Montenegro **I**nternet e**X**change Point (**MIXP**) – a success story

www.mixp.me

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Content

- Short history of the MIXP establishing
- Design
- Installation
- Challenges

Initiative

- Montenegro was one of the last countries in Europe without an Internet exchange point

- Therefore the Agency for Electronic Communications and Postal Services has started some activities to promote this issue and made the Study for IXP at November 2013.

Feasibility Study

- CIS UoM prepared the Feasibility Study on the Establishment of Internet Exchange Point (IXP) in Montenegro on April 2014 and validated through many public debates and events.

- During IT event "Infofest 2014", the Agency and the Ministry organized a final presentation and evaluation of the FS in front of representatives from International telecommunication union (ITU), Internet society (ISOC), local ISPs, NGOs and other relevant stakeholders.

Feasibility Study - conclusion

- Considering the recommendations from FS, the analysis of profiles of the existing providers and potential candidates for the first IXP in Montenegro, as well as the fact that the national, strategic and security reasons take precedence over the commercial reasons, it was proposed that the academic environment is the optimum solution for establishing the first IXP

- Government of Montenegro has made the Decision on the 6th of November 2014 to make the CIS UoM the host and operator of first IXP in Montenegro

The technical specification

- The technical team of the CIS UoM has created the detailed specifications of the equipment and activities necessary for the technical part of installing the IXP.

- At the end of November 2014, a detailed specification of the equipment and activities was prepared, and it has passed the validation of the professional team of SOX

The wide world support

- Since ISOC and ITU have showed great interest and have expressed the readiness to help on installing the first IXP, the TFG has contacted their representatives and has planned to organize a comprehensive workshop which will give the final design to the future IXP.

- The three-day workshop took place as a part of the anniversary 20th international scientific conference IT 2015 in Žabljak. The workshop has gathered the representatives of **RIPE, ICANN, France-IX, INEX, SIX, NIX.CZ, CISCO, CIS UoM, the Ministry, the Agency** and the **local ISPs.**

Recommended technical solution

- IXP based on Ethernet, using route-server model, as a separate AS with a unique ASN and IPv4 and IPv6 addresses
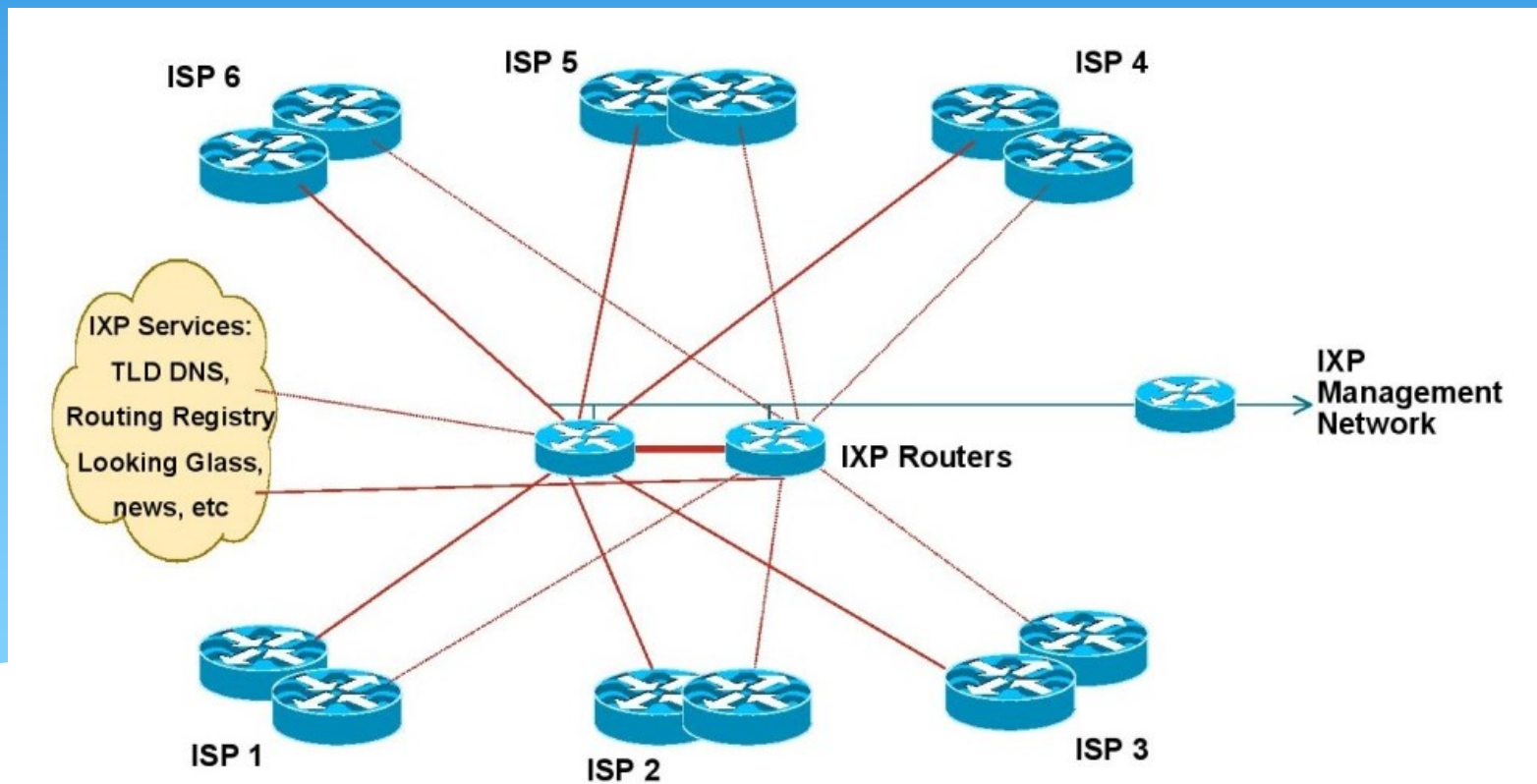
The local ISP support

- Following the IT conference in Žabljak, the Task Force Group held a series of meetings with the leading ISPs in Montenegro (Telekom, Telenor and M:tel) about finding their interest and the way of helping in installing the first IXP. **Telenor and Telekom** have truly made an effort to help on the installation of the first IXP and have agreed to together procure all the active equipment from the list

Design
Main functionalities

- Peering and Route-server
- Public and Members-only services
- Private services
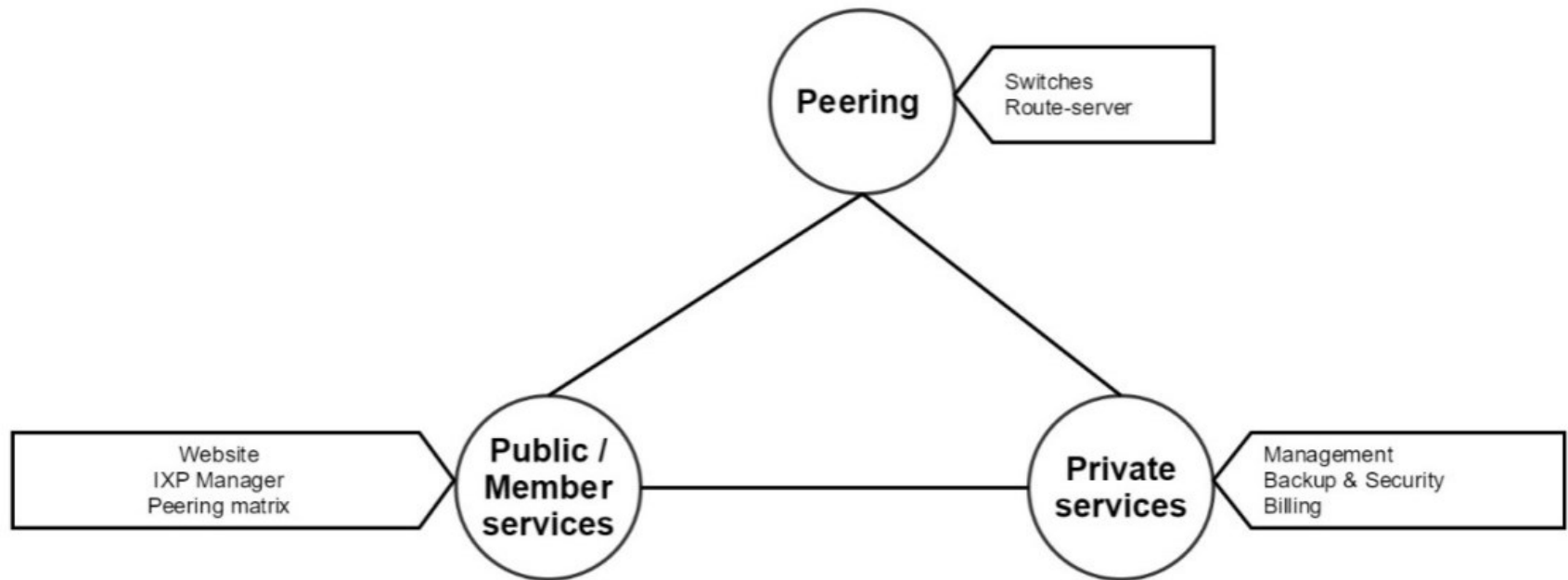
Installation

Prerequisites:

- Location of equipment: Raised floor needed additional support for heavy-weight rack with equipment; Upgrade of video-surveillance

- Power supply: all power lines, coming from distribution network, batteries and fuel-generators had to be arranged in separate protected circuits

- Air conditioning had to be reconfigured for unattended mode operation

- Preparation of website containing description of MIXP services and draft agreement

- Administrative procedures to obtain IP resources from RIPE

Servers connectivity diagram
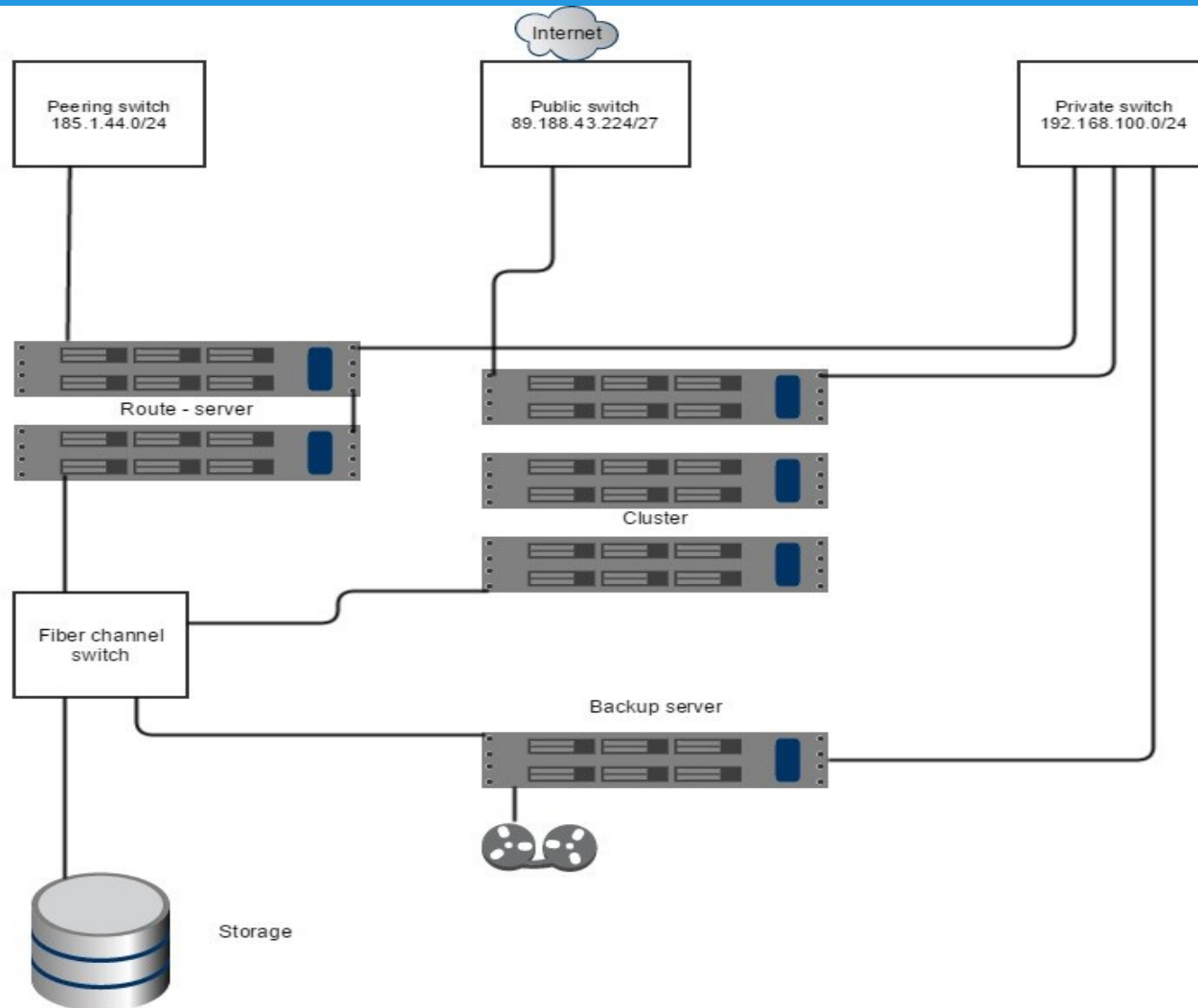
Challenge
Equipment procurement

- Typical challenge of finding initial capital, as there was no budget allocated locally and limited funding from ITU and ISOC

- Support from two largest ISPs in country to buy equipment in exchange for first year services

Challenge
The targeted deadline

After workshop at Žabljak was finalized, documentation and order list updated, **July 2015** is designated as the deadline by when the IXP in Montenegro to be established, linked to the ISP operators in Montenegro, and functional.

Challenge
Connecting ISPs

- All registered ISPs in country have been contacted
- University, .ME registry and T-com already connected
- Telenor established fiber path, connectivity during this week
- Couple of operators working on fiber path

ONGOING ✔

Challenge
Operations and management

- MIXP is operated by Center for Information Systems at University of Montenegro
- Operational procedures to be formalised
- Advisory and supervisory body within Ministry was formed

ONGOING