OpenFlow-based Migration and Management of the TouIX IXP

Rémy Lapeyrade, Marc Bruyère, Philippe Owezarski

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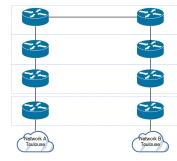
4 Conclusion

IXP fabric SDN TouSIX project

Inter-networking methods

Transit network

- Give access on the entire geographical network
- Pays per quantity transited
- Network shared with other customers



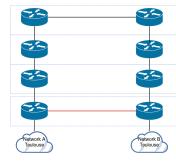
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IXP fabric SDN TouSIX project

Peering network

Benefits

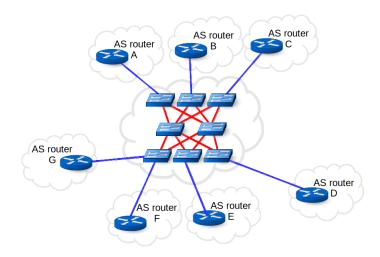
- No restriction on traffic (cost reduced)
- Latency reduced
- Security increased



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IXP fabric SDN TouSIX project

Typical IXP fabric



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IXP fabric SDN TouSIX project

IXP strengths

- Flexibility
- Low-cost shared infrastructure
- Security

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IXP fabric SDN TouSIX project



Decoupling control plane from data plane

- More flexible network
- Less constraints from constructor implementation



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Popular norm: OpenFlow

IXP fabric SDN TouSIX project



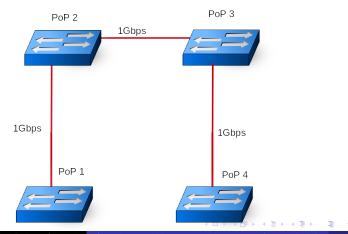
- 10 members announcing IP prefixes and sharing data
- Available on 4 PoP



http://touix.net/

IXP fabric SDN TouSIX project

TouIX topology



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IXP fabric SDN TouSIX project

TouSIX project

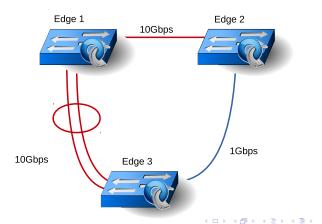
Replace TouIX IXP with native OpenFlow fabric Main objectives:

- Help on management and availability of the network
- Full OpenFlow monitoring
- Open to new services with SDN



Network architecture TouSIX-Manager

Network topology



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Context Transition of TouIX IXP Deployment

Network architecture TouSIX-Manager

Switch configuration

Choice

- Pica8 + PicOS
- Whitebox switch: OpenVSwitch
- OpenFlow 1.3 MultiTable

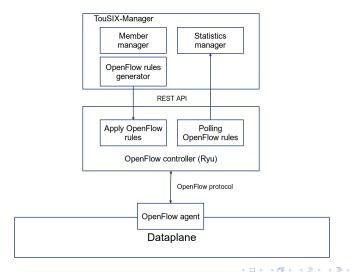


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Network architecture TouSIX-Manager

Software architecture

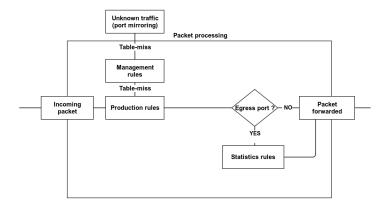


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Network architecture TouSIX-Manager

OpenFlow rules management



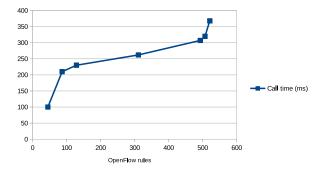
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Context Transition of TouIX IXP Deployment

Network architecture TouSIX-Manager

Statistics performance

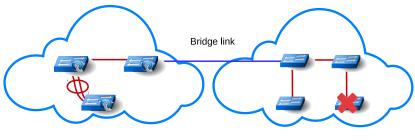


Rules generation module execution time

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Deployment



TouSIX network

TouIX network

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Statistics sampling

Period : week ~		
Type : IPv4 🗸		
Source : ALL V		
Destination : ALL ~		
→ Result		
Zoom tim 3m tim YTD ty At	Click and drag in the plot area to zoom in	From Apr 17, 2016 To Apr 16, 2016
		154 1046
	Marine	Inthat with how that
18. Apr 03.00 08.00 09.00 12.00 15.00	18:00 21:00 19. Apr 05:00	06.00 09.00 12.00 15.00
1 2 second and 22 second have seen and the 15 second have seen and the 15 second have seen and the 15 second have been also as a	18. Act	Ester under 18 der mehren and

Total IPv4 traffic on TouIX IXP (18-19th april).

Conclusion

- 1st operationnal european IXP leveraging SDN
- Foundation for experimental research platform

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