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POLISH INTERNET EXCHANGE

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How to create an effective NOC in Poland?

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PLIX

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Do not forget to tell about the contest!

Sylwester ☺

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What is PLIX?

- PLIX is not only Sylwester Biernacki ☺
- 11 people, the chameleon, and some fish.
- PLIX is the only neutral (and the biggest!) point of exchange of IP traffic in Poland.
- We are in 3 locations, including the warmest place in Warsaw (LIM 42th floor).

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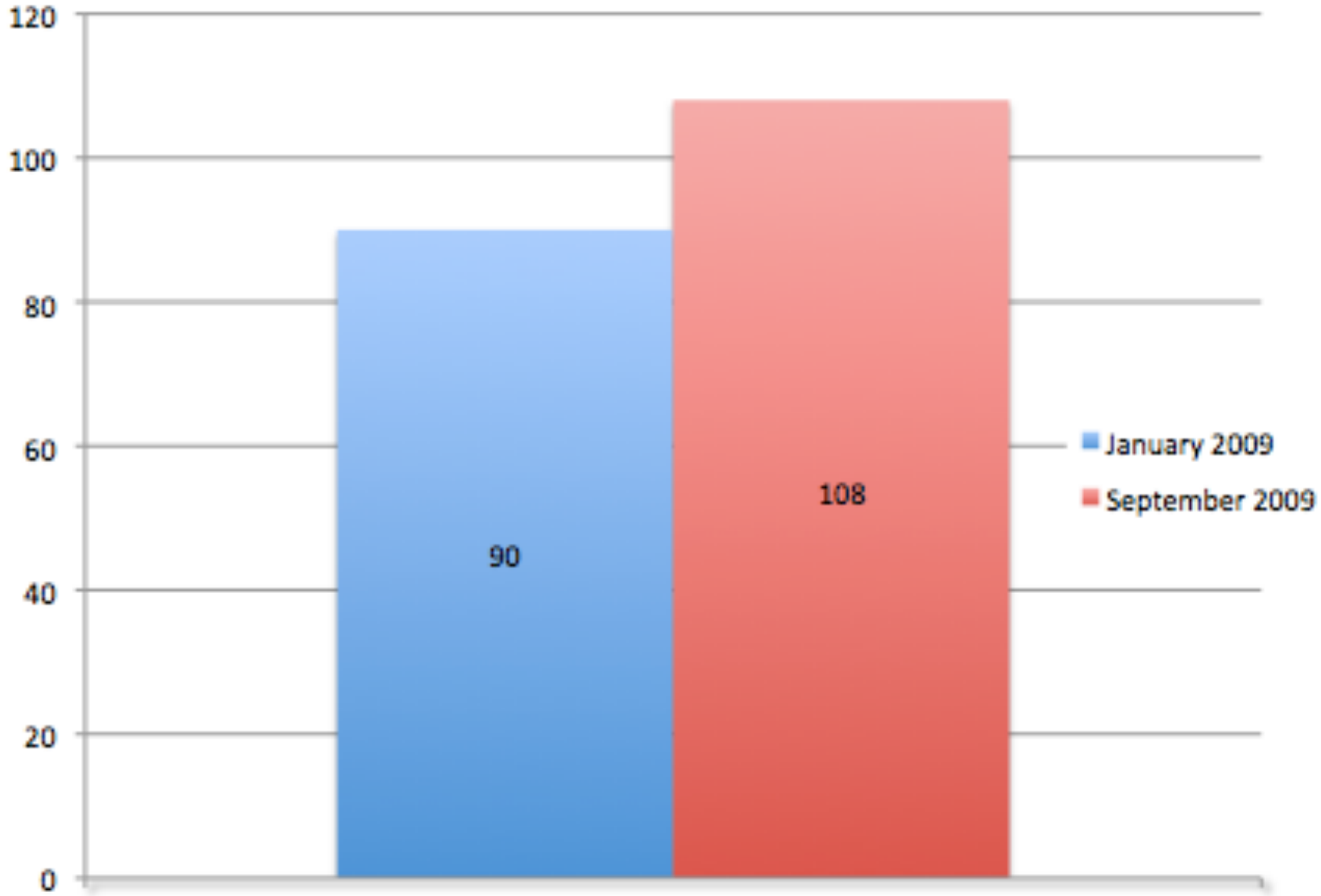
PLIX in numbers

The amount of Coustomers



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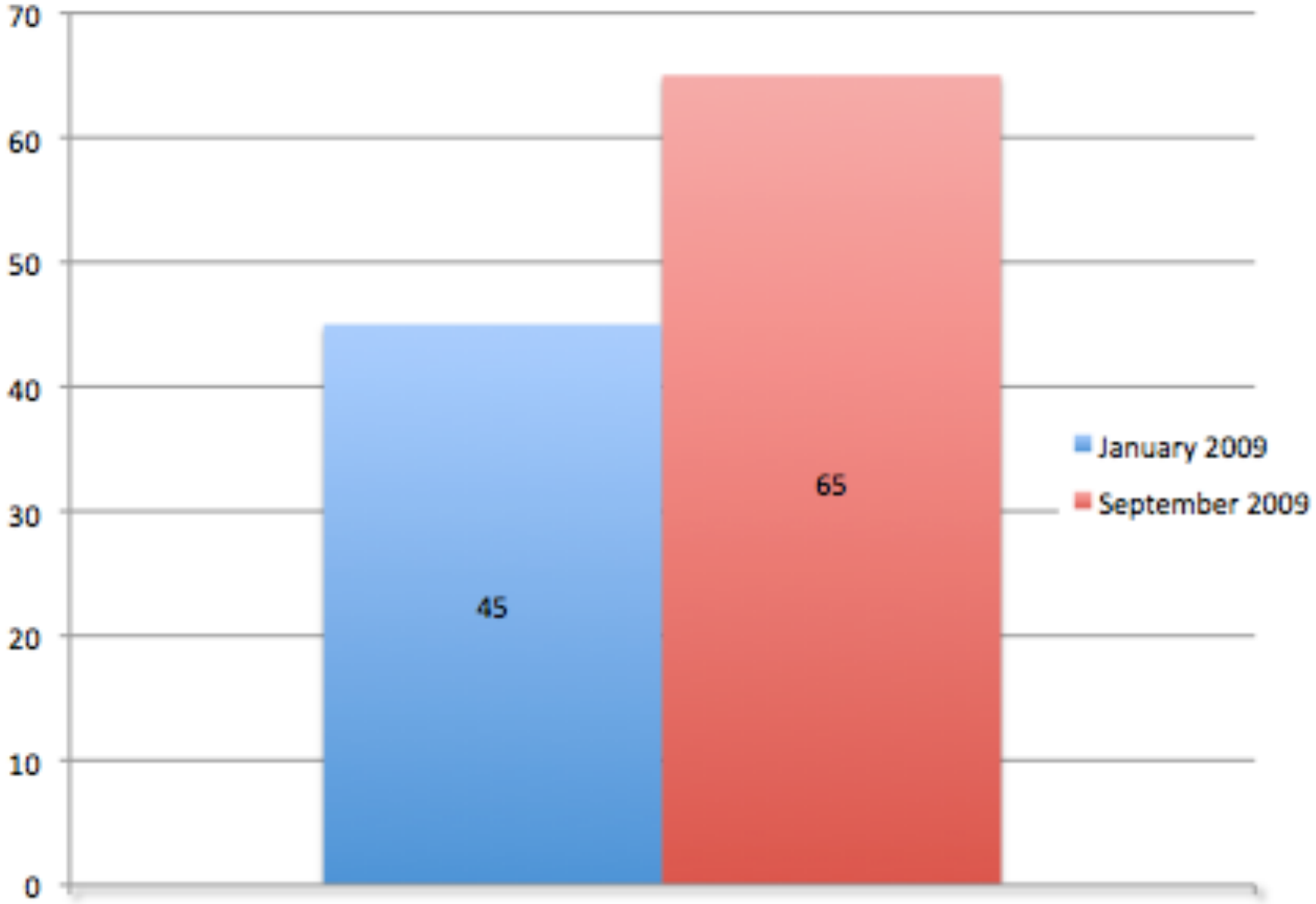
PLIX in numbers

The amount of traffic



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PLIX in numbers

	January 2009	September 2009	Growth in %
Customers	~90	108	20%
Switches	11	11	0%
Ports 1/10G	386	406	5%
Traffic	~45 Gbps	> 65 Gbps	44%
BGP Session	200	> 225	12%

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Network Operation Center

- What is a NOC?
- Requirements
  - Monitoring
  - Diagnosis
  - First Aid
  - Customer information
  - Events documentation

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NOC PLIX

- This is our NOC (a 'potty' in English means NOCNIK / NOC operator in Polish ((-;

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NOC PLIX

- ... And an "old school" NOC Manager

NOC PLIX

What do we really monitor in PLIX NOC

- BGP Session state
- IP traffic level
- Availability BGP neighbours
- Port state (up/down)

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NOC PLIX

- It operates 24 hours a day, 7 days a week
- You can contact us in many ways:
  - Phone: +48 22 427 39 99
  - Mobile: +48 721 333 999
  - E-Mail: noc@plix.pl
  - Customer panel my.plix.pl
- It is always on the site

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my.plix.pl
Drawing

```
irb(main):> rand(108) % 1 + 73
=> 73
```

my.plix.pl

Strona Główna Wyloguj

Firmy

Moja firma
Lista firm

Tickety

Nowy ticket
Wyświetl tickety

[redacted]

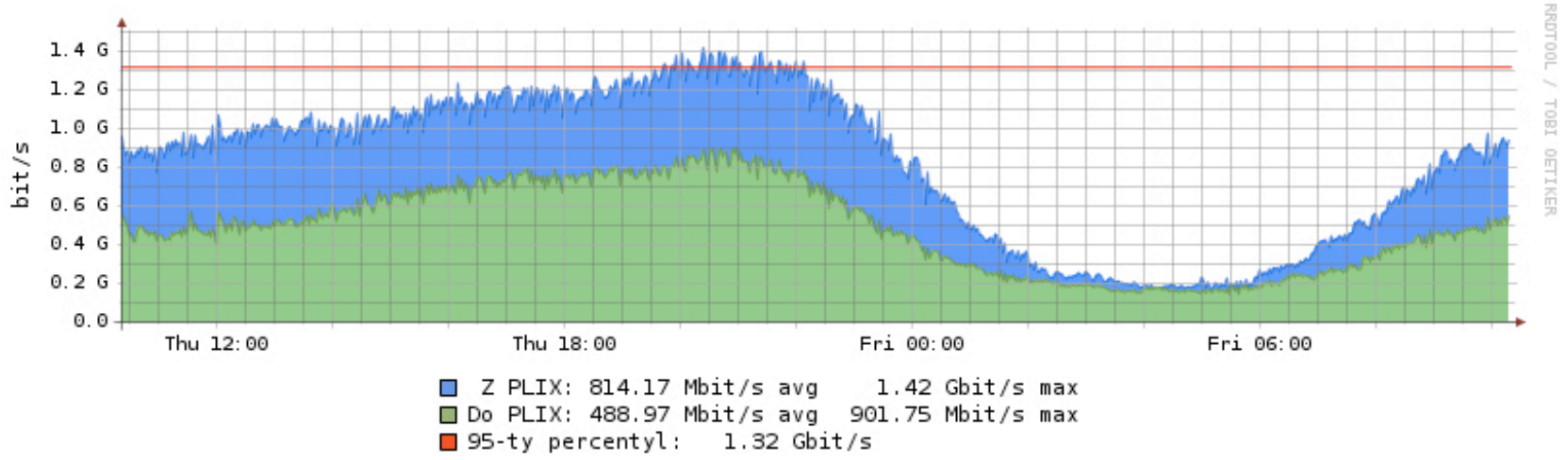
NIP:
Adres strony internetowej:
Polityka peeringu:
Wersja językowa:

Edytuj

Kontakty | Adresy | Otwarte tickety | Ostatnie tickety | Statystyki | Smokeping | Sesje BGP | Raporty

6 godzin | 24 godziny | Tydzień | Miesiąc | 3 miesiące | Rok | Wyświetl

Lim 42p. (Warszawa) , waw-sw4, TenGigabitEthernet 7/3 [redacted] Aktualna prędkość: 523.89 Mbit/s in / 896.99 Mbit/s out



Disadvantages of the former NOC – Tools: nagios

- No possibility of grouping events,
- Resources,
- Nagios must regularly check the all of the services

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Disadvantages of the former NOC – Tools: CACTI

- Problems when switching customers between ports/devices,
- Lack of integration with CRM,
- No possibility of traffic aggregation from selected ports.

Disadvantages of the former NOC – Tools: SMOKEPING

- Poor notification,
- a lot of e-mails.

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Disadvantages of the former NOC – Tools: TRAP BROWSER

- A large number of events to review,
- No possibility of grouping events,
- No filtering / searching.

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Disadvantages of the former NOC - Tools.

- Many utilities are :
  - many different APIs
  - many different user interfaces,
  - many different configuration files
  - many different types of notification…(e-mail, sms, www),
  - ... and lack of personalization (example: assigning the client to the port), counting SLA (agreement with the client),
- All of this makes the monitoring system is very unreadable .

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Disadvantages of the former NOC - Infrastructure

- No redundancy,
- Susceptibility to failure,
- Difficulty in maintaining and updating,
- Complex relations between system elements,
- Long time "disaster recovery",
- Low productivity, duplicating processes

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Disadvantages of the former NOC - Infrastructure

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Changes were needed

- To cope with the demands we had to have eyes in the back of our heads,
- The recruitment process won the chameleon called Strips. (His name takes roots from a type of a meal served in KFC restaurants),
- We decided to hire him
- It was a good step.
- As you can see he does excellent cable work and does his best debugging our software (from any possible crickets

PLIX LAB - objectives

- The creation of efficient infrastructure and redundancy,
- Creating a consolidated system of notification of anomalies
  occurring in the networks,
- Intelligent monitoring - diagnosis, grouping and filtering of events,
- Centralization (webservice) - uniform API for all tools,
- Personalization of systems, in the direction of the SLA,
  and contract terms with customers


Coca-Cola


Coca-Cola

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PLIX LAB - implementation

- New infrastructure,
- Admin.plix
- Webservice - API
- Trap Monitor,
- Live Network Map,
- Live Network Traffic Graph,

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Implementation - infrastructure

- Redundancy of services,
- Virtualization,
- Simplifying the process of deploying and maintenance,
- Optimization processes (no tasks duplication)

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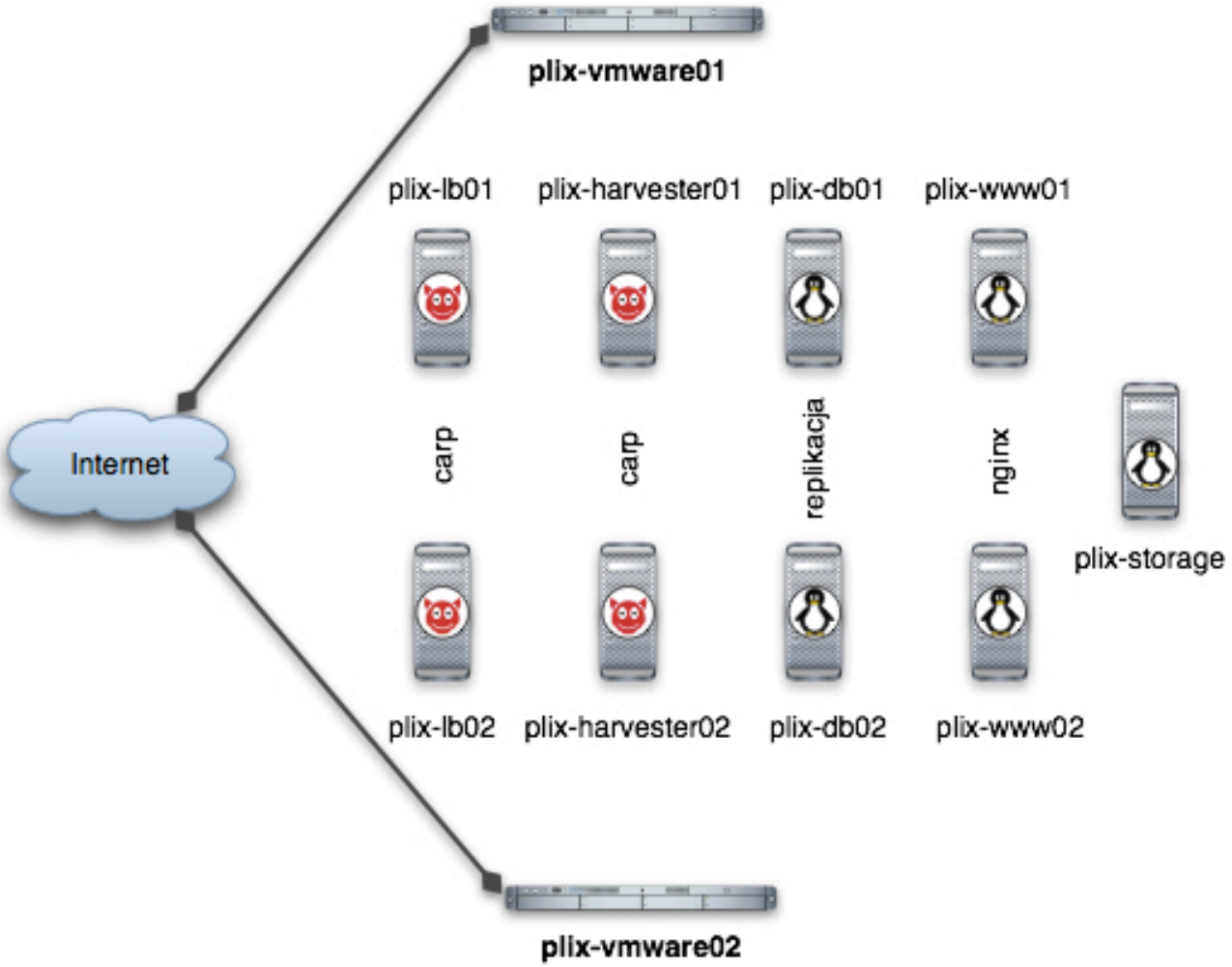
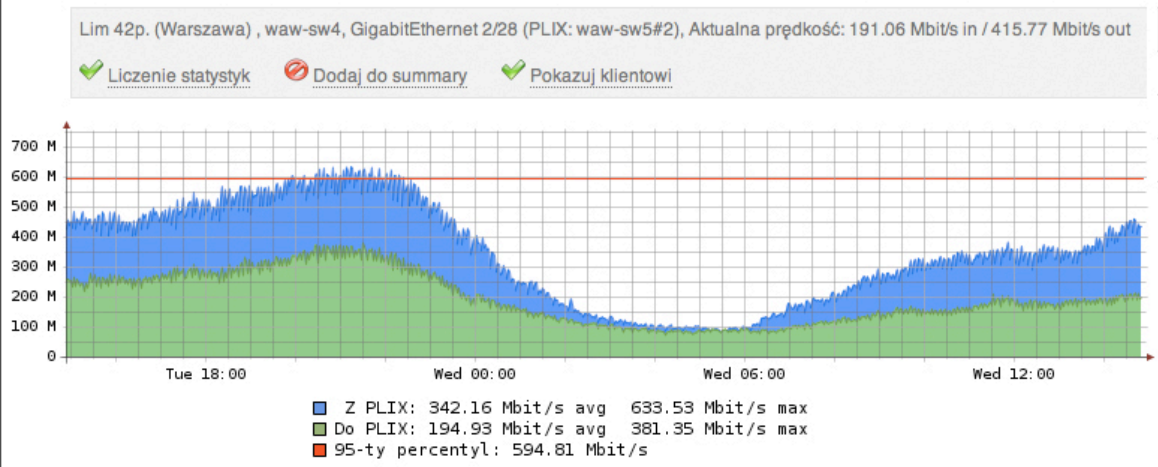
Implementation - infrastructure

Implementation - infrastructure

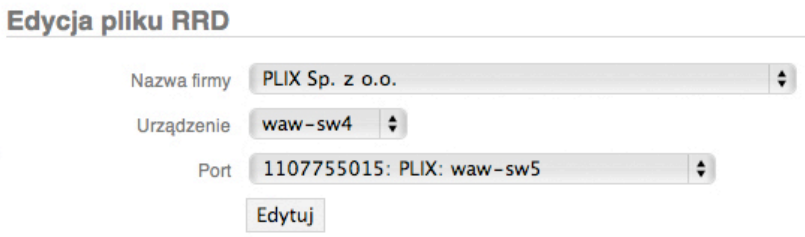


PLIX LAB – admin.plix

- Complete customer information (ports, sessions, statistics),
- Infrastructure management and ticket system,
- Configuration tools, which are still in use (nagios, smokeping)



urządzenie	status	port descr	port alias	port status	port in octets	port out octets
waw-sw4	up	TenGigabitEthernet 4/7		up / up	3.04 Gbit/s	314.08 Mbit/s
waw-sw4	up	TenGigabitEthernet 7/0		up / up	5.19 Gbit/s	369.76 Mbit/s
waw-sw4	up	Port-channel 6		up / up	8.23 Gbit/s	684.45 Mbit/s



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Competition!!!

- Guys probably forgot about the competition, so the slide will remind them:)
- Do you remember how we called our chameleon, and what the origin of his name is?
- All the time thinking about you ... Sylwester ☺

Implementation - tools
Trap Monitor

- Visualization of events (live),
- Centralization,
- Grouping of events on the basis of the customer information system (session, port, ip),
- Uniform notification,
- Trap browser,
- **Precise** counting time of failure.

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Implementation - tools

Trap Monitor

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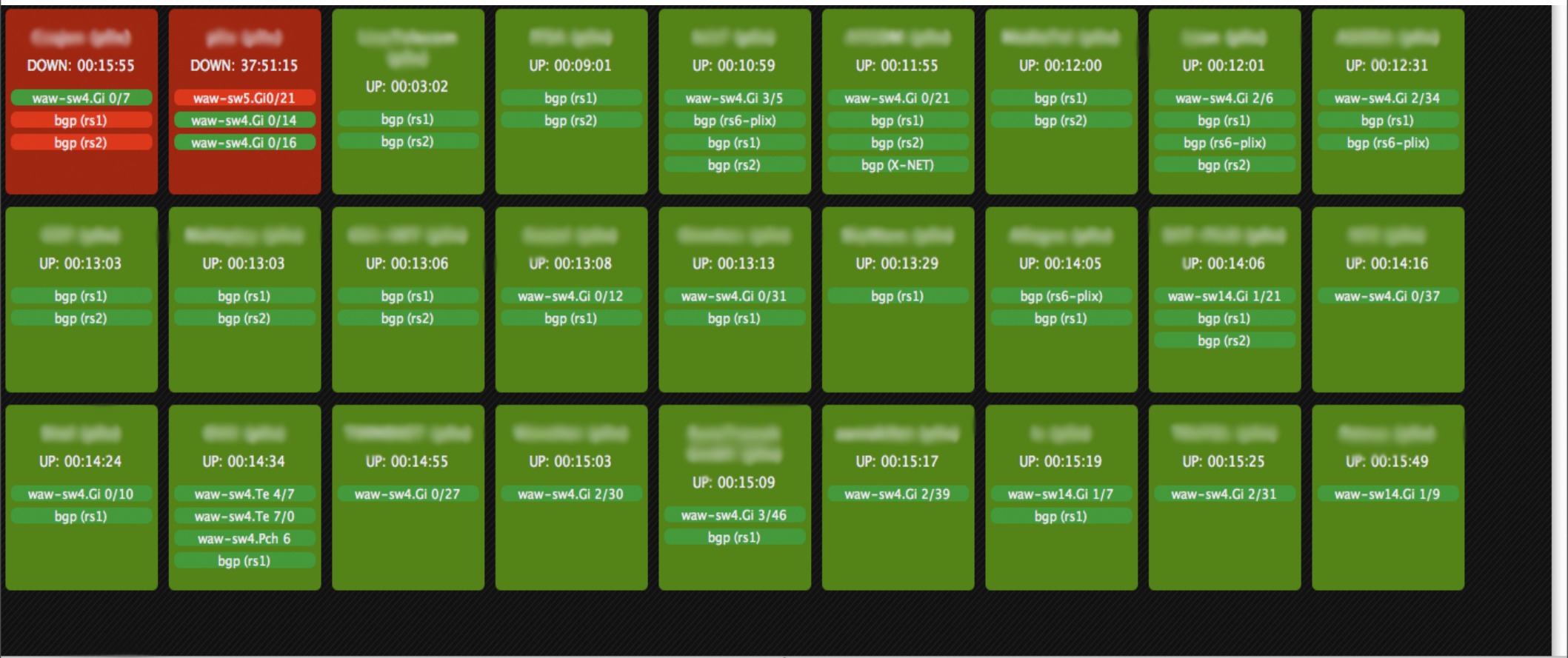


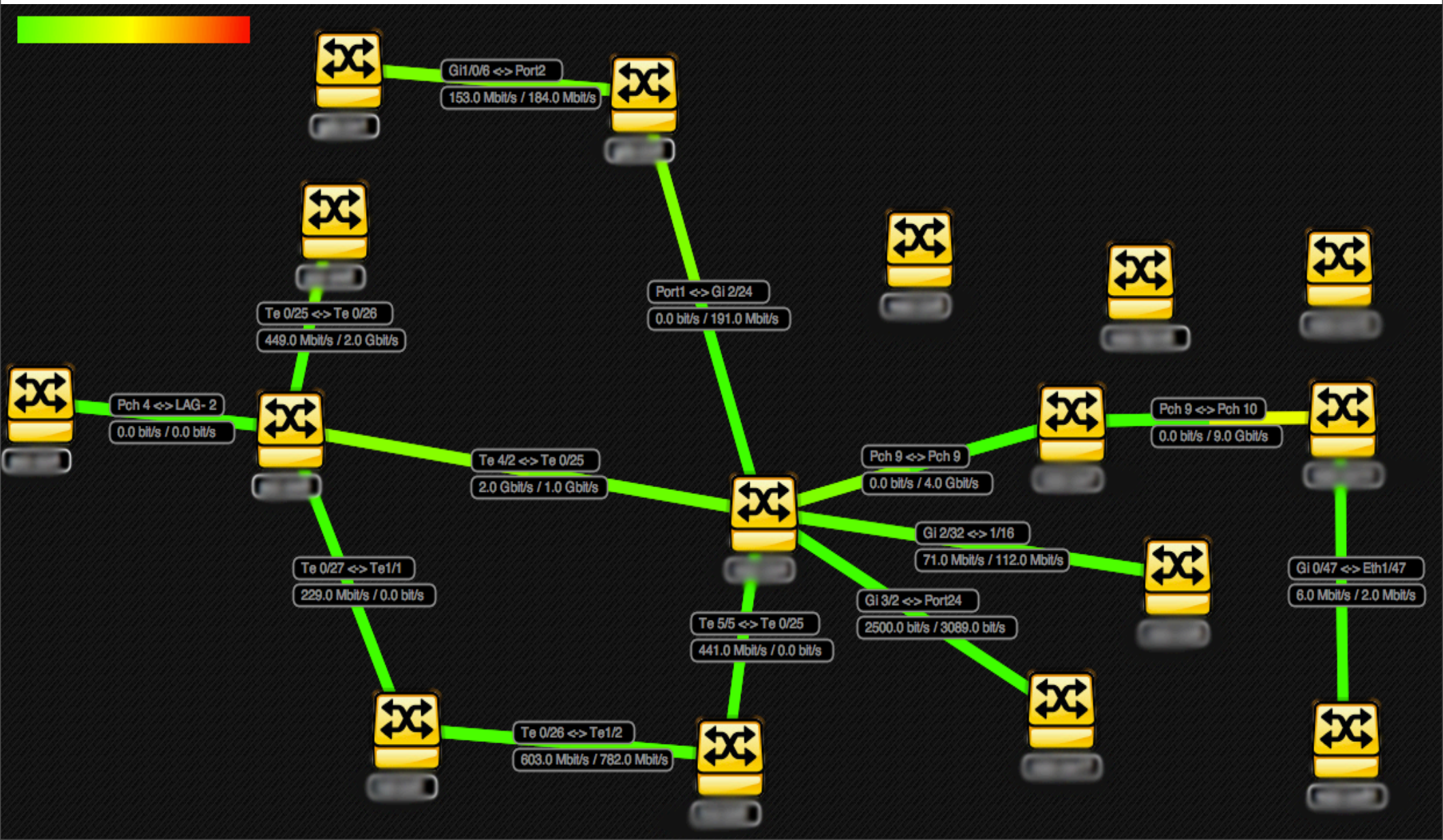
Trap id	Czas	Host	Agent IP	Typ	Ważność	Komunikat
49455		rs2	0.0.0.0	bgpEstablished	Normal	BGP Established:
49454		rs1	0.0.0.0	bgpEstablished	Normal	BGP Established
49453		rs2	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49452		rs1	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49451		rs6-plix	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49450		rs2	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49449		rs1	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49448		X-NET	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49447		rs2	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49446		rs2	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49445		rs2	0.0.0.0	bgpEstablished	Normal	BGP Establishe
49444		rs2	0.0.0.0	bgpDownEvent	Critical	BGP Down

Implementation - tools
Live Network Map

- Visualization of network infrastructure,
- State of the network infrastructure,
- Saturation uplinks between the switches,
- Visualization of events on devices.

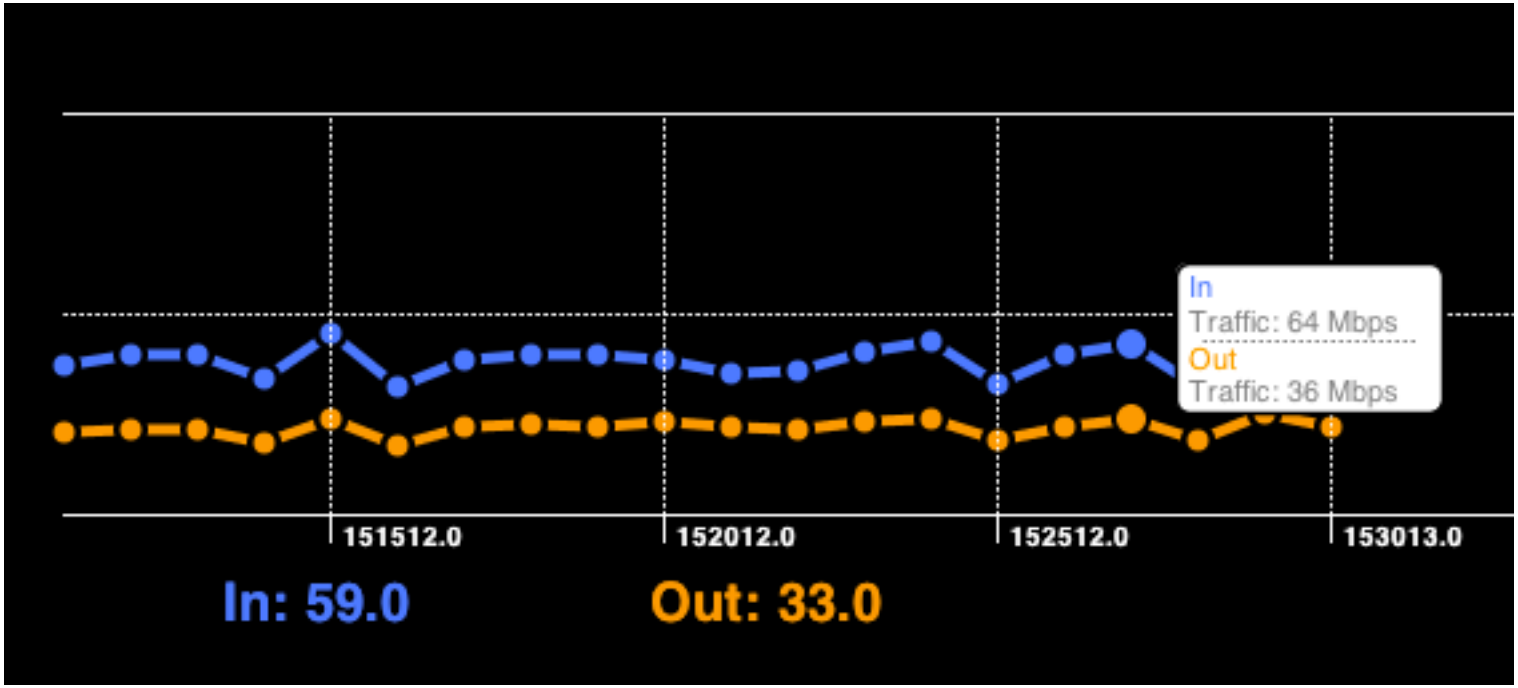
Implementation - tools

Live Network Map



Implementation - tools
Live Network Traffic Graph

- Drawing graphs with traffic on selected ports, (example: uplinks) in real time,
- Sampling every 30-60 seconds (optional).



PLIX LAB – current projects
Trap Monitor

- Create tickets on the basis of grouped events,
- Grouping and filtering of events using values such as BGP software, data transmission provider, location,
- Intelligent diagnostics - the ability to detect a power outage at LIM, the supplier of transmission failures, errors in the software.

PLIX LAB – current projects
Live Network Traffic Graph

- Analysis of traffic (multicast, broadcast),
- Anomalies (peaks and declines).

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Brain storm

- What an ideal NOC should be like?
- How should NOC work?
- What tools should it use?
- Procedures

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Questions? ☺

To nie duzi zjadają małych, tylko szybsi wolniejszych