REMOTELY DEPLOY ROUTING CAPABILITIES RATHER THAN DEPLOYING PHYSICAL ROUTERS

IP functionality is needed, but does it require a full deployment of physical routers?

Service providers require IP functionality in the Metro and aggregation parts of their networks. This requirement derives from the need to provide services like L3VPN, Dedicated Internet Access (DIA). Traditionally this need was met with a massive and costly deployment of routers throughout the entire network.

Telco Systems has released the IP-PLUS software package that enables service providers to remotely deploy IP-related services from the Metro or even from the CPE, on-demand, as needed, to an existing or new Telco Systems Layer 2 device, without additional hardware and without truck roll.
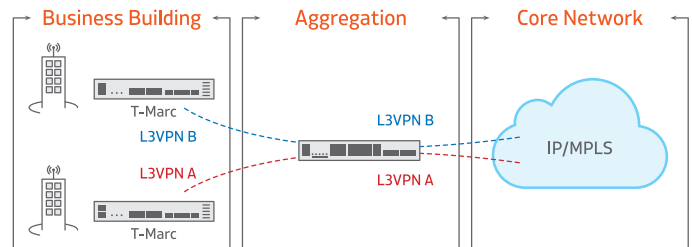
Support of L3VPN using VRF-Light

L3VPN is widely used for carrier metro networks to provide VPN service to enterprise users. It is used for many reasons such as the easy expansion to other software-based services (IP management, network administration, firewalls and other networks security means), the inherent redundancy at the customer premise (using VRRP) and an additional level of network security created by the implementation of access lists (ACLs). IP-PLUS enables operators to deploy L3VPN from the aggregation (T-Metro) point or the access (T-Marc) point, without having to deploy a router. It does so by using an advanced set of Layer 3 features including IP protocols, including Open Shortest Path First (OSPF), Border Gateway Protocol Version 4 (BGPv4), VRRP, DHCP and others.

Support of L3VPN from the CPE / NID

The main benefits of T-Marc devices enhanced with IP-PLUS are:

1. Using one box instead of two: T-Marc best of breed Network Interface Device (NID) provides all the necessary routing capabilities to provide L3VPN

2. Upgrading installed NIDs on demand: Service provides can download IP-PLUS software package remotely to the CPEs as and when needed

3. SLA that can be provided on L2 and L3 utilizing L3 traffic management such L3 shaping and policing (DSCP)

4. Redundancy from the customer premise using VRRP

5. Extended security features with the support of Access Lists and Firewall

Business Building — Aggregation — Core Network
T-Marc / L3VPN B / L3VPN A / T-Marc / L3VPN B / L3VPN A / IP/MPLS

Support of L3VPN from the aggregation layer / MTU

The main benefits of T-Metro devices enhanced with IP-PLUS are:

1. No need for costly PE routers, as T-Metro acts as an aggregation switch and a PE with the relevant routing protocols (OSPF and BGP)

2. Best of two worlds: A truly reliable L2 aggregation switch (see Telco Systems' L2 Carrier Grade Switches) with L3 features

3. Provides both L2VPN and L3VPN over the same infrastructure

4. IP SLA management

5. Allows for complete and safe separation of customers' traffic and routing data by implementing VRF

Business Building — Aggregation — Core Network
CPE 2 / CPE 1 / T-Metro / L3VPN B / L3VPN A / IP/MPLS
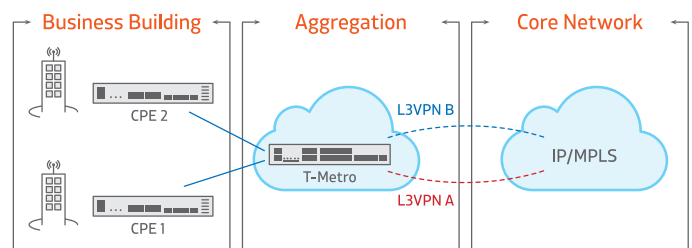
Support of dedicated Internet access (DIA)

The requirement for Dedicated Internet Access (DIA) is common among enterprises. Traditionally this requirement is met by deploying a dedicated router at the customer's premise. Since some of these enterprises require other L2 services as well, they are bound to be equipped with a L2 demarcation device (NID), hence service providers find themselves deploying two devices at the customer premises. Immediately it results in additional costs for the device and for installation (truck role). The longer term implications are the maintenance of the additional device. Telco System's IP-PLUS software package provides an elegant and cost-effective way to deal with the requirement for a DIA. Instead of deploying a new physical router, the Service Provider can remotely download the software, when and where DIA service is needed.

REMOTELY DEPLOY ROUTING CAPABILITIES RATHER THAN DEPLOYING PHYSICAL ROUTERS

The main benefits of using IP-PLUS for DIA are:

1. Single box solution: Reduces CAPEX and OPEX significantly

2. Provides DIA services over existing T-Marc NID by remotely deploying routing capabilities. This means no additional hardware, zero truck rolls and much faster provisioning

3. Best of breed carrier grade capabilities: QoS, resiliency, SLA monitoring, and full MEF CE 2.0 support

4. H-QoS to efficiently handle voice, video and data using IP routing and intelligence

5. Allowing for a fully survivable DIA service by implementing VRRP

6. Supports all types of connectivity to the Internet: static routes, OSPF and BGP

Support of cell site router

Mobile operators can backhaul their networks using L2 or L3. Since both in 3G and LTE the deployment of IP is inevitable in the network core, some mobile operators tend to deploy IP starting from the cell site. By doing so, these mobile operators enjoy the following benefits:

- Having a single solution/product in the network rather than two makes it much easier from management and operation perspectives.

- IP networks are autonomous by nature as they are governed by routing protocols and unlike layer 2 networks they require no management by the operator.

- Traffic separation: Mobile operators need to separate traffic. Traffic can be separated based on the use of the traffic (management vs. subscribers'), the underlying technology (LTE vs 3G), the QoS, and others. Traffic separation as well as other security aspects is well catered to by IP using VRF, Access Lists and L3VPNs.

The main benefits of IP-PLUS for mobile backhauling are:

- Tunneling for safe interconnection of cell sites using L2 and L3 VPNs.

- End-to-end OAM from the cell site via the core, using TWAMP and advanced L2 OAM.

- Supporting 2G through CES over IP interface.

- IPv4 and IPv6 for scalability.

- Support of relevant routing protocols, such as OSPF and BGP.

IP-PLUS main features

L3VPN	VRF-Light support
Routing	Static routes, BGPv4, OSPF
Forwarding	IPv4/IPv6 line rate forwarding
Routing Policies	Access-lists, prefix-lists, as-path-lists, community-lists, and route maps for both IPv4 and IPv6
DHCP	Client and relay for IPv4
VRRP	Automatic default gateway selections on an IP network
OAM	TWAMP support

T-Marc and T-Metro with IP-PLUS – the right solution for service provider networks

- Remotely deploy routing capabilities rather than deploy physical routers.

- Industry-leading solution for L2/L3 VPNs and Dedicated Internet Access (DIA), on the same device.

- IP-PLUS enhances the already existing functionality of the best of breed L2 T-Marc and T-Metro devices which include superior features such as all support of MEF CE 2.0 service types, advanced hardware-based OAM tools, SLA management, Sub-50msec protection, L2-L4 service testing, performance monitoring and fault management.

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