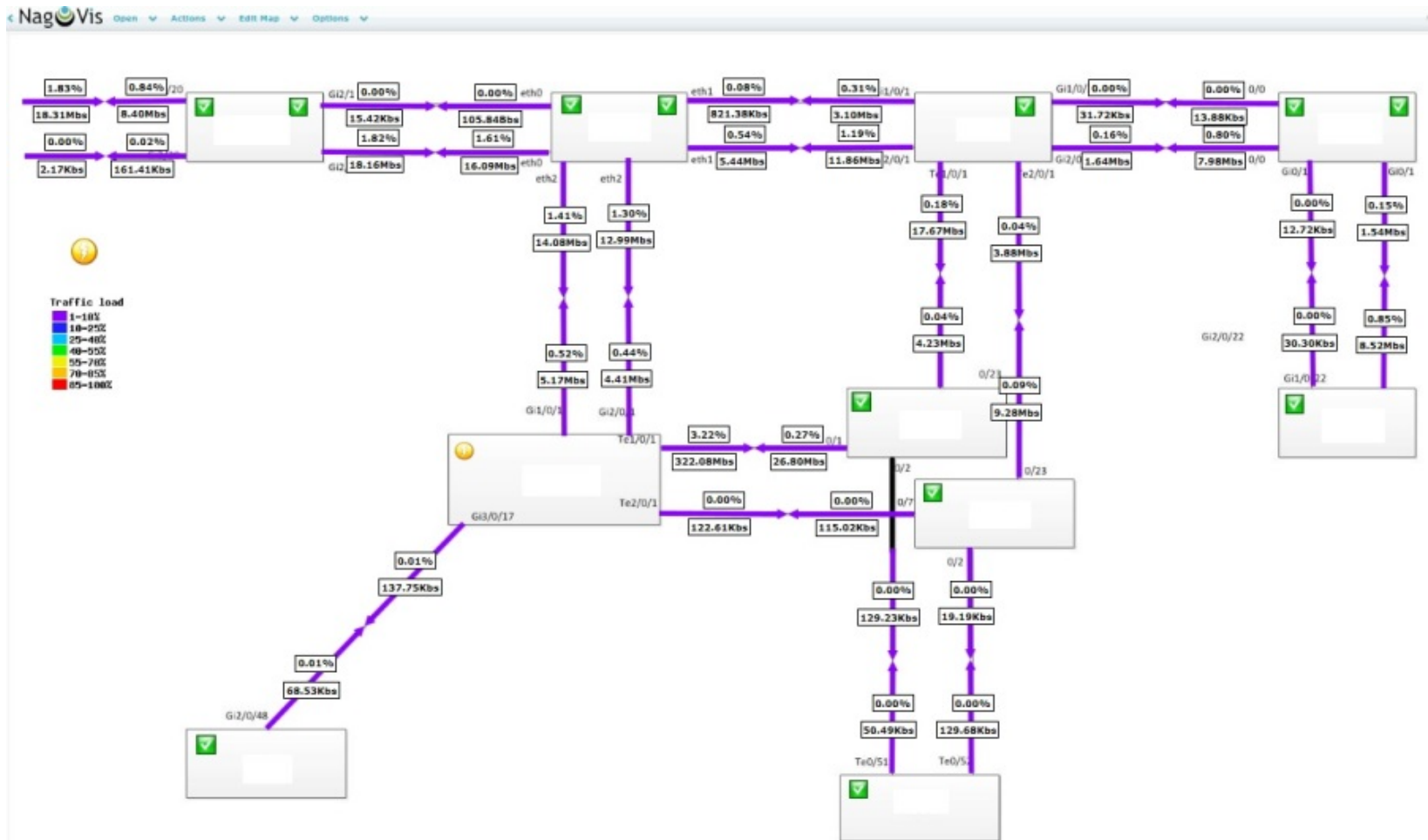




# Vizualizacija – stolpični prikaz



# Vizualizacija – „vremenska karta“





# Nagios - poslovni pogled

- Drevesna struktura
- Definicija odvisnosti posameznih komponent (testov) pri delovanju servisa IT

Essential group members are denoted with: \*\*

## High Priority

Ok	LIBROAM	0 problem(s)	brezplačno internetno omrežje	Edit	Delete
Ok	COBISS/OPAC infrastruktura	0 problem(s)	OPAC - infrastrukturni pogled	Edit	Delete
Ok	Bibliografije	0 problem(s)		Edit	Delete
Ok	SICRIS	0 problem(s)	SICRIS	Edit	Delete
Ok	Spletne strani IZUM	0 problem(s)	Spletne strani IZUM.SI, COBISS.SI, COBISS.NET	Edit	Delete
Ok	Tuje baze podatkov	0 problem(s)	Tuje baze podatkov	Edit	Delete
Ok	Metaiskalniki	0 problem(s)	Metaiskalniki	Edit	Delete
Ok	Knjižnico nadomestilo	0 problem(s)	Knjižnico nadomestilo	Edit	Delete
Ok	Najbolj brane knjige	0 problem(s)	Najbolj brane knjige	Edit	Delete
Ok	Casopis OZ	0 problem(s)	Casopis OZ	Edit	Delete
Ok	Portal izobraževanje	0 problem(s)		Edit	Delete
Ok	Spletno učenje	0 problem(s)	Spletno učenje	Edit	Delete
Ok	Tecaji, licence, izpiti	0 problem(s)	Tecaji, licence, izpiti	Edit	Delete
Ok	Referenčni servis Vprašaj knjižničarja	0 problem(s)	Referenčni servis Vprašaj knjižničarja	Edit	Delete
Ok	E-prirocniki	0 problem(s)	E-prirocniki	Edit	Delete
Ok	COBISS2	0 problem(s)	COBISS2	Edit	Delete
Ok	COBISS3	0 problem(s)	COBISS3	Edit	Delete
Ok	Spletne strani knjižnic	0 problem(s)	Spletne strani knjižnic	Edit	Delete
Ok	mCOBISS	0 problem(s)		Edit	Delete

## Medium Priority

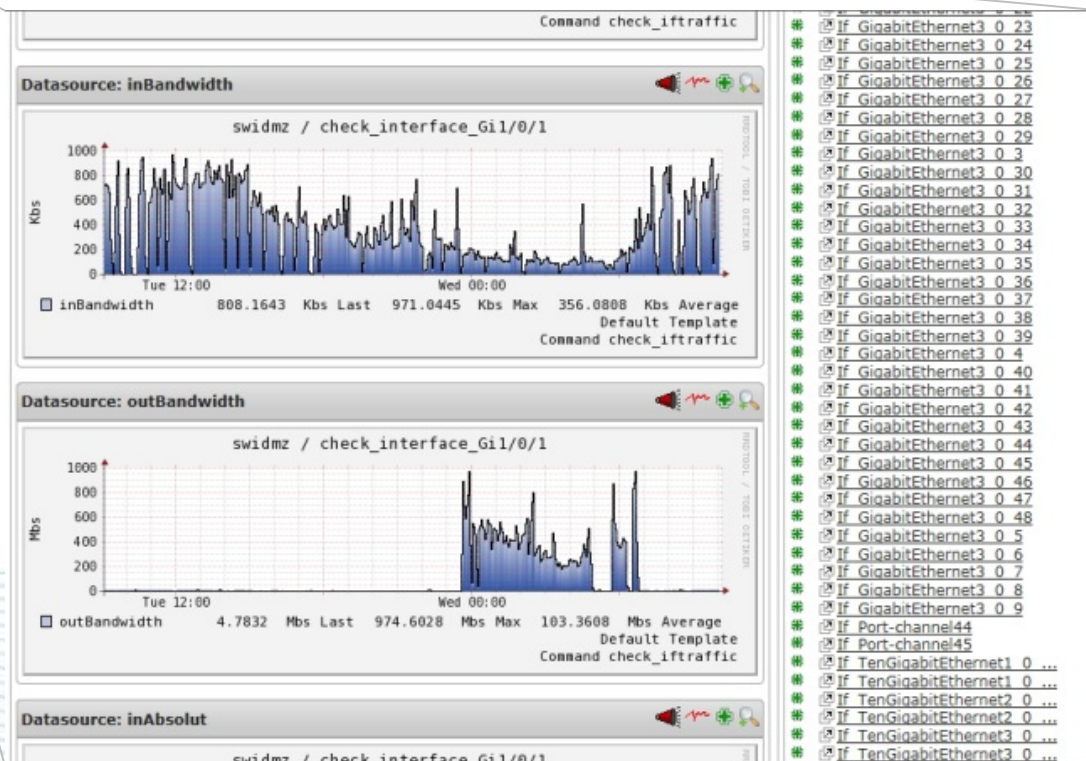
Ok	Oracle Databases	0 problem(s)	Oracle Databases	Edit	Delete
Critical	OpenVMS backup	2 problem(s)		Edit	Delete
Ok	Dosegljivost omrežja IZUM	0 problem(s)		Edit	Delete
Ok	Kontrola aplikativnih prehodov	0 problem(s)		Edit	Delete
Ok	COBISS/OPAC	0 problem(s)	COBISS/OPAC - funkcionalni pogled	Edit	Delete
Ok**	OPAC infrastruktura web na ELINKS	0 problem(s)		Edit	Delete
Ok	IZUMW4	check_opac_cobiss4_elinks	HTTP OK: HTTP/1.1 200 OK - 18432 bytes in 1.533 second response time		
Ok	IZUMW5	check_opac_cobiss5_elinks	HTTP OK: HTTP/1.1 200 OK - 17339 bytes in 2.298 second response time		
Ok	IZUMW6	check_opac_cobiss6_elinks	HTTP OK: HTTP/1.1 200 OK - 17354 bytes in 1.837 second response time		
Ok**	OPAC infrastruktura web na COBIB	0 problem(s)		Edit	Delete
Ok	IZUMW5	check_opac_cobiss5_cobib	HTTP OK: HTTP/1.1 200 OK - 12937 bytes in 1.521 second response time		
Ok	IZUMW4	check_opac_cobiss4_cobib	HTTP OK: HTTP/1.1 200 OK - 13415 bytes in 1.028 second response time		
Ok	IZUMW6	check_opac_cobiss6_cobib	HTTP OK: HTTP/1.1 200 OK - 12937 bytes in 1.080 second response time		
Ok**	OPAC infrastruktura web na lokalne baze	0 problem(s)		Edit	Delete
Ok	OPAC infrastruktura web na COBISL	0 problem(s)		Edit	Delete
Ok	IZUMW4	check_opac_cobiss4_cobisl	HTTP OK: HTTP/1.1 200 OK - 35217 bytes in 2.240 second response time		
Ok	IZUMW5	check_opac_cobiss5_cobisl	HTTP OK: HTTP/1.1 200 OK - 34212 bytes in 2.641 second response time		
Ok	IZUMW6	check_opac_cobiss6_cobisl	HTTP OK: HTTP/1.1 200 OK - 34229 bytes in 2.673 second response time		
Ok	OPAC infrastruktura web na LJGW	0 problem(s)		Edit	Delete
Ok	IZUMW4	check_opac_cobiss4_ljgw	HTTP OK: HTTP/1.1 200 OK - 18172 bytes in 1.188 second response time		
Ok	IZUMW5	check_opac_cobiss5_ljgw	HTTP OK: HTTP/1.1 200 OK - 17668 bytes in 2.104 second response time		
Ok	IZUMW6	check_opac_cobiss6_ljgw	HTTP OK: HTTP/1.1 200 OK - 17663 bytes in 1.831 second response time		
Ok	Backup konfiguracij	0 problem(s)	backup konfiguracij opreme	Edit	Delete

## Low Priority

# Nagios – performančni podatki

Host ^v	Service ^v	Status ^v	Last Check ^v	Duration ^v	Attempt ^v	Status Information
swidmz	Check cisco hardware	OK	21-05-2014 10:03:14	83d 21h 2m 57s	1/3	3 Fan OK, 3 ps OK, 3 temp OK : OK
	SNMP Status Uptime	OK	21-05-2014 10:04:19	83d 21h 3m 44s	1/3	SNMP OK - Timeticks: (2081468623) 240 days, 21:51:26.23
	TRAP	OK	08-03-2013 08:38:05	439d 0h 28m 19s	1/3	OK
	check_interface_Gi1/0/1	OK	21-05-2014 10:03:22	13d 3h 22m 6s	1/3	GigabitEthernet1/0/1 = 1.3.6.1.2.1.2.2.1.2.10101 / 10101

- Poljuben številčni podatek
- Pogled v različnih časovnih intervalih
- ZOOM za lažjo analizo



# Nagios – uporaba v IZUM-u

- Nadzor nad delovanjem:
  - odgovorni sodelavci – e-pošta, vmesnik Nagios
  - dežurni sodelavci – SMS-sporočila – 24/7
  - receptor IZUM – vmesnik Nagios (postopek v pripravi)

- Obveščanje o dogodkih:
  - Manj pomembni testi – brez obveščanja – nadzor preko vmesnika Nagios
  - Pomembnejši testi – obveščanje preko e-pošte
  - Kritični testi – SMS-sporočila



- Prispevek k izboljšanemu nadzoru:
  - Boljši splošni pregled nad delovanjem sistema in servisov COBISS
  - Veliko incidentov zaznanih in rešenih, preden pride do resnih težav
  - Hitrejše zaznavanje, lokalizacija in reševanje večjih težav in izpadov

**Hvala za pozornost!**