

Outline for A Framework for Network Based VPNs

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Ross Callon

(Juniper Networks)

Bryan Gleeson

(Nortel Networks)

Eric Rosen

(Cisco Systems)

Chandru Sargor

(Cosine Communications)

Jieyun (Jessica) Yu

(Cosine Communications)

Framework Document

- Discuss technical issues for Network Based / Provider Provisioned VPNs
- Will match document scope to working group scope
- Discuss range of possible solutions
- Description of the significant technical issues

A Framework is NOT

- Selection of specific approaches
(NO NO NO)
- Making choices re engineering tradeoffs
(NO NO NO)
- Detailed protocol specification
(NO NO NO)

Why an Outline?

- We had time to agree on an outline
 - Includes very rough text
- We have considerable text produced...
- but..., the authors didn't have time to agree on all of the text
- We expect that the outline will be "twiddled" as text is filled in

1. Introduction
2. A Brief Overview of Requirements
3. Functional Components of a VPN
4. Customer Interface - Services and Protocols
5. VPN Establishment and Maintenance
6. VPN tunneling
7. Routing for VPNs Across the Public Network
8. QoS and IP Differentiated Services
9. Security Issues
10. Interoperability
11. Intellectual Property
12. Authors' Addresses
13. References

1. Introduction

1.1 Overview of Virtual Private Networks

1.2 Types of VPNs

1.3 Terminology

1.4 Acronyms

2. A Brief Overview of Requirements

3. Functional Components of a VPN

4. Customer Interface - Services and Protocols

4.1 Customer view of Routing in the Private Network

4.2 Quality of Service

4.3 Visibility into the Provider Network

4.4 Carrier's Carrier

5. VPN Establishment and Maintenance

5.1 VPN Control Plane

5.2 VPN Membership

5.3 Controlling VPN Route Distribution

5.4 Data-Plane Topology

5.5 VPN Capabilities negotiation

5.6 More detailed discussion on specific control plane mechanisms

6.0 VPN tunneling

6.1 Encapsulation

6.2 Tunnel Establishment

6.3 Hierarchical Tunnels

6.4 Tunnel Maintenance

6.5 Multiplexing

7. Routing for VPNs Across the Public Network

7.1 Virtual Forwarding Instances

7.2 Virtual Routers

7.3 Aggregated Routing Model

7.4 Inter-Domain Routing and Route Aggregation

7.5 Header Lookups in the VFIs

7.6 Penultimate Hop Popping for MPLS

7.7 Demultiplexing to Eliminate the Tunnel Egress VFI
Lookup

8. QoS and IP Differentiated Services
 - 8.1 QoS in the Public Network
 - 8.2 Mapping QoS from the Private to Public Network
9. Security Issues
 - 9.1 Security of User Data
 - 9.2 Security of Routing Information
 - 9.3 Security of Membership Information
10. Interoperability
11. Intellectual Property
12. Authors' Addresses
13. References