Global eVLAN Service

Global Layer 2 VPN Networking with the Highest Quality

NTT Communications Global eVLAN Service

NTT Communications Global eVLAN service enables customers to extend their LAN environment globally with cost-effective LAN equipment.

Unlike other network services, special settings such as PVCs are not required and, by simply plugging into Global e-VLAN, all sites are connected. Since Ethernet is a well-known, simple and easy-to-manage protocol, special knowledge is not required for IT managers.

Benefits of a Layer 2 VPN Service

Routing control

The Layer 2 VPN model is a new approach to implementing global enterprise networks, offering a Layer 2 switched solution for customers. The Layer 2 approach provides complete separation between the provider's network and the customer's network, i.e., there is no route exchange between customer and provider routers, allowing customer's to have more control on their routing environment and providing a simpler delivery of service.

Premise Equipment Cost and Management

Supporting large bandwidth deployments typically requires specialized hardware and technical knowledge on the customer premise to accommodate the service. With layer 2 Ethernet-based services, customers can reduce cost significantly due to hardware reduction or elimination altogether, while reducing management complexity using standard Ethernet architecture.

Ethernet-over-Ethernet

There are currently a few methods for service providers to offer Layer 2 VPN services, based on several draft IETF documents. The most common deployment methods for Multipoint-to-Multipoint based Layer 2 VPN services are VPLS (Virtual Private LAN Services) and E-o-E (Ethernet-over-Ethernet). Both VPLS and E-o-E architectures are similar in design, allowing service providers to switch customer frames transparently over a wide area, all while maintaining fault tolerance and loop avoidance mechanisms.

NTT Communications deploys Ethernet-over-Ethernet as a Layer 2 VPN architecture due to its maturity in the marketplace, having been used as a service topology in Japan for over 10 years.

Also some major differentiators from VPLS are:

- Superior end-to-end monitoring and reporting functionality with built-in Ping and Trace route functionality.

- TTL (time-to-live) mechanism that prevents broadcast storms, as opposed to VPLS having to rely on a split horizon rule when forwarding customer frames.

- No MAC address limitation per site, due to the fact that E-o-E encapsulation does not need to forward frames through core switches.

Global eVLAN Benefits

Layer 2 service

Multipoint-to-Multipoint

Layer 2/3 CoS/QoS

VLAN transparency

Proven technology in Japan

Standard Web reporting

End-to-End monitoring

SLA

NTT Communications Benefits

Extensive Global Coverage with particular depth in Asia-Pacific region.

Global backbone with largest capacity between U.S. and Asia

Proactive Monitoring

One-stop Order, Billing and Support

NTT Communications

When to use a Layer 2 or Layer 3 VPN Service?

Both Layer 2 (E-o-E) or Layer 3 (MPLS) type service architectures have strengths and weakness based on types of traffic supported, scalability, deployment and cost factors. Considering these attributes, a best-of-breed network solution can be designed using either technology or an integration of both.

Type of Traffic Supported

The Layer 3 service will offer transport of IP traffic only, where Layer 2 will offer transport of any customer layer-3 protocol packets. For customers who use other protocols than IP in their IT infrastructure, and like to control and manage complex routing architectures a layer 2 service is less restricting and most likely preferred. While customers who only need IP routing and prefer less management and complexity at customer edge will typically choose Layer 3 MPLS services.

Scalability

Both Layer 2 and Layer 3 services offer scalable solutions for full-mesh topologies, however due to the higher bandwidth availability of Layer 2 Ethernet services, Layer 2 VPNs are typically deployed as core network locations for large headquarter or data center locations. Many small sites with small bandwidth needs will typically deploy Layer 3 MPLS.

Global eVLAN Service Features

Priority Control Service (Layer 2 and Layer 3 CoS/QoS support)

NTT Communications Global eVLAN service offers Prioritization of Layer 2 frames or Layer 3 packets by offering a CoS/QoS mechanism. NTT provides downstream QoS, meaning Global e-VLAN carries out priority control at the Global e-VLAN edge equipment where the traffic is sent to customer site. Control in 4 levels for ToS and 3 levels for CoS are available.

VLAN Transparency

NTT Communications Global eVLAN service allows customers VLAN (IEEE 802.1q) LAN architecture to be preserved transparently over the WAN. This means that any VLAN information at each site will be transparently mapped across the NTT backbone, allowing for seamless customer integration of LAN topology.

Data Center Integration

NTT Communications Global eVLAN service is available at most of the NTT Communications Global Data Center facilities, offering a simple cross connect into a customer collocation or hosting service. This allows easy, high bandwidth connectivity between global data centers for use with database replication or large file transfer needs.

Making Sense of Ethernet Topologies

The Metro Ethernet Forum (MEF) is a standards body that has defined some common terminology to describe Carrier Based Ethernet Services. The most common EVC or Ethernet Virtual Connection type of services are categorized into 3 main types.

E-LINE

E-Line services provide a Point-to-Point topology and are most commonly used to provide Ethernet Private Line (EPL) services. NTT Communications offers Ethernet Leased Line service in this category.

E-LAN

E-LAN services provide Multipoint-to-Mulitpoint topology and are most commonly used to provide Ethernet Virtual Private LAN (EVP-LAN) services. Our Global eVLAN service is a member of this category.

E-TREE

E-Tree services provide Point-to-Multipoint or partial mesh topologies and are not widely deployed.

"With Ethernet's rapid evolution from LAN to WAN technology in the past decade, EVP-LAN services provide viable WAN service alternative to L3VPN as well as migration option for legacy L2 services such as frame relay and ATM for enterprise users."

Source: Yankee Group, Carrier Ethernet's Global Domination Plan, March 2010