



Jak šel čas v síťování Marian Rychtecký

KKTS Plzeň 2020



NIX.CZ



10BaseT2

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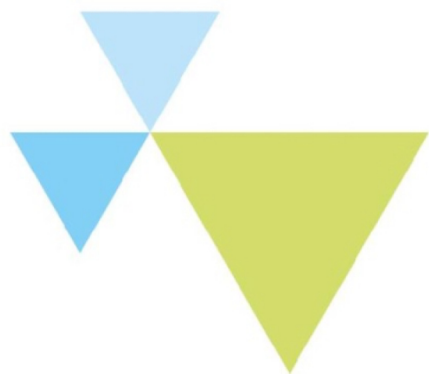
400G-QSFP-DD LR4



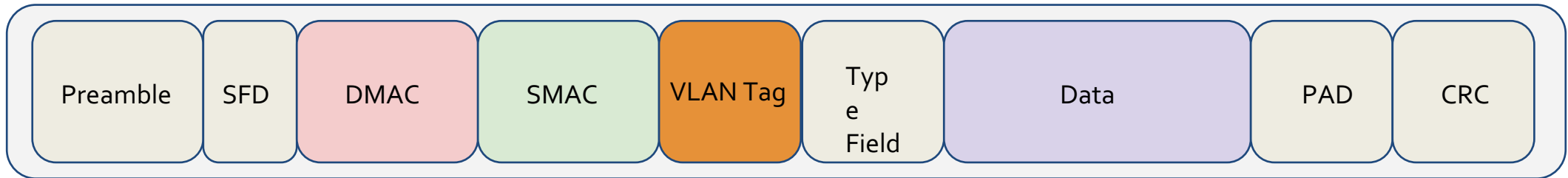
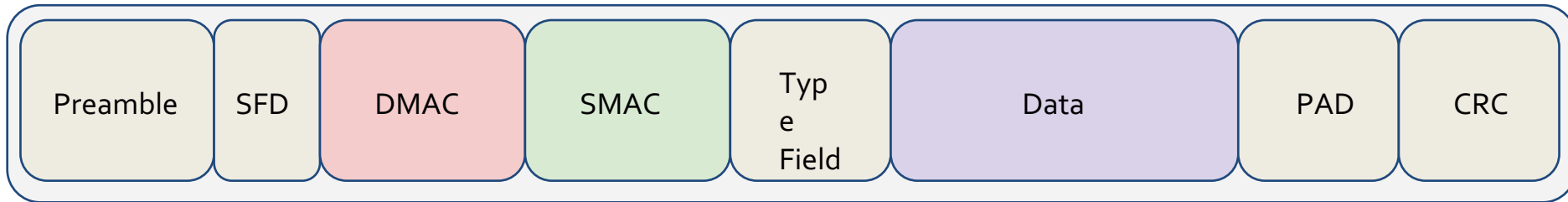
Ethernet a jeho důsledky



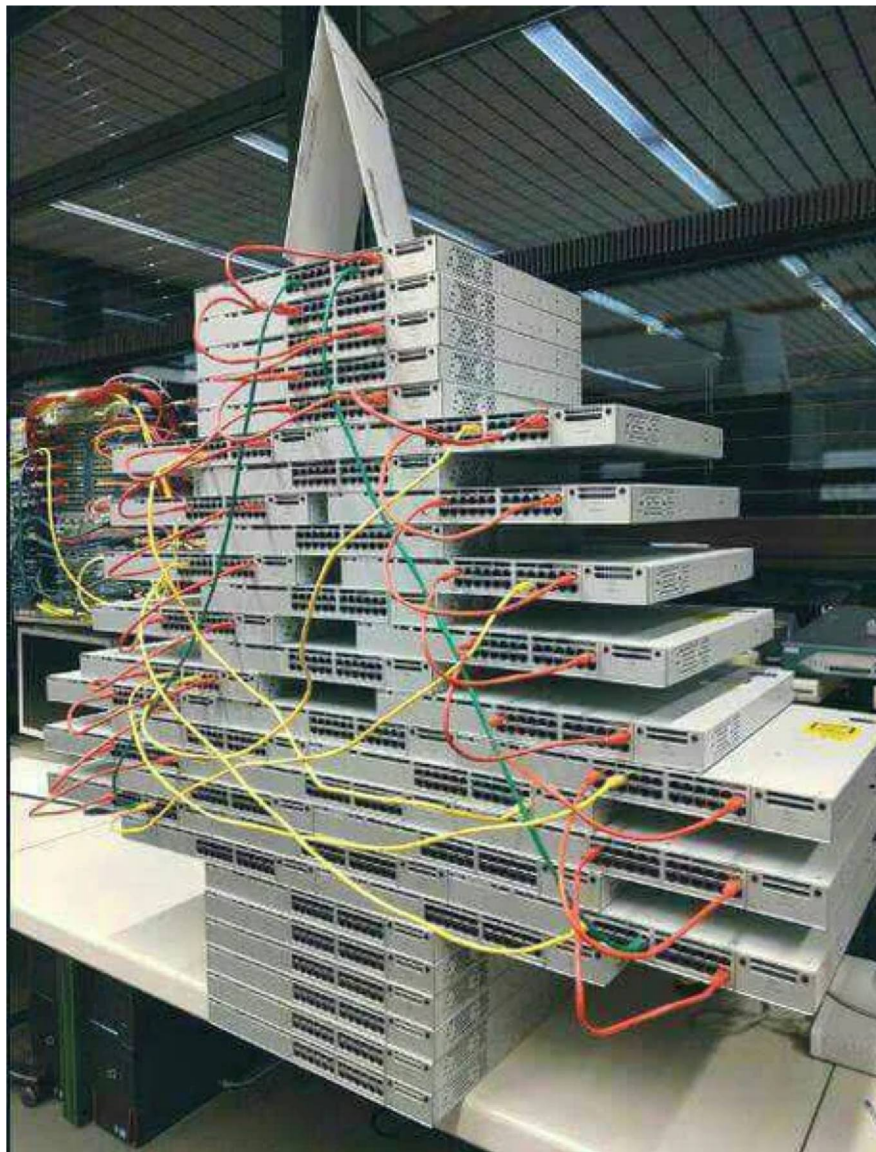
<https://www.amazon.com/splicing-machine-Splicer-Cleaver-KOMSHINE/dp/B073GLSRBX>



Ethernet a jeho důsledky



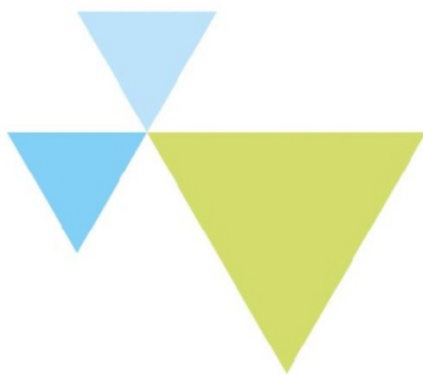
Ethernet a jeho důsledky



Spanning Tree

<https://ggag.com>

Ethernet a jeho lahůdky





TRILL

(TRansparent Interconnection of Lots of Links)

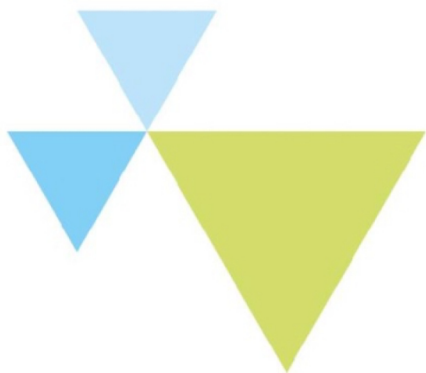
Fabric Path

(Cisco)

Virtual Cluster Switching

(Brocade)

Ethernet a jeho lahůdky





SPB

(Shortest Path Bridging)



Ethernet a jeho lahůdky



TRILL vs. SPB



Ethernet a jeho lahůdky



EoIP / GRE / TAP



Ethernet a jeho lahůdky

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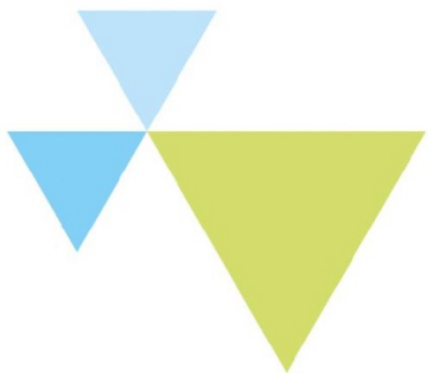
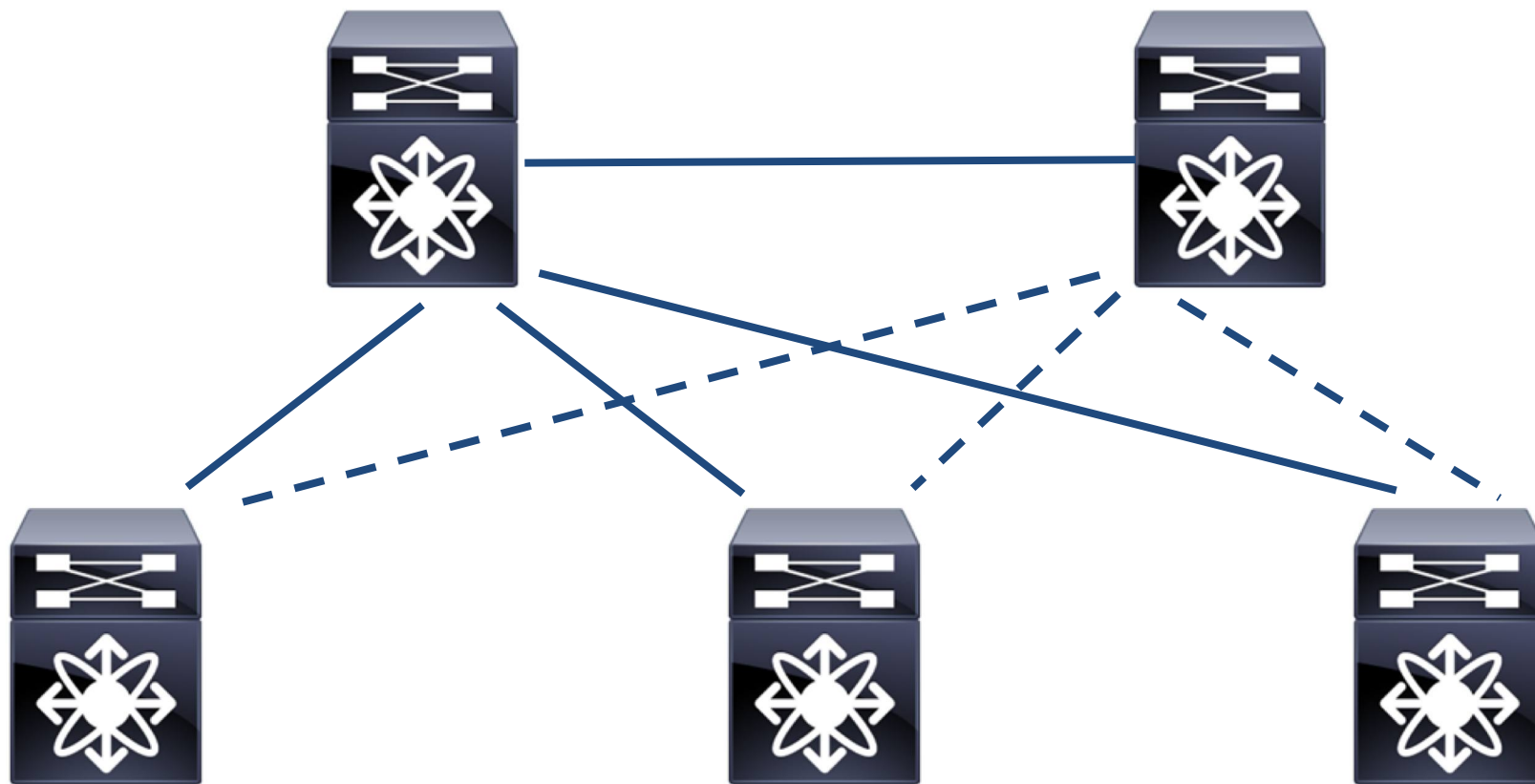
MPLS / VPLS



Ethernet a jeho lahůdky

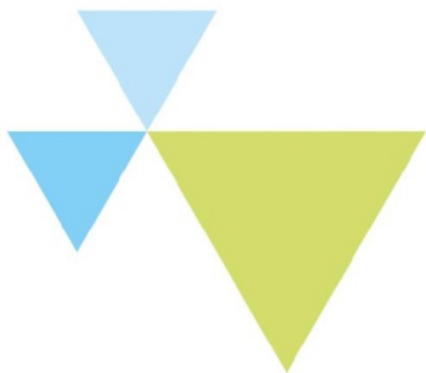
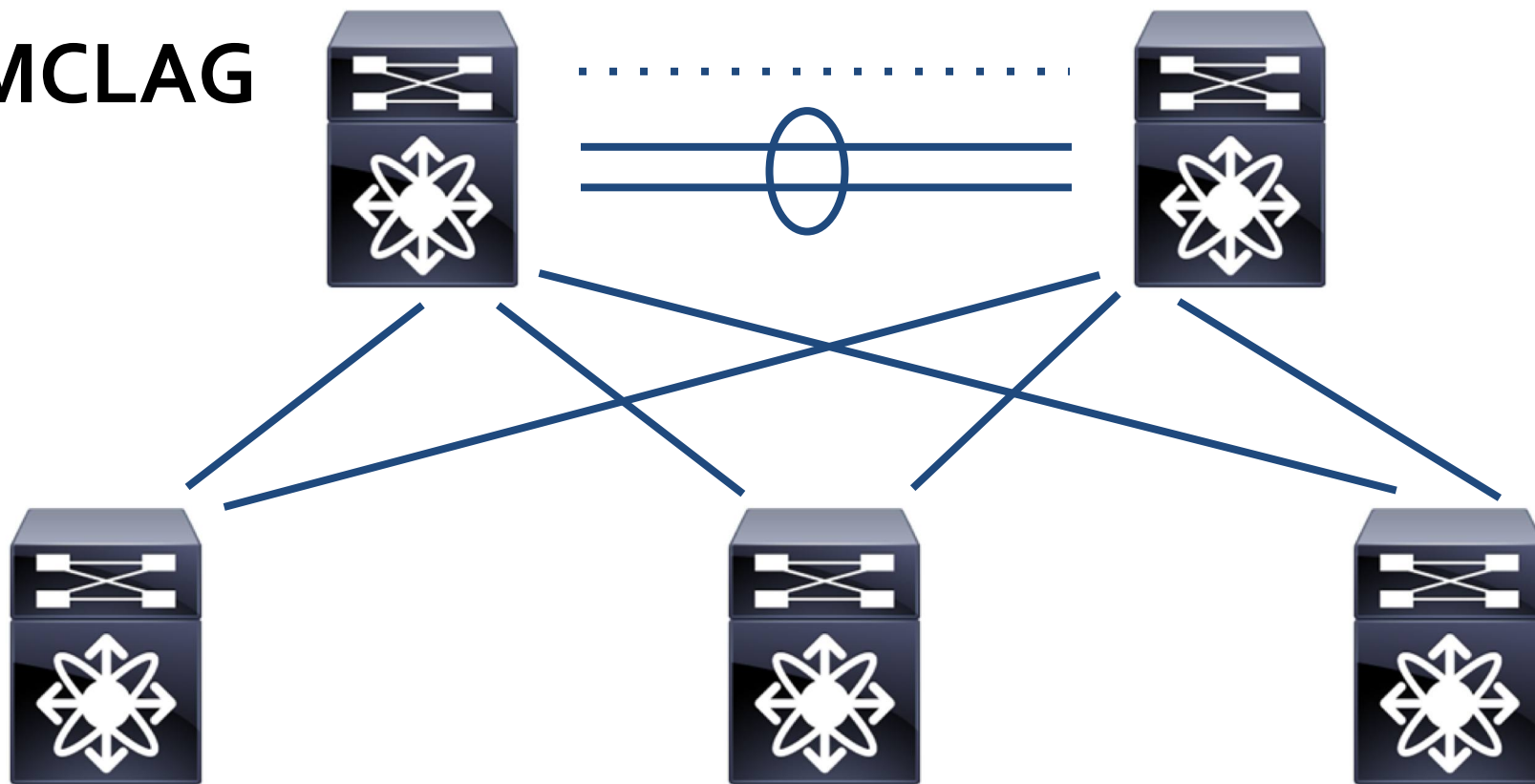
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STP



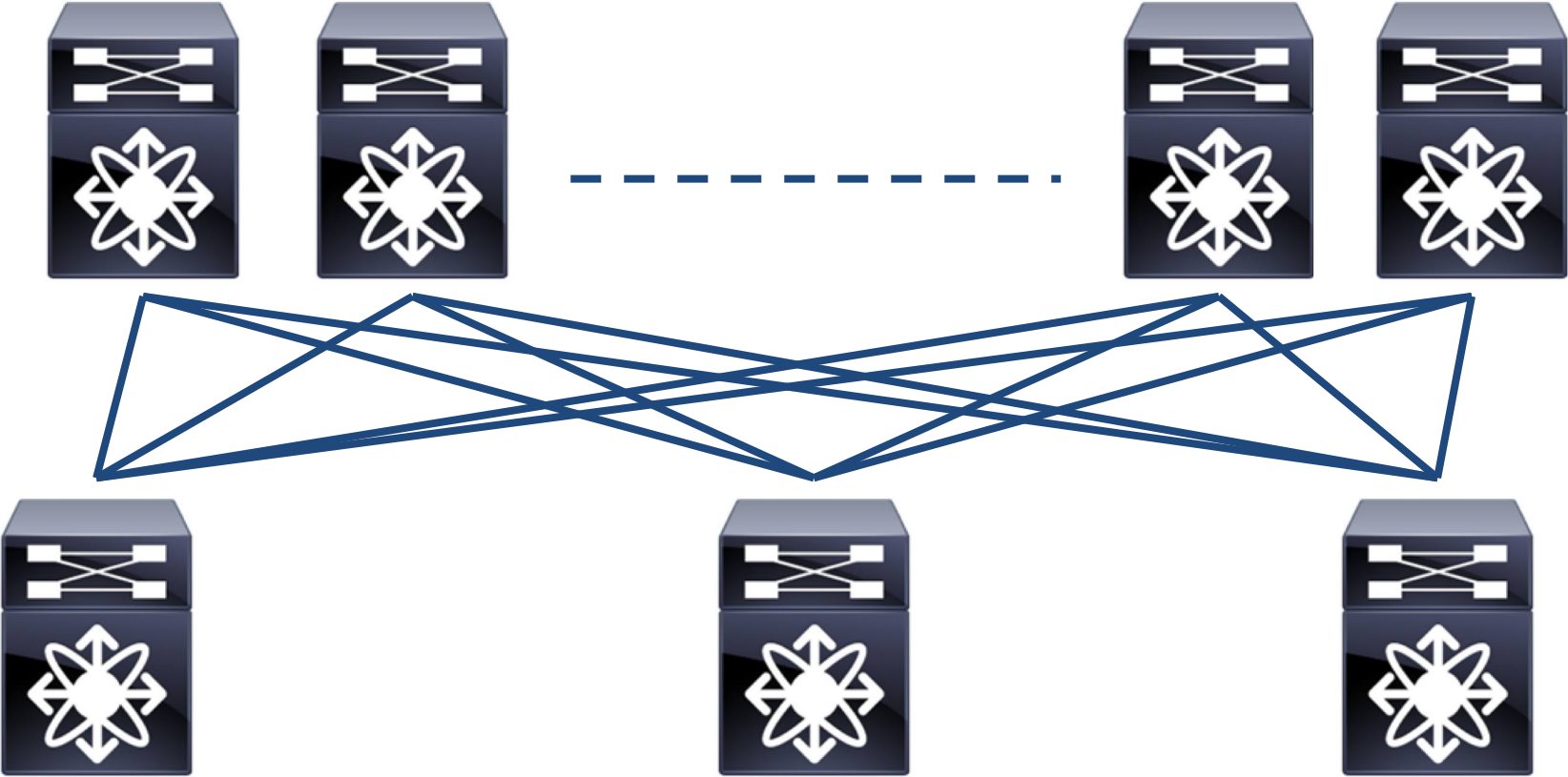
Jak se čas v data centrech

vDC / MCLAG



Jak se čas v data centrech

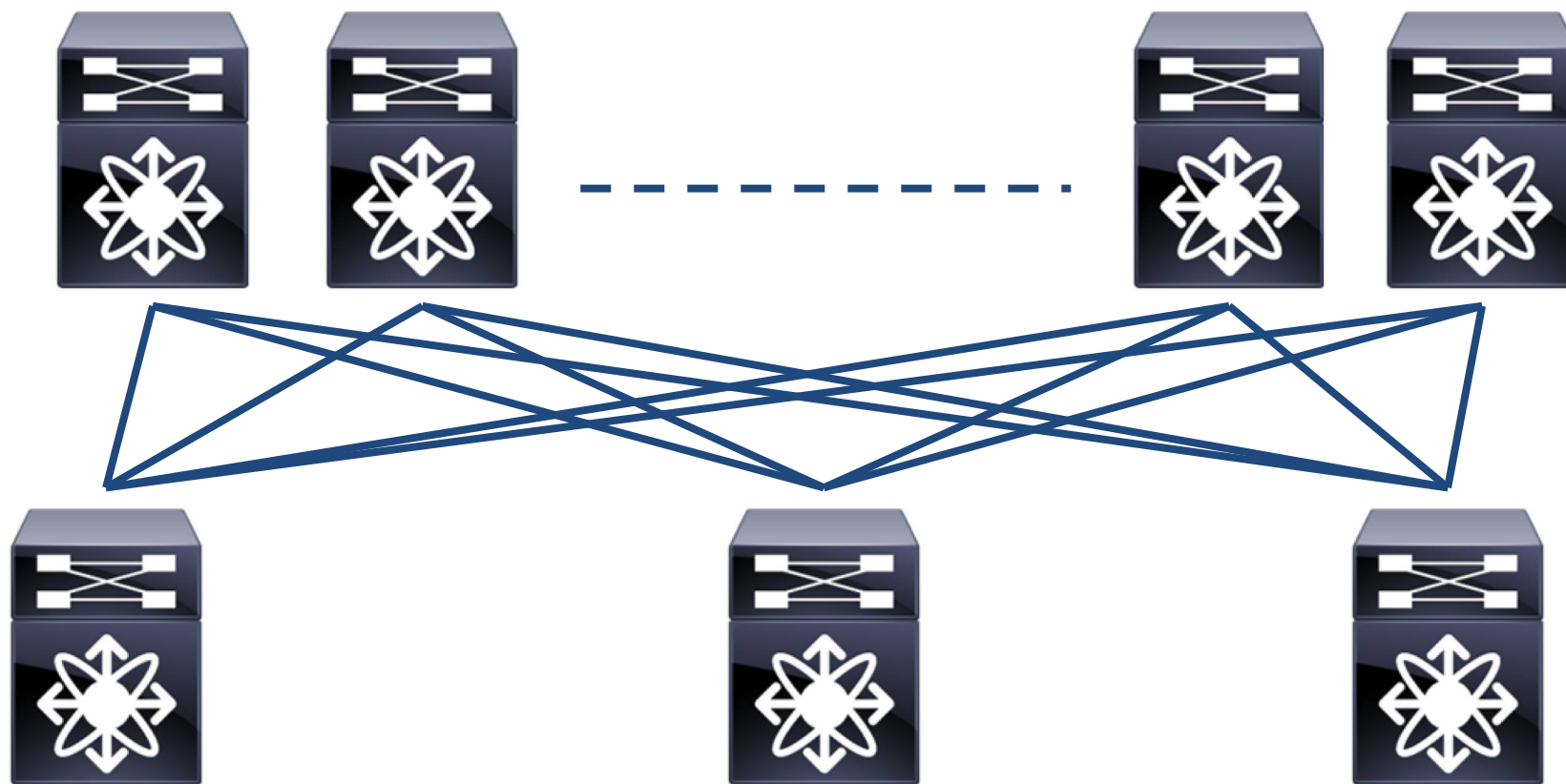
Trill / FP



Jak se čas v data centrech

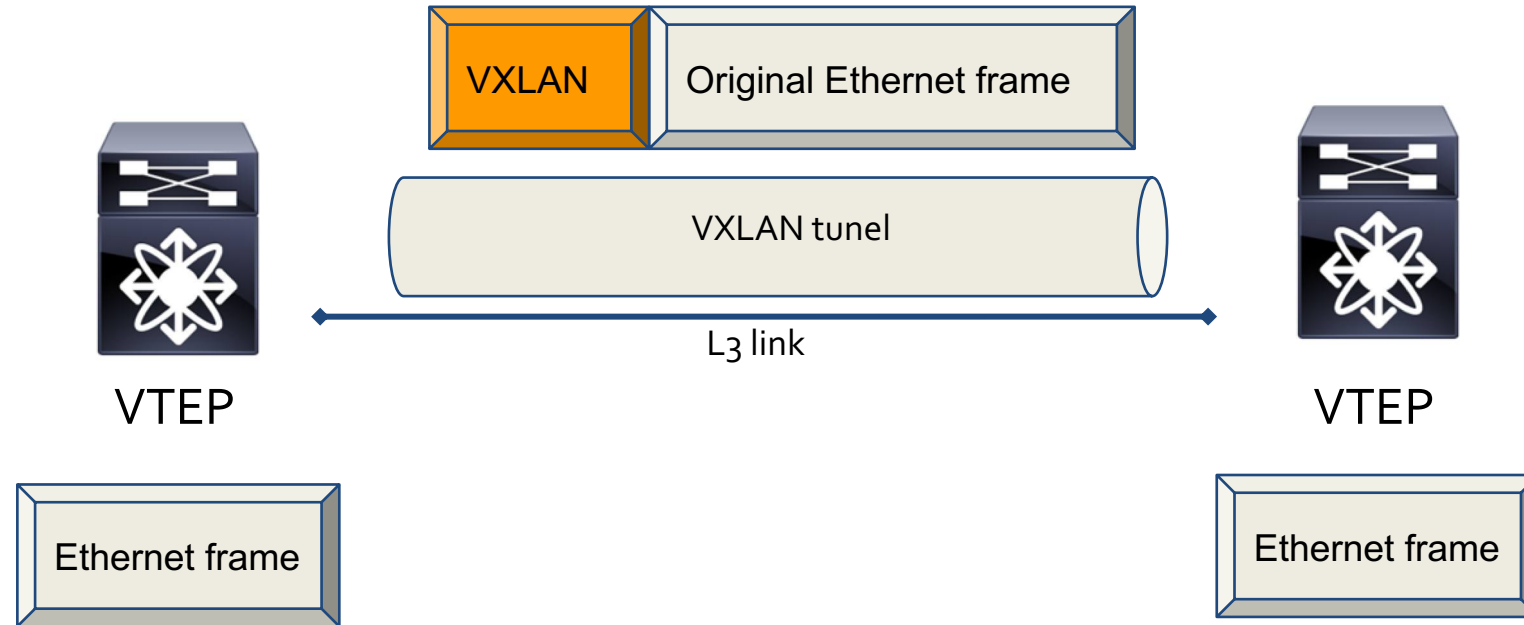


VxLAN



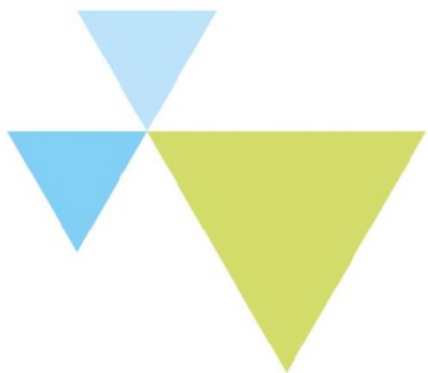
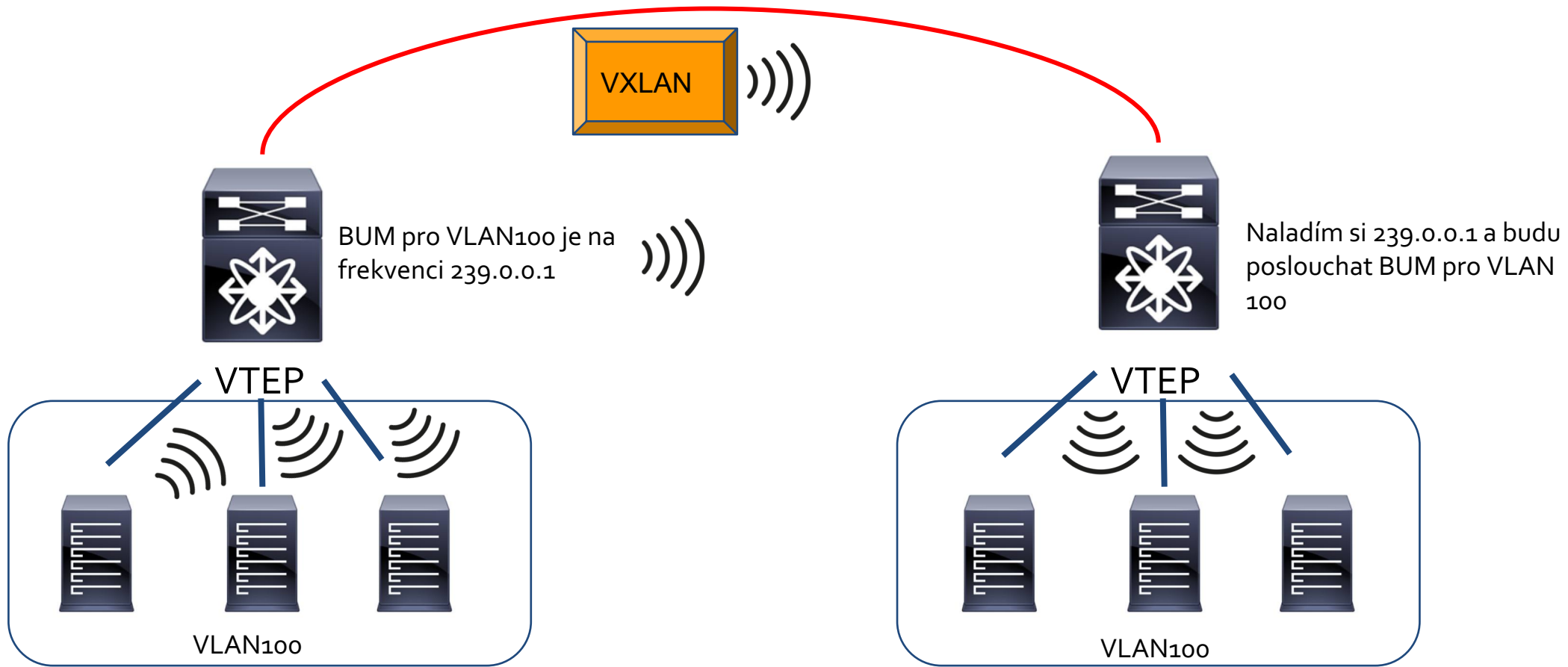
Aktuálně v datacentru

VxLAN



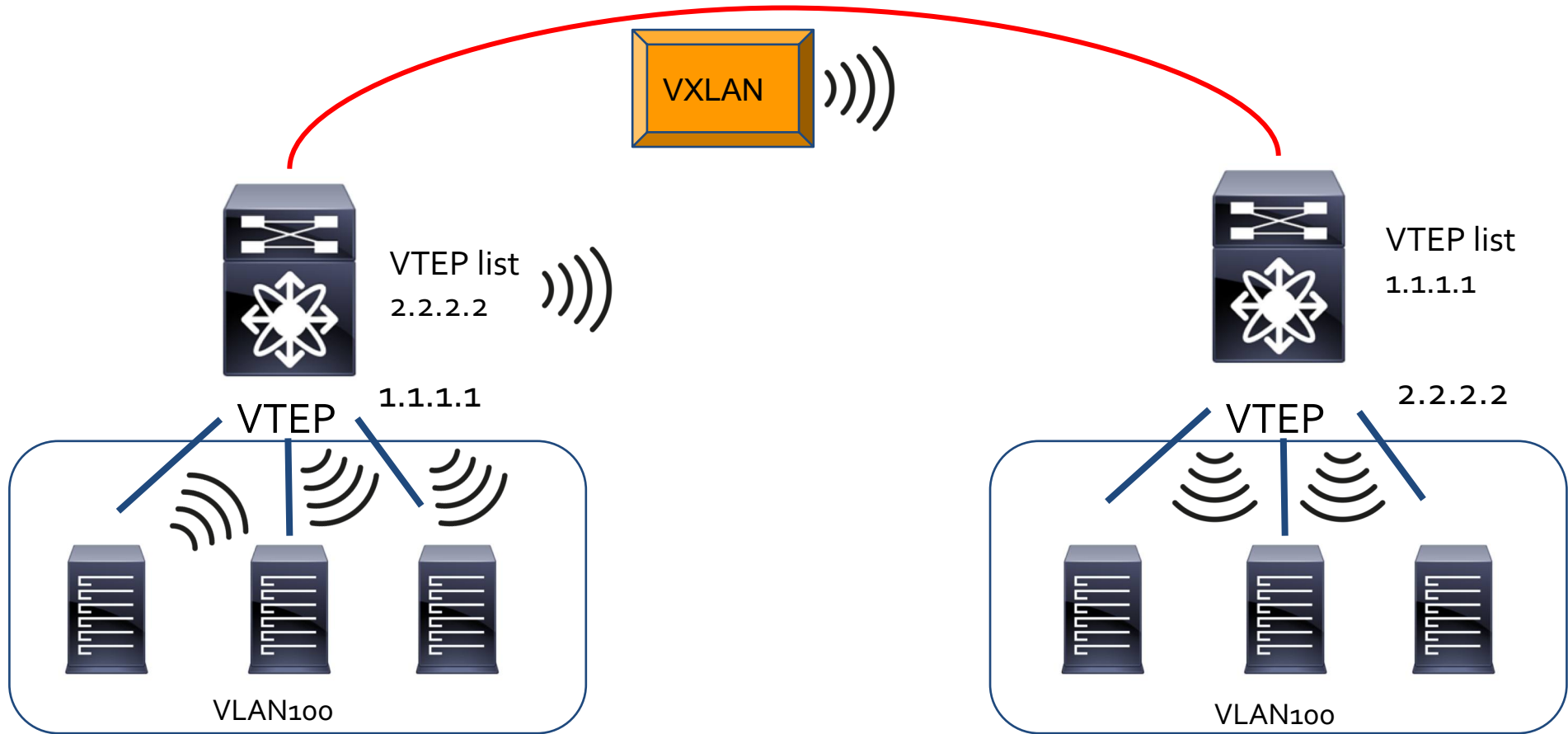
Aktuálně v datacentru

VxLAN BUM F&L



Aktuálně v datacentru

VxLAN BUM HER



Aktuálně v datacentru

VxLAN EVPN

4 via VTEP1
5 via VTEP1
6 via VTEP1



Lo1

L3 propoj
OSPF/ISIS

(i)BGP



Lo1

1 via VTEP1
2 via VTEP1
3 via VTEP1

VTEP1

VTEP2



1

2

3



4

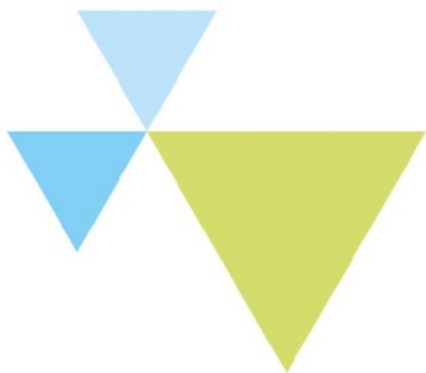
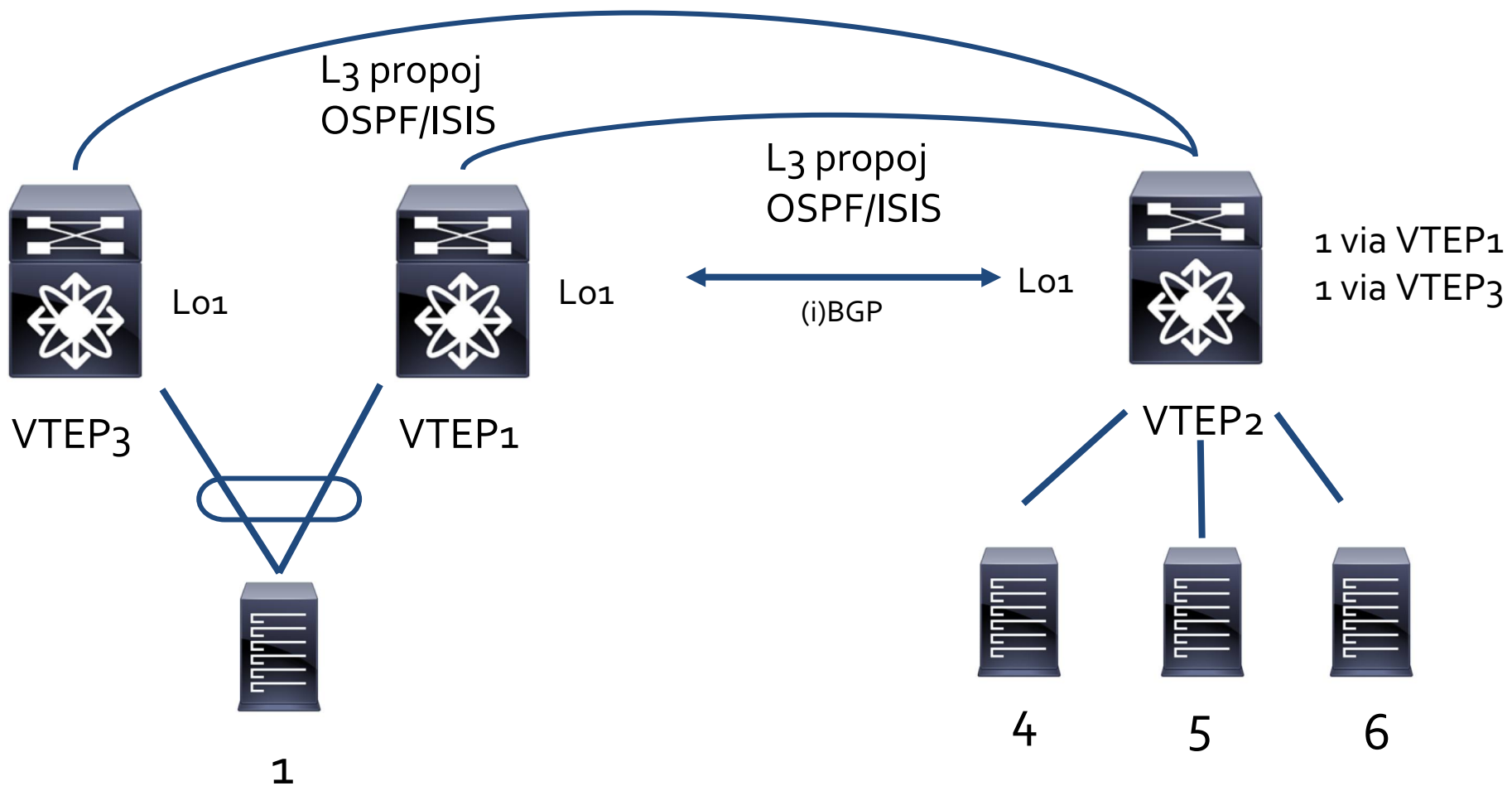
5

6



Aktuálně v datacentru

VxLAN EVPN



Aktuálně v datacentru

VxLAN funguje....

Cisco, Arista, Juniper a další výrobci

Mikrotik také, ale bez EVPN podpory

Linux implementuje VxLAN v jádře, EVPN pomocí
FRR/GoBGP



Podpora VxLAN

Není příliš vhodný pro DC

Zjednodušuje MPLS - někdy také MPLS 2.0

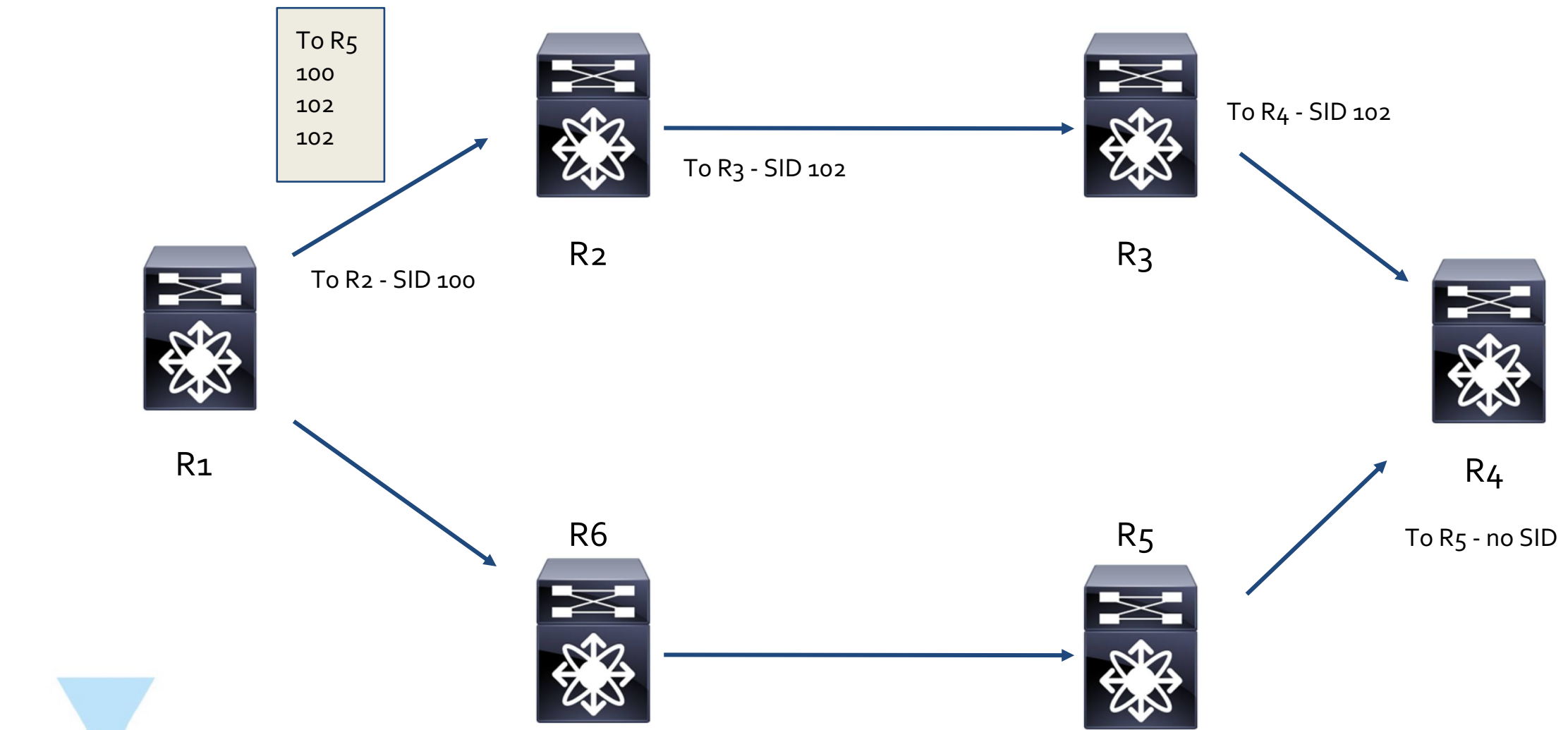
Využívá MPLS stoh (stack) pro své identifikátory segmentu (SIDs)

Šetří zdroje v zařízeních

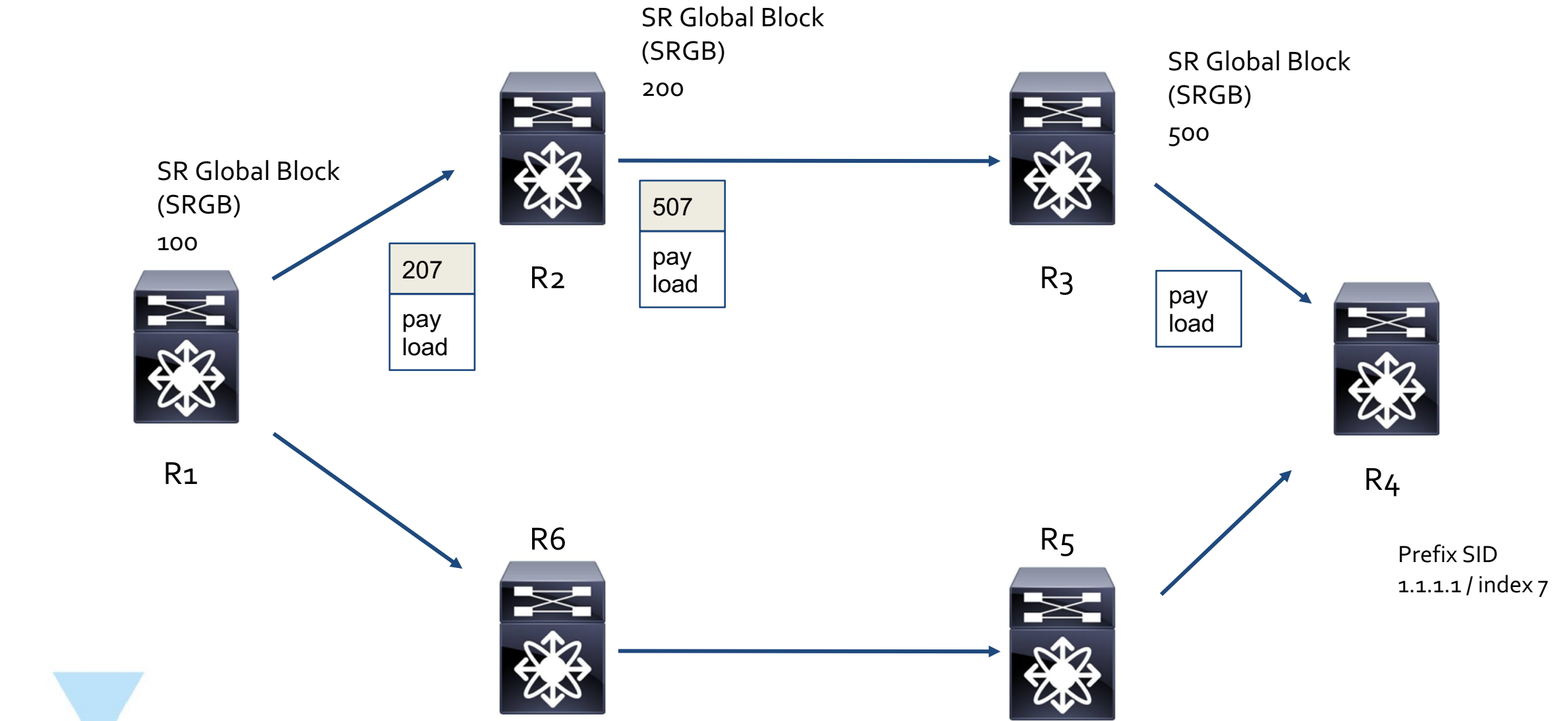
Verze čistě IPv6 - SRv6



Segment routing

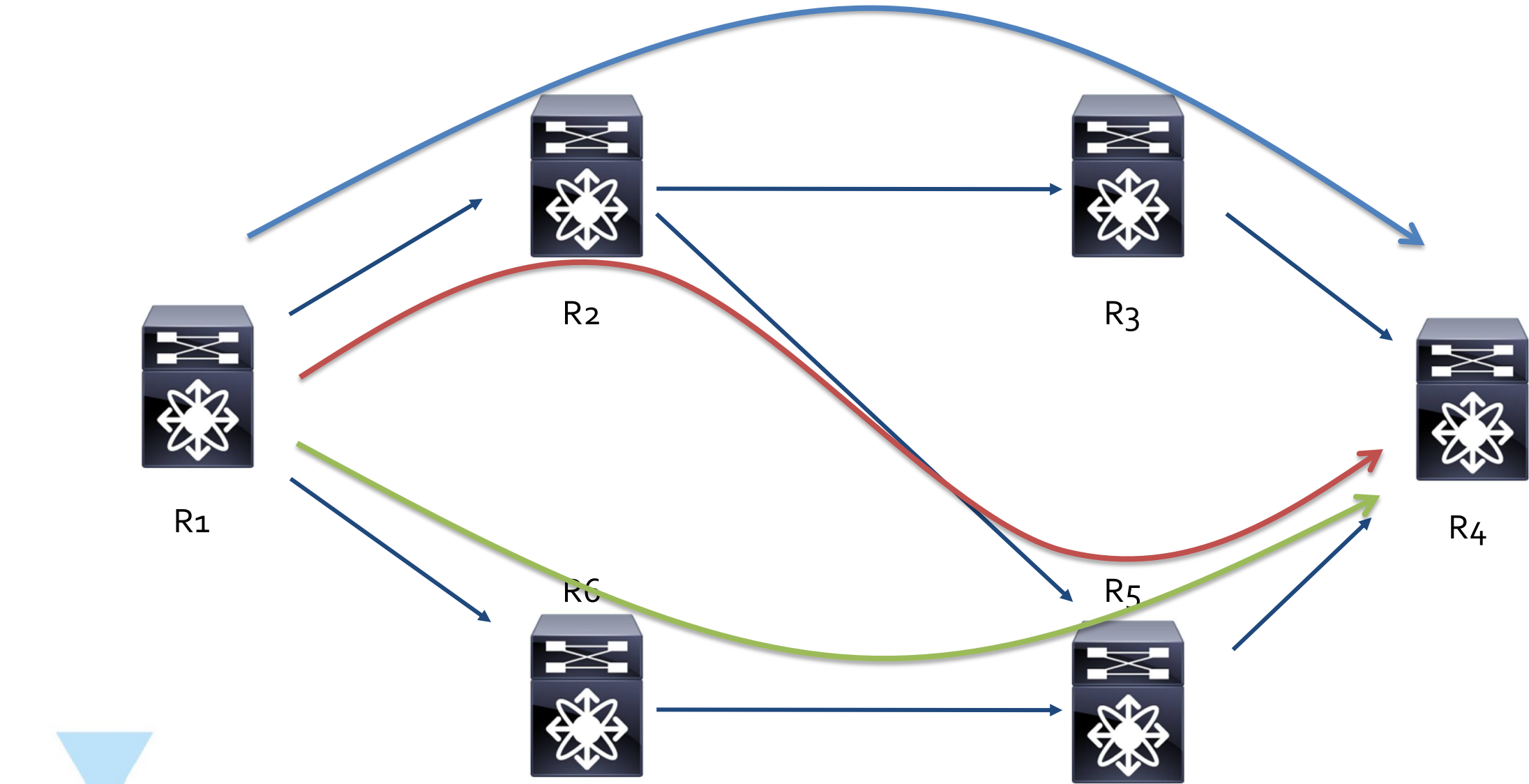


Segment routing - local adjacencies



Segment routing - prefix SIDs & SRGB





Segment routing – TE Policy - colors



- Jednoduchost
- Škálovatelnost
- Jednoduché nasazení
- Možnost řízení provozu dle parametrů služeb
- Ochrana proti výpadku



Segment routing

VxLAN

Building Data Centers with VXLAN BGP EVPN

Krattiger, Kapadia, Jansen (ciscopress.com)

Segment Routing

www.segment-routing.net



Zdroje