

Enhanced Virtual Private Networks (VPN+)

draft-bryant-rtgwg-enhanced-vpn-02

{Stewart Bryant, Jie Dong} @ Huawei

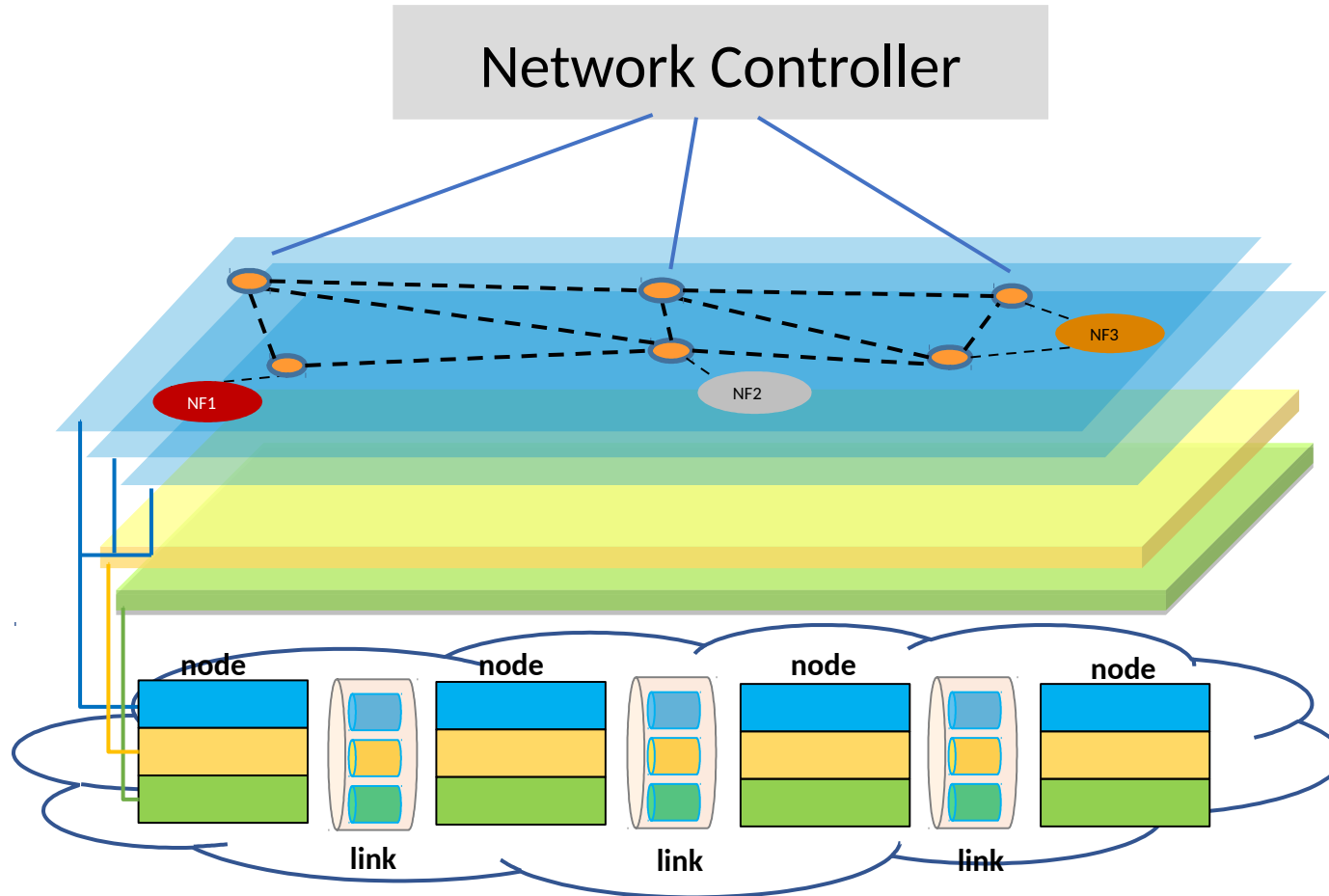
Zhenqiang Li @ China Mobile

Takuya Miyasaka @ KDDI Corporation

Purpose of This Discussion

- Version -02 of this document was an editing pass aimed at producing a more coherent view of the problem and the solution.
- We are now actively working with two service providers on the approach.
- The purpose of this slot is to discuss some of the issues raised at the last IETF that require discussion amongst the WG.

Architecture of Enhanced VPN



Control & management
(Flexibility, scalability)



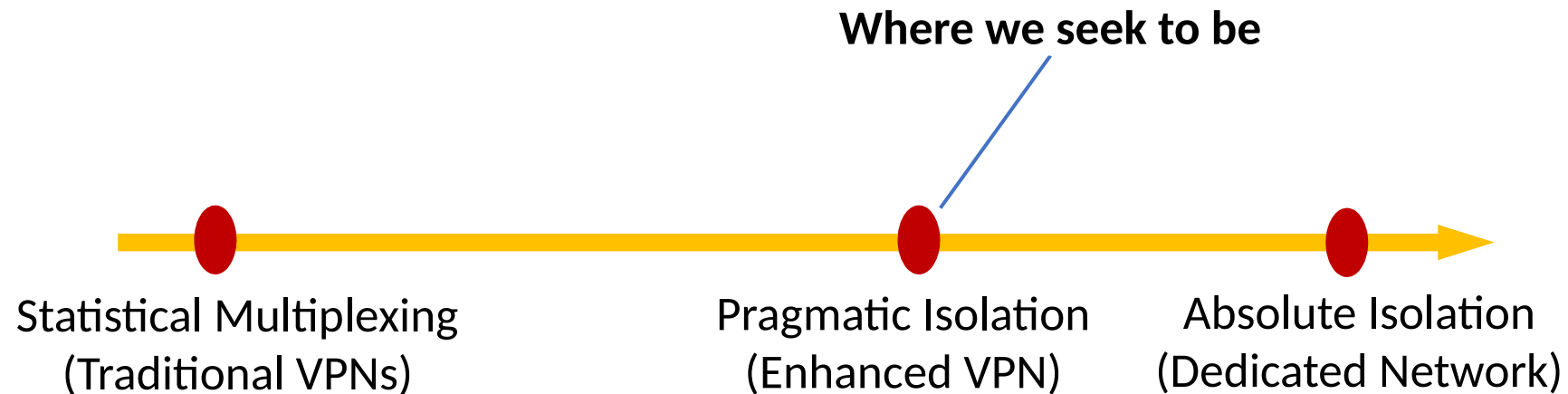
VPNs with dedicated resources
(overlay & underlay integration)



Enhanced data plane
(FlexE, TSN, Detnet, queues, etc.)

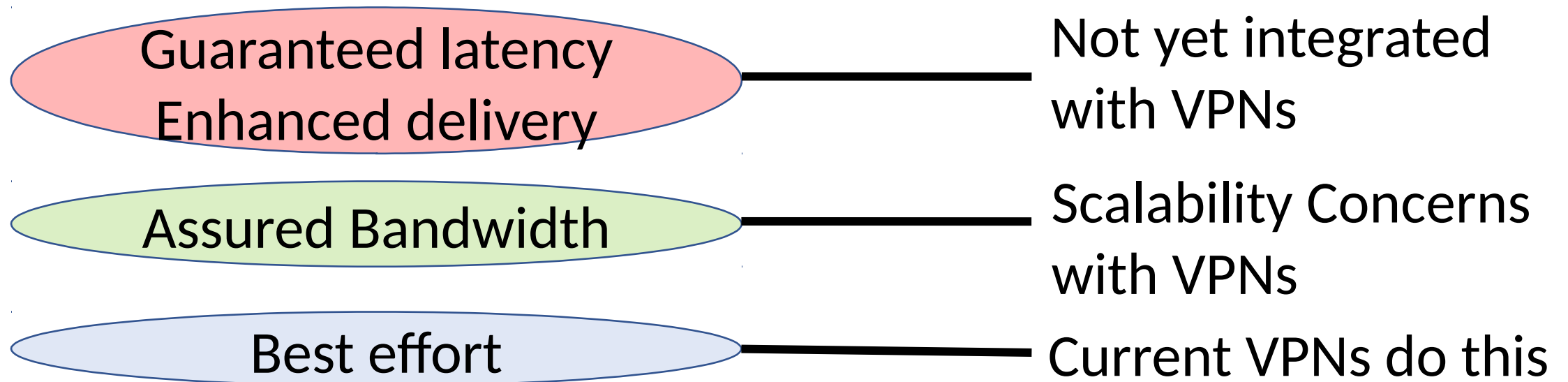
Spectrum of Requirements (Isolation)

- We seek to provide better isolation that allows new applications be deployed in a packet network rather than needing a dedicated network



Spectrum of Requirements (Performance)

- The following types of performance requirements need to be considered:



SR with Resource Allocation & Identification

- SID allocation based on resource requirements is a key differentiator for this work.
- Going forward we plan to document resource allocation and identification based on service requirements
 - Virtual links
 - Specific queues etc.
- Now have a draft in Spring describing enhancements to SR
- We anticipate routing protocol work probably in the LSR WG

Scaling

- With RSVP-TE (and MPLS-TP) we need to set up an end-to-end path for each service that requires unique resources. This uses a label per path one each node.
- This is not needed for SR, but ...
- Currently Segment Routing provides no allocation of resource to a service.
- With VPN+ we are adding resource reservation to SR.
- This allows us mix resource reservation with resource aggregation along a VPN service.
- Fundamentally if every VPN+ instance needs dedicated resources at every hop this expands to one label per VPN+ instance at each node.
- However some degree of aggregation is likely to be possible.
 - Some services will require a dedicated resource label at each hop.
 - Some others can share the same label.
 - Some services will need a mixture of both techniques on an LSP depending on the performance requirement and the degree of contention at each path segment.

Where Does the Framework Work Belong?

- At the end of the day that is a WG Chair and AD decision.
- Our concern is that it is not a perfect fit well in any of the following WGs:
 - It does not belong in SPRING because the design is broader than SR
 - It does not belong in DETNET because it is not simply about determinism.
 - It does not belong in TEAS because TEAS is tightly scoped to MPLS.
- What we need at this stage is an incubation WG to develop the architecture of this network slicing underlay. Incubation of new work is the scope of RTGWG, hence the reason to bring the work here.
- We are not quite ready, but we think we are close to asking for this work to be given a formal home with the IETF and for a WG to adopt the work.

Feedback and contributions
welcome.

Questions?