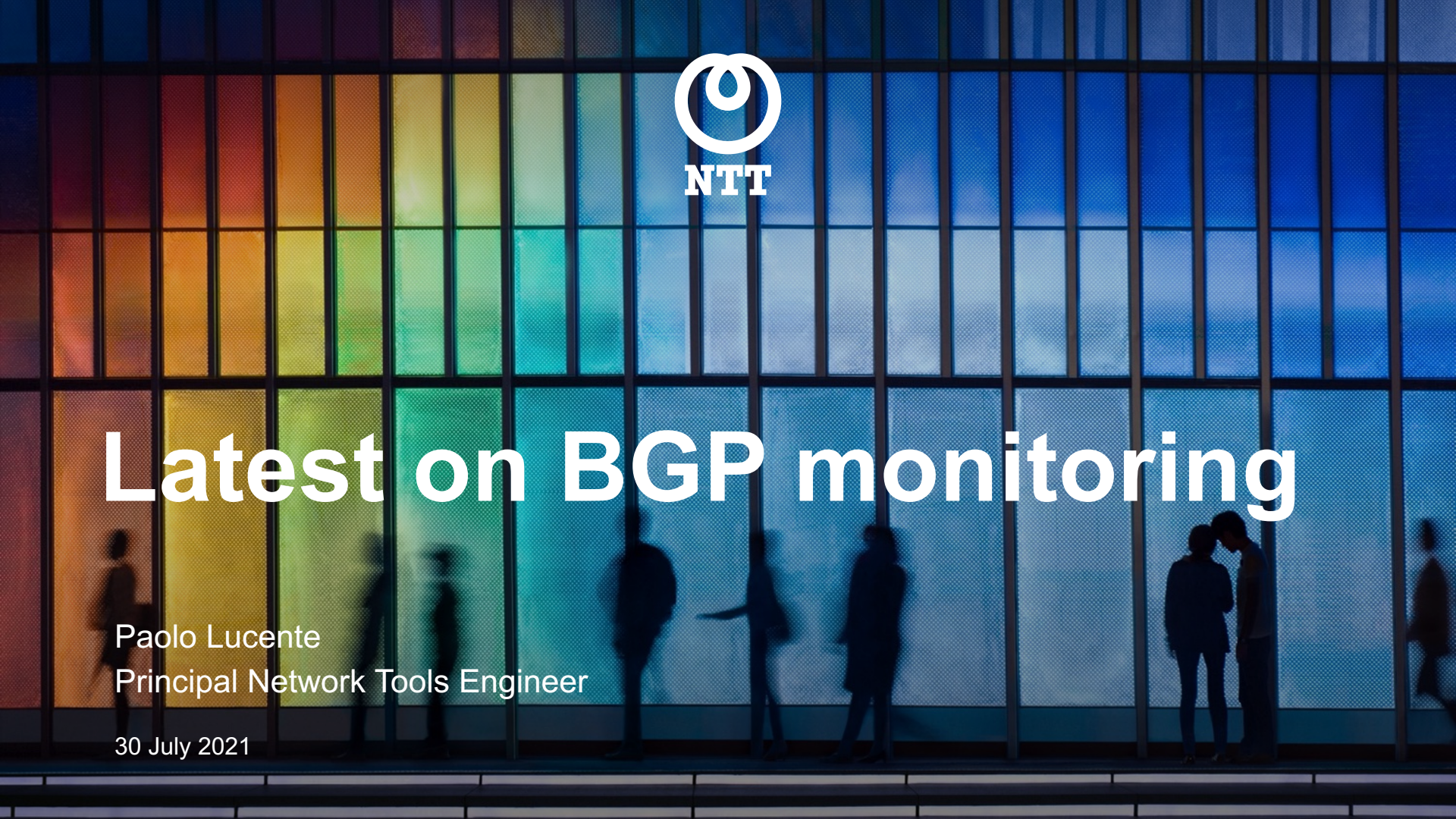

Latest on BGP monitoring

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30 July 2021

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BGP

(The) control-plane protocol to advertise Reachability Information

Why monitoring BGP?

- To verify correct functioning of control-plane
- To correlate control-plane data to:
  - Material aspects, ie. reliability of pipes or volumes of traffic
  - Business aspects, ie. cost of traffic trajectories, adherence to SLAs
- To contribute enablement of closed-loop operations

What is the main feature of BGP?

Massive scale.

So massive that BGP is the control-plane protocol that governs exchange of Reachability Information on the global Internet.

Wow!

How does BGP achieve massive scale?

Credits to: Gary Bernhardt @ CodeMash 2012

~~Wow!~~

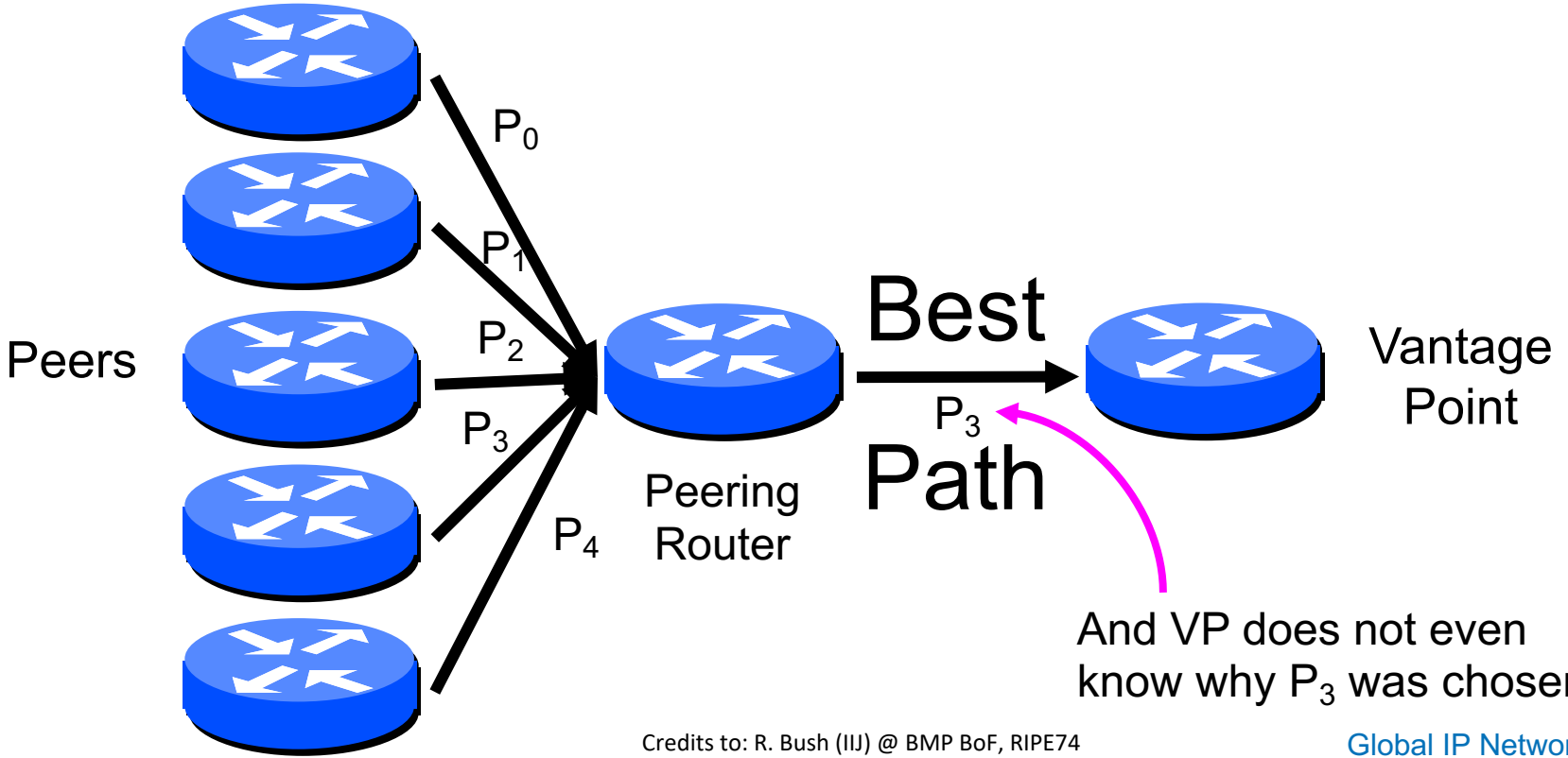
How does BGP achieve massive scale?

By applying information hiding

BMP: untangling information hiding

- BGP Monitoring Protocol (BMP)
- Seminal work became IETF RFC 7854 in 2016
- Uncomplicated protocol design 
- Get visibility, in a standardized fashion, of all reachability information in every processing stage

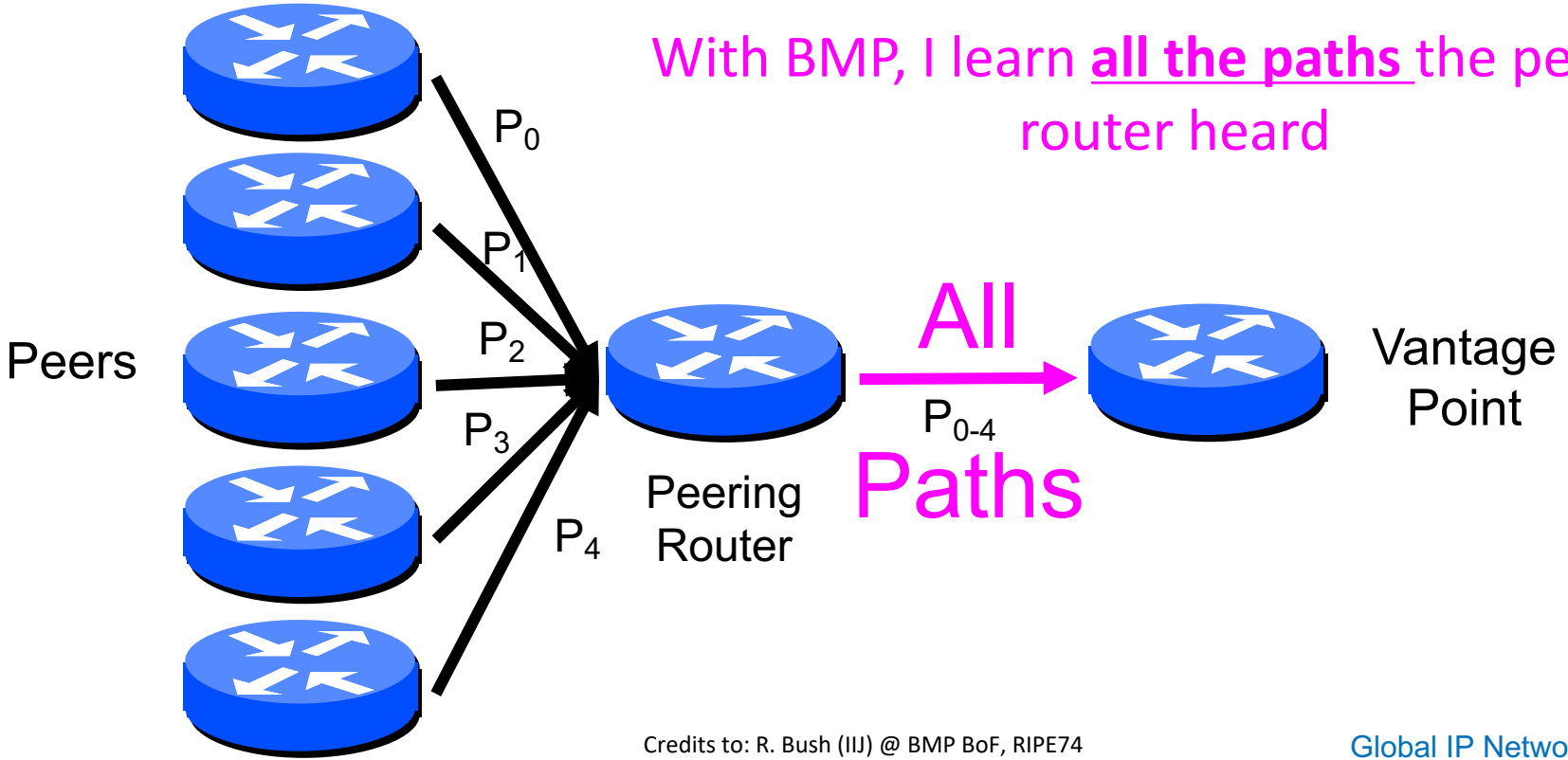
Example: traditional BGP monitoring



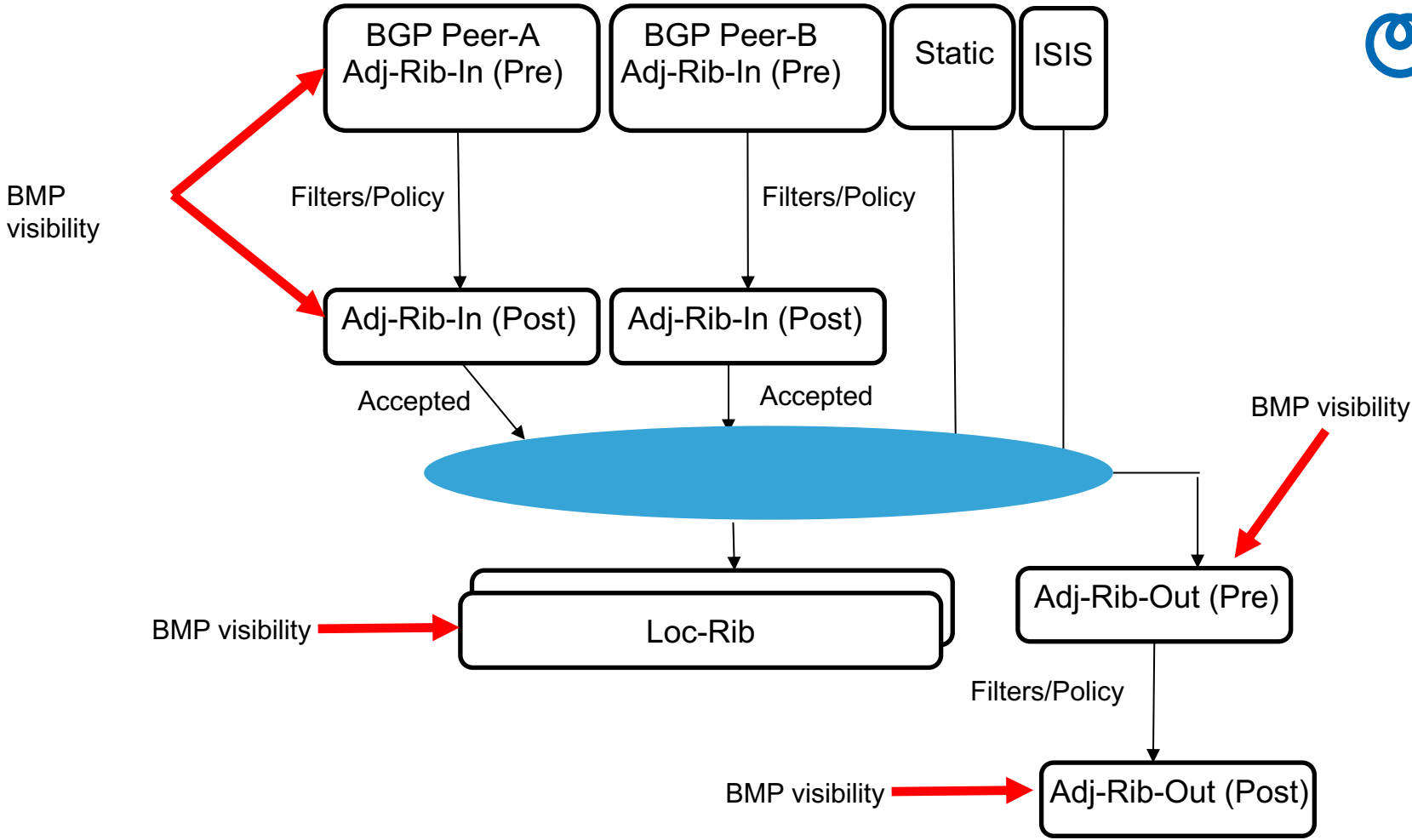
Credits to: R. Bush (IIJ) @ BMP BoF, RIPE74

Example: monitoring with BMP

With BMP, I learn **all the paths** the peering router heard



Credits to: R. Bush (IIJ) @ BMP BoF, RIPE74



Credits to: T. Evens (Cisco), S. Bayraktar (Cisco), P. Lucente (NTT) @ GROW WG, IETF 98

Global Routing Operations
Internet-Draft
Updates: 7854 (if approved)
Intended status: Standards Track
Expires: 16 December 2021

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14 June 2021

Support for Local RIB in BGP Monitoring Protocol (BMP)
draft-ietf-grow-bmp-local-rib-12

Abstract

The BGP Monitoring Protocol (BMP) defines access to local Routing Information Bases (RIBs). This document updates BMP (RFC 7854) by adding access to the Local Routing Information Base (Loc-RIB), as defined in RFC 4271. The Loc-RIB contains the routes that have been selected by the local BGP speaker's Decision Process.

Loc-RIB use-cases

- Monitor routes selected and used by the router:
  - ECMP
  - Correlation with NetFlow/IPFIX
  - Next-hop preservation
- Monitor locally originated and BGP routes without requiring peering
- Policy verification

Credits to: T. Evens (Cisco), S. Bayraktar (Cisco), P. Lucente (NTT) @ GROW WG, IETF 98

Internet Engineering Task Force (IETF)
Request for Comments: 8671
Updates: 7854
Category: Standards Track
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November 2019

Support for Adj-RIB-Out in the BGP Monitoring Protocol (BMP)

Abstract

The BGP Monitoring Protocol (BMP) only defines access to the Adj-RIB-In Routing Information Bases (RIBs). This document updates BMP (RFC 7854) by adding access to the Adj-RIB-Out RIBs. It also adds a new flag to the peer header to distinguish between Adj-RIB-In and Adj-RIB-Out.

Adj-Rib-Out use-cases

- Policy verification
- Monitor routes advertised to peers
  - Routing hygiene
  - Closed-loop operations

Credits to: T. Evens (Cisco), S. Bayraktar (Cisco), P. Lucente (NTT) @ GROW WG, IETF 98

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November 16, 2020

TLV support for BMP Route Monitoring and Peer Down Messages
draft-ietf-grow-bmp-tlv-04

Abstract

Most of the message types defined by the BGP Monitoring Protocol (BMP) do provision for optional trailing data. However, Route Monitoring messages (to provide a snapshot of the monitored Routing Information Base) and Peer Down messages (to indicate that a peering session was terminated) do not. Supporting optional data in TLV format across all BMP message types allows for an homogeneous and extensible surface that would be useful for the most different use-cases that need to convey additional data to a BMP station. While it is not intended for this document to cover any specific utilization scenario, it defines a simple way to support optional TLV data in all message types.

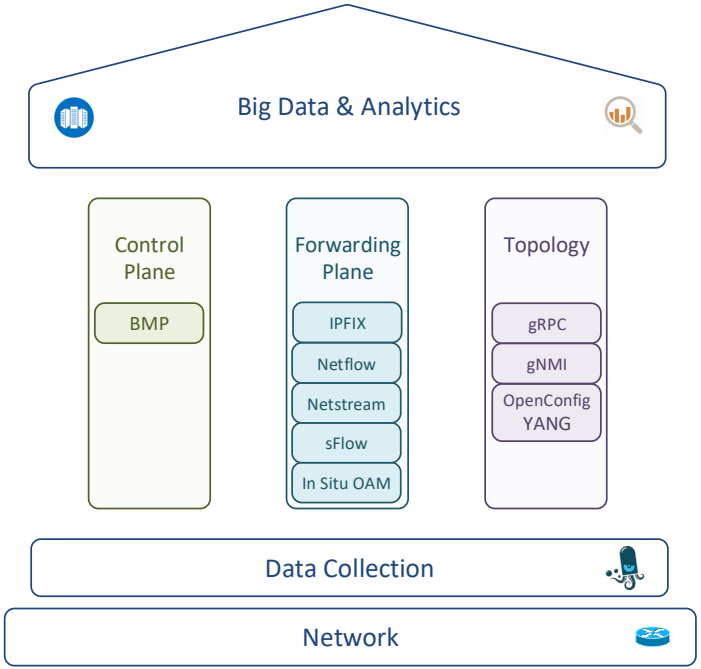
Use-cases for TLVs

- Which paths are active, which backup, etc.?
  - draft-cppy-grow-bmp-path-marking-tlv
- Which policy on which node did filter out a route?
  - draft-xu-grow-bmp-route-policy-attr-trace
- Countless others

Recap: current works on BMP

- Make the protocol extensible
- Polish registries
- Get extra visibility in certain Routing Information Base (RIB) characteristics
- Get visibility in BGP policies
- Quick restore of BMP sessions

Recap: where does BMP fit?



Credits to: T. Graf (Swisscom) @ UBBF 2018


NTT
Together we do great things

Thank you.

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