

MPLS L3-VPN & L2-VPN application issues

Topics revisited

- MPLS VPN
- Issues on L3 VPNs
- Issues on L2 VPN
- End-2-end provisioning mechanism

MPLS VPN

- Separation between forwarding and routing
- MPLS : technique with integrated approach between topology (routing) and forwarding
- MPLS VPNs: Definitions of isolated routing tables

MPLS L3 VPNs

- RFC 2547 – RFC 2547bis
- Two label stacking
- BGP-MP
- route targets = VPN colors
- Policies = Extended communities
 - Hub and spoke
 - Full Mesh

Juniper - Cisco Interoperability.

MPLS L3 VPN

- Internet access on L3 VPN
 - OUTBOUND: ONE static route on PE with global gateway
 - INBOUND: MULTIPLE Static routes on every PE for routes of each VPN sites.
- RFC 3107 Label information with BGP !!!
 - MPLS VPN—Inter-AS—IPv4 BGP Label Distribution
 - transport IPv4 routes with MPLS labels over a non MPLS VPN service provider
 - NO need for any other label distribution protocol between adjacent LSR
 - Is this End to End ? !!

MPLS Layer 2 VPN

- The concept “ Define a Layer 2 VPN passing through juniper and cisco gear”
- Using which ever implementation available (draft martini, kompella)
- several drafts are under process at the IETF for the standardization of VPN layer 2
 - Martini drafts
 - draft-martini-l2circuit-encap-mpls-04.txt
 - draft-martini-l2circuit-trans-mpls-08.txt
 - Kompella drafts
 - draft-kompella-ppvvpn-l2vpn-01.txt
 - L2TPv3 !(without MPLS)
 - IP based interworking
 - draft-shah-ppvvpn-arp-mediation-00.txt

Juniper technology

- Layer 2 over MPLS -CCC
 - ATM interface
 - ATM PVC
 - POS interfaces
 - Cisco-HDLC, PPP, Frame Relay
 - Ethernet
 - VLAN (rewrite)
- TCC, VPLS

Cisco Technology

- ATOM
 - Any Transport Over MPLS
 - ATM Cell,
 - AAL5,
 - Frame Relay,
 - PPP,
 - HDLC,
 - Ethernet,
 - dot1q

Cisco – Juniper Interoperable

- Cisco Conf

```
interface GigabitEthernet0/1/1.200
  encapsulation dot1Q 1000
    ip address 195.251.25.165 255.255.255.252
    xconnect 195.251.27.129 200 encapsulation mpls
```

- Juniper conf

```
interfaces { ge-0/0/0 { vlan-tagging;
  encapsulation vlan-ccc; unit 512 {
  encapsulation vlan-ccc; vlan-id 1000; } } }
```

New experiments

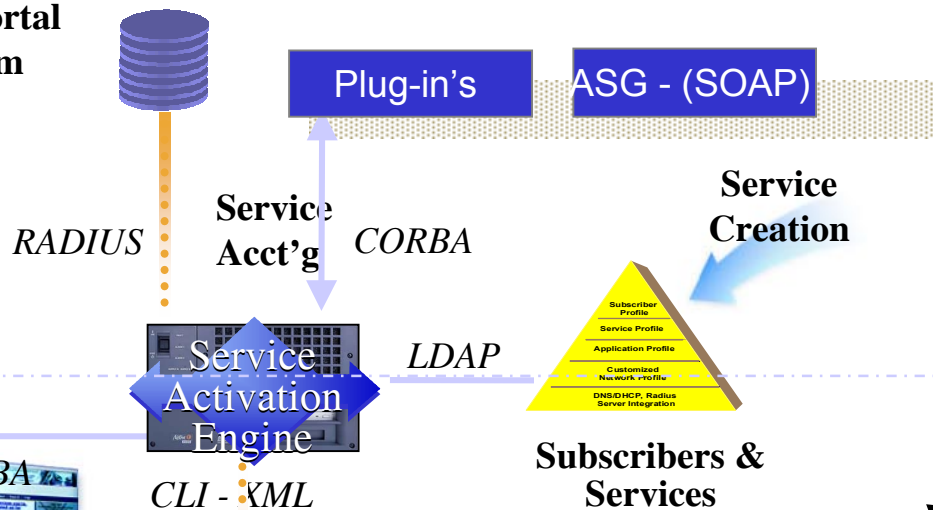
- Multiple site Layer 2 VPNs
 - Need of Layer-2 device for passing traffic.
 - Ethernet switch
- Alternative VPLS service

New Capabilities

- NREN establish p2p Backup Ethernet connections
- Set up a service to automatically configure backup ports with VLAN configuration
- Based on Web services

Service Creation and Activation High Level System Architecture

J2EE Web Portal
Server Farm



Remote Service Activation Example

A Simple Overlay B2B NREN Model

