

Monitoring and Measurement of Federation Activity

Miroslav Milinović

*University Computing Centre,
University of Zagreb, Zagreb, Croatia
<miro@srce.hr>*

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Content

- ❖ concepts
- ❖ current status
- ❖ examples
- ❖ future work

The problem space ...

- ❖ measurement
 - ◆ facilitate maintenance / management
 - ◆ compute service performance indicators
- ❖ monitoring
 - ◆ simple vs. functional
- ❖ diagnostics
 - ◆ to resolve incidents
 - ◆ to enhance user experience

Federations landscape

❖ levels:

- ◆ confederation
- ◆ federation (national)
- ◆ regional
- ◆ ...
- ◆ local

❖ ideal monitoring/diagnostics system:

- ◆ e2e; extends over all levels
- ◆ as close to the user experience as possible

Monitoring tasks

- ❖ It is not enough to know that some hosts are accessible!
- ❖ Monitor functionality of:
 - ◆ servers/elements (IdP, SP, proxies, MDS, ...)
 - ◆ infrastructure (path and interaction between servers/elements)
 - ◆ AA proces (user experience)
- ❖ Ultimate goal is to test real users experience
 - ◆ perform both accept and reject logic tests

Diagnostics tasks

- ❖ to be able to diagnose the problem on demand ...
- ❖ to be able to give the information about the status for the specified period ...

... for ...

- ❖ problem user reports
- ❖ problems with / status of the part(s) of the infrastructure

First step(s)

- ❖ identify elements / parts / services
- ❖ define the data to be collected / published / retrieved
- ❖ define the collection / analysis method

- ❖ harmonisation / metadata about the elements

Current status

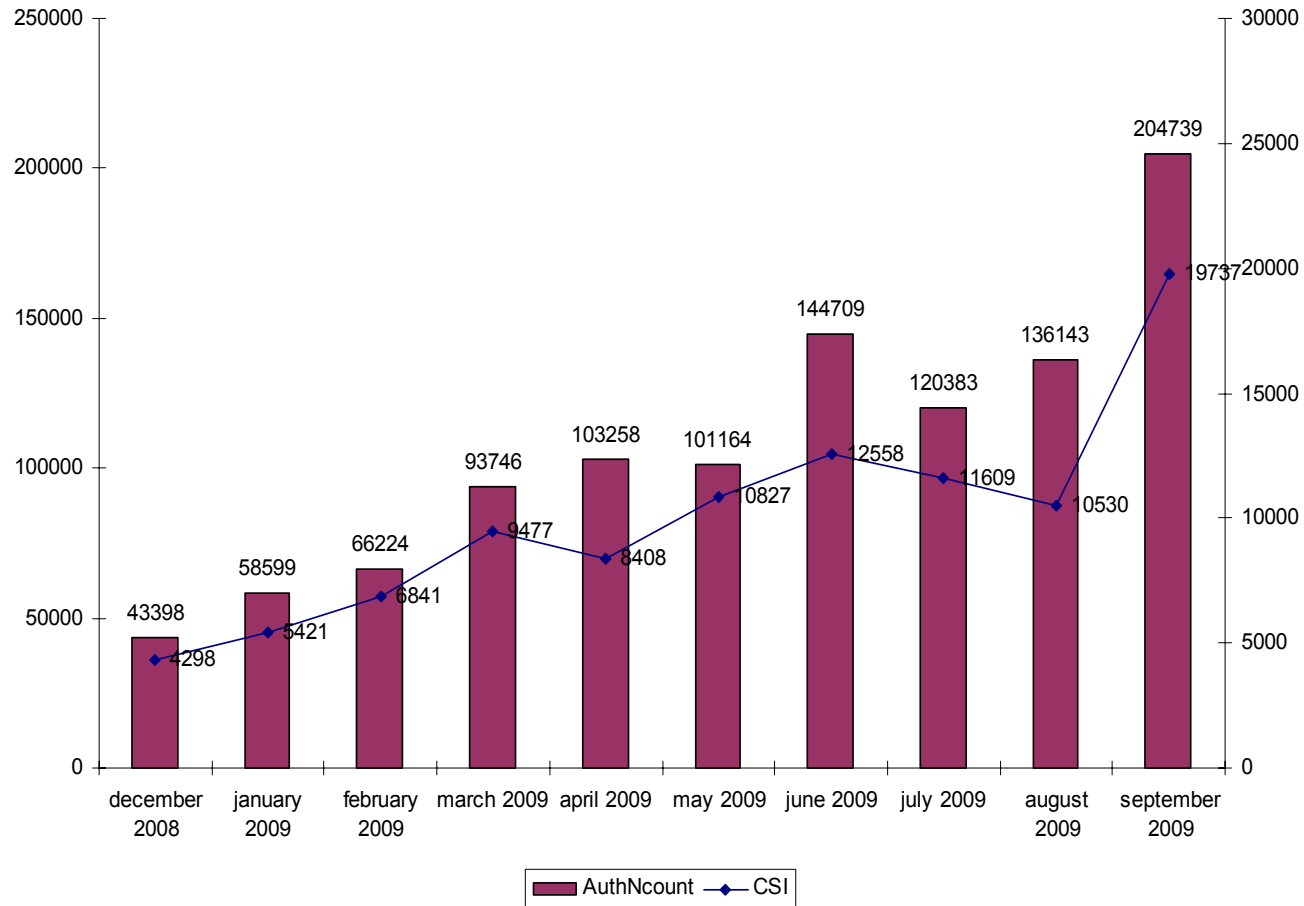
- ❖ REFEDs Federations Survey (November 2009)
 - ◆ <https://refeds.terena.org/index.php/FederationMonitoring>
- ❖ 23 federations listed

- ❖ 12 – no answer / nothing in place
- ❖ 2 – ongoing work
- ❖ 9 – monitoring system in place
 - ◆ 4 clearly state that they use NAGIOS framework (with some modifications)
 - ◆ a number of homegrown solutions

An example: eduroam confederation

- ❖ European eduroam confederation
- ❖ 36 active members
- ❖ RADIUS hierarchy
 - ◆ 2 ETLRSs
 - ◆ 67 FLRSs
- ❖ centralised monitoring service & database
- ❖ <http://monitor.eduroam.org/>

eduroam: international traffic 2008 - 2009

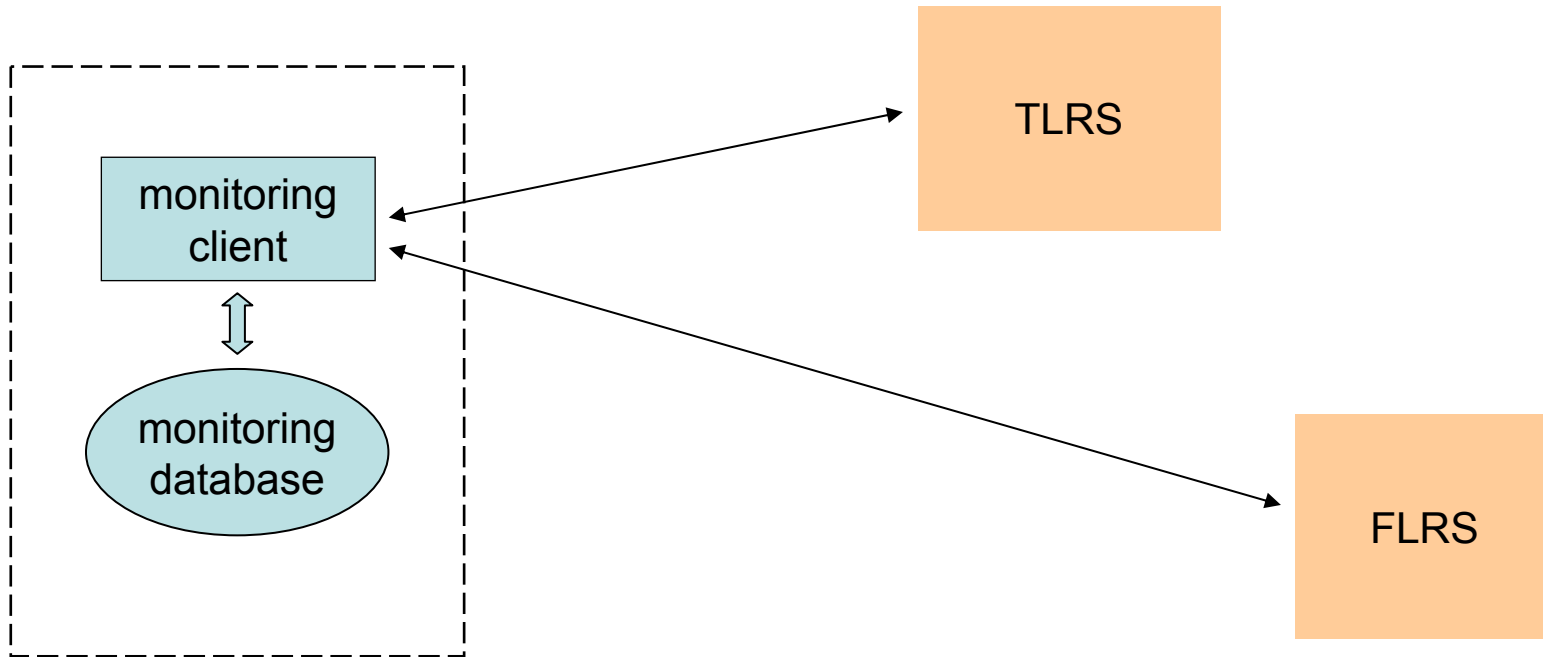


eduroam monitoring

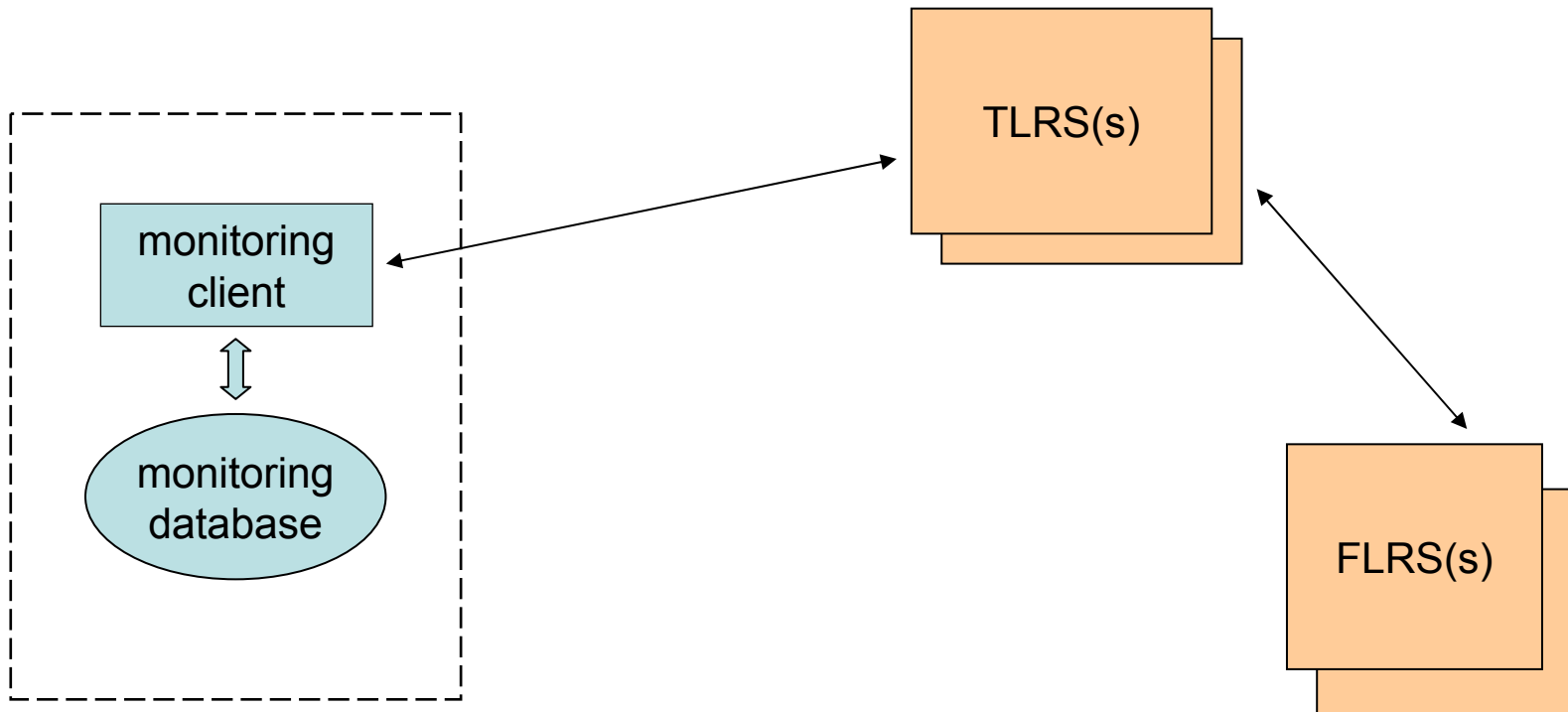
- ❖ The goal is to monitor:
 - ◆ functionality of the servers
 - ◆ functionality of the infrastructure
 - ◆ user experience
- ❖ Ultimate goal is to test real users experience
 - ◆ different workflows at RADIUS servers for Accept and Reject
 - ◆ perform both accept and reject logic tests
- ❖ implemented scenarios
 - ☑ monitoring servers
 - ☑ monitoring infrastructure
 - ☑ testing on demand (access via web)
(http://monitor.eduroam.org/inter/test_otm.php)
 - ☑ RadSec monitoring



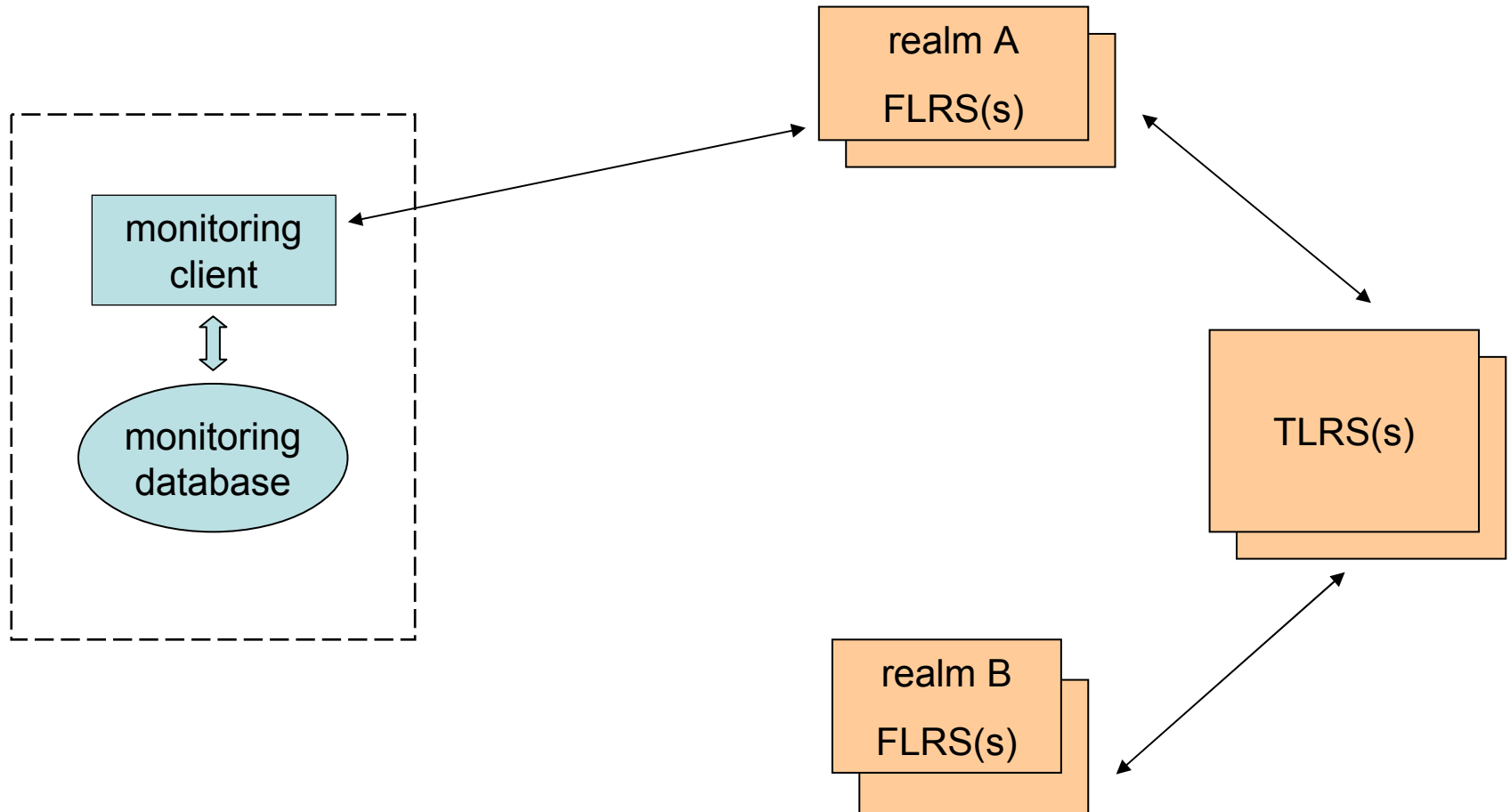
Monitoring servers



Monitoring infrastructure



Testing on demand

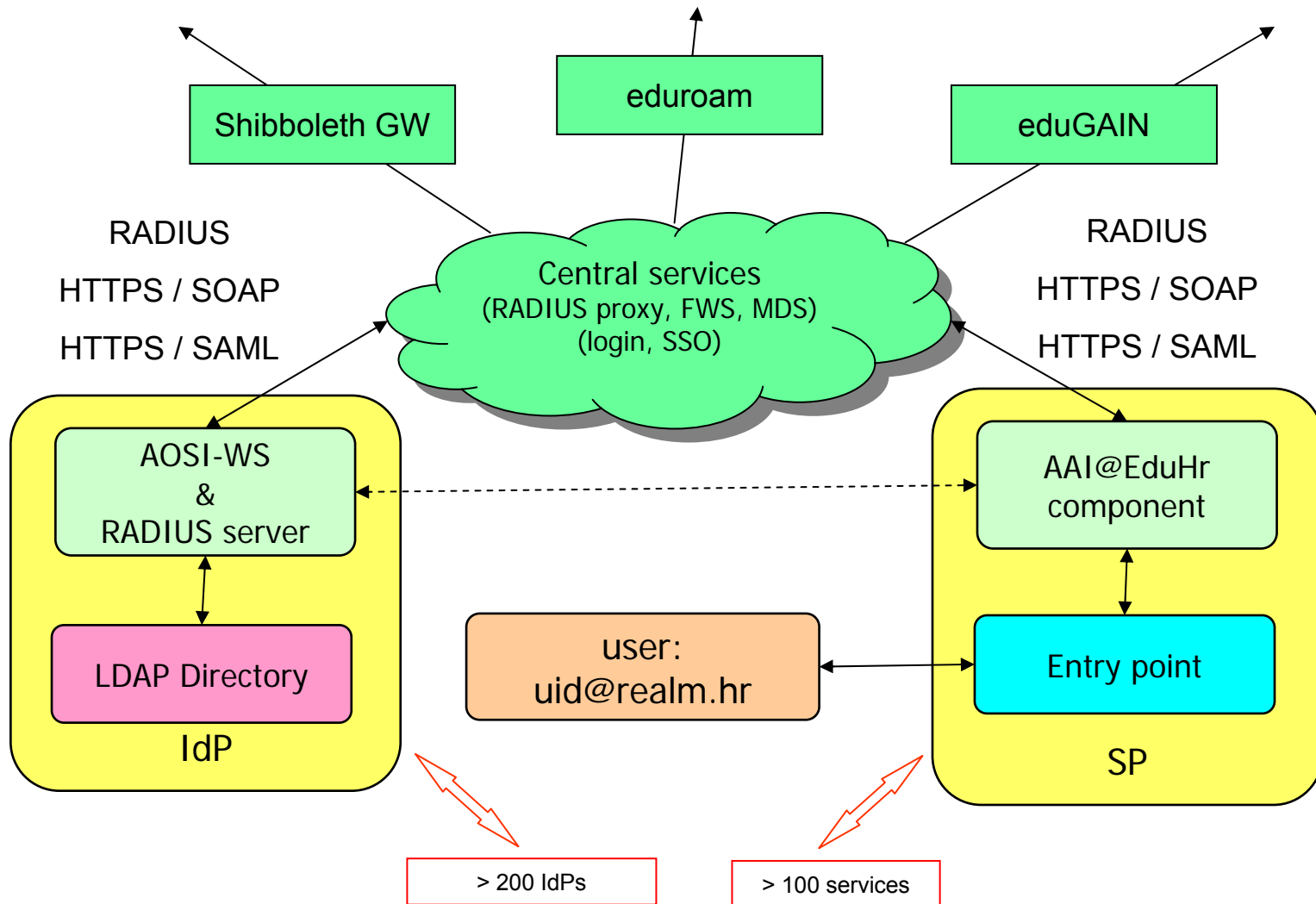


eduroam monitoring (data)

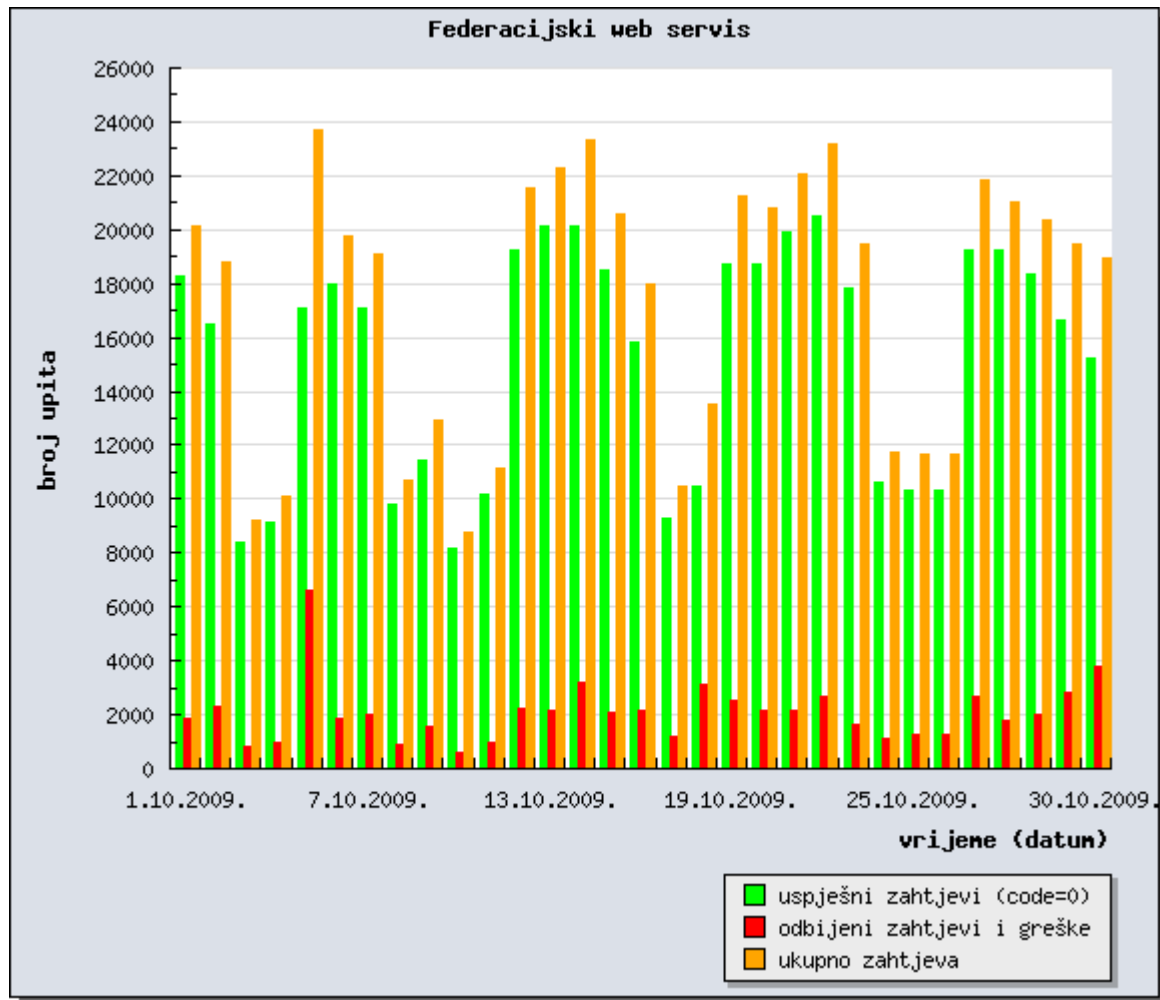
realm	tested via	Data	month					
			2008-08	2008-09	2008-10	2008-11	2008-12	2009-01
at	ETLRS1 (nl)	OK	99,87%	90,01%	96,01%	99,85%	99,87%	99,87%
		Possible problem	0,00%	0,27%	0,12%	0,15%	0,00%	0,00%
		Wrong response	0,13%	0,14%	0,13%	0,00%	0,13%	0,13%
		No response	0,00%	9,58%	3,73%	0,00%	0,00%	0,00%
	ETLRS2 (dk)	OK	99,87%	90,30%	99,73%	100,00%	99,87%	99,60%
		Possible problem	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		Wrong response	0,13%	0,00%	0,27%	0,00%	0,13%	0,40%
		No response	0,00%	9,70%	0,00%	0,00%	0,00%	0,00%
be	ETLRS1 (nl)	OK	100,00%	98,22%	96,53%	100,00%	99,76%	99,87%
		Possible problem	0,00%	0,13%	0,00%	0,00%	0,24%	0,00%
		Wrong response	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		No response	0,00%	1,65%	3,47%	0,00%	0,00%	0,13%
	ETLRS2 (dk)	OK	100,00%	99,88%	100,00%	99,86%	99,88%	100,00%
		Possible problem	0,00%	0,00%	0,00%	0,00%	0,12%	0,00%
		Wrong response	0,00%	0,00%	0,00%	0,14%	0,00%	0,00%
		No response	0,00%	0,12%	0,00%	0,00%	0,00%	0,00%
bg	ETLRS1 (nl)	OK	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		Possible problem	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		Wrong response	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		No response	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%
	ETLRS2 (dk)	OK	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		Possible problem	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		Wrong response	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		No response	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%
ch	ETLRS1 (nl)	OK	100,00%	97,95%	96,65%	99,87%	99,87%	100,00%
		Possible problem	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		Wrong response	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
		No response	0,00%	2,05%	3,35%	0,13%	0,13%	0,00%
	ETLRS2 (dk)	OK	100,00%	99,45%	100,00%	99,86%	99,87%	100,00%
		Possible problem	0,00%	0,14%	0,00%	0,00%	0,00%	0,00%
		Wrong response	0,00%	0,00%	0,00%	0,00%	0,13%	0,00%
		No response	0,00%	0,41%	0,00%	0,14%	0,00%	0,00%

*Sample data from the monitoring database
(infrastructure monitoring scenario)*

An example: AAI@EduHr federation

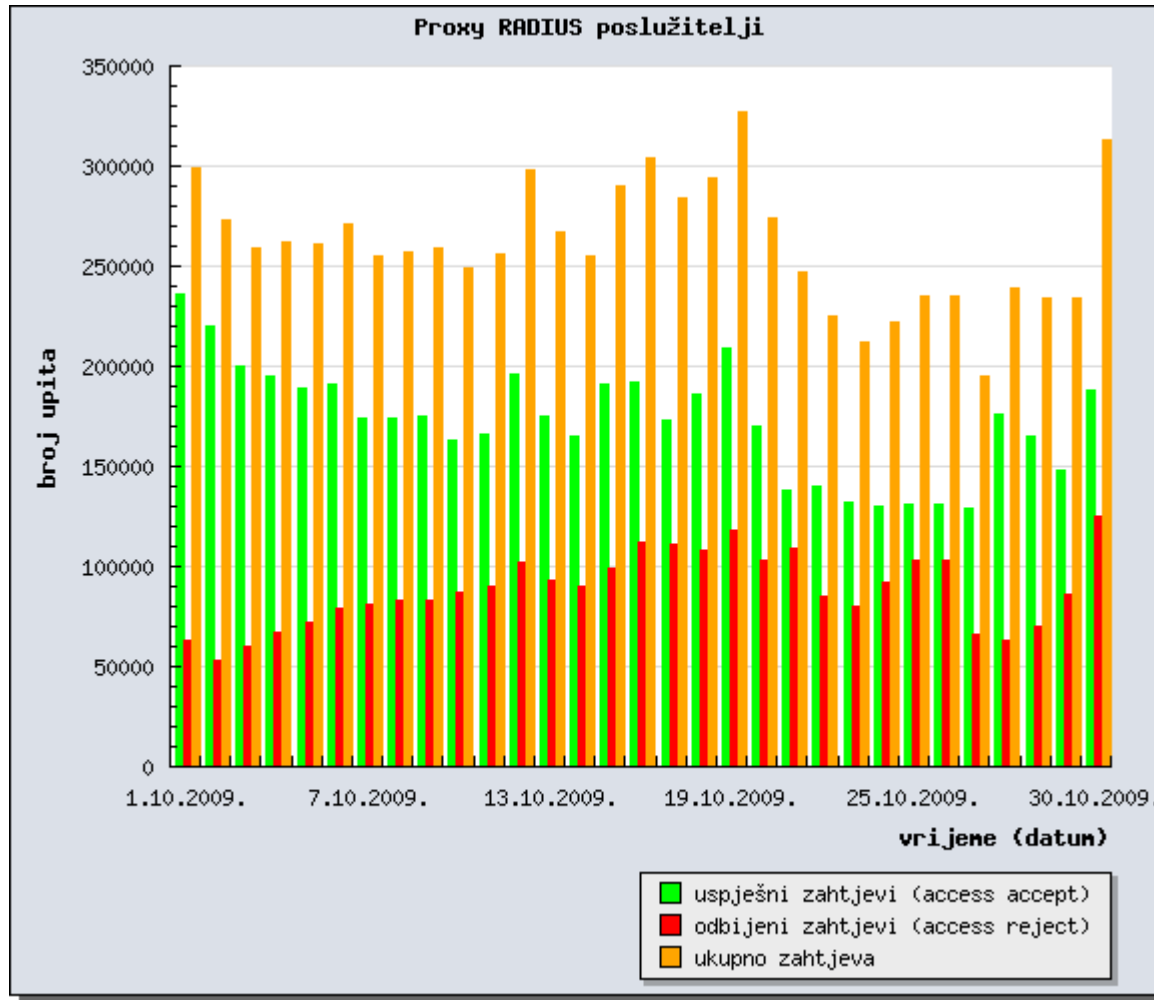


AAI@EduHr traffic (1)



**FWS/SSO
(SOAP/SAML)
traffic for
October 2009
total: 536533
requests**

AAI@EduHr traffic (2)



**RADIUS traffic
for October 2009
total: 8.214.631
requests**

AAI@EduHr monitoring

- ❖ centralised monitoring service
 - ◆ for central services, IdPs and selected SPs
 - ◆ functional testing
 - ◆ Nagios based
 - ◆ http://www.aaiedu.hr/status_li.php

LDAP domena	Naziv ustanove	P/S	RADIUS	AOSI	LDAP	Broj e-ID
acmt.hr	Američka visoka škola za management i tehnologiju - ACMT	P	✓	✓	✓	108
adu.hr	Akademija dramske umjetnosti	P	✓	✓	✓	205
agr.hr	Agronomski fakultet u Zagrebu	P	✓	✓	✓	1782

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Food for thought

- ❖ standardisation
 - ◆ what and how do we measure & monitor?
- ❖ centralised vs. distributed solutions
 - ◆ central repositories (databases)?
 - ◆ centralised monitoring service?
- ❖ tools integration/standardisation?
- ❖ NAGIOS framework as a standard?
- ❖ can we learn/generalise from the eduroam model?
- ❖ “test identity”? yes or no

- ❖ what about your organisation / country / (con)federation?

Confederation monitoring: a proposal

