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MPLS and iDirect Network

The Internet boom continues to grow as more and more businesses, residential and SOHO clients start using the Internet. As service providers begin to scale their networks to accommodate this triple digit growth, traffic engineering and scalability of the network has been of utmost importance. For these service providers MPLS provides the following advantages,

1. Ability to create Virtual Private Networks, using the connection oriented features of MPLS.
2. Scalability – Since MPLS traffic is switched using labels rather than routing, these systems now have less overhead and latency to deal with by switch packet traffic over an MPLS enabled network.
3. Traffic engineering capability – Extremely flexible and feature rich controls are available to enable service providers with the ability to engineer a network to meet any type of customer traffic requirements. Controls such as strict routing, loose routing, QoS, bandwidth controls allow for different levels of service.
4. Resiliency – With the automatic fail over capability of an label switch path (LSP), MPLS networks provide a very resilient and highly available network.

iDirect has created a technology that provides the fastest and most reliable connectivity using a satellite based 2-way broadband transmission medium. In addition, iDirect is the first vendor in this market to provide a system that was designed from ground up to support IP traffic. The iDirect system provides the necessary controls, such as QoS and dynamic bandwidth allocation, which enables service providers with the tools to create networks that are optimized for the traffic requirements of each individual customer. The advantages of the iDirect system are,

1. Most optimized satellite based IP networking system
2. Most reliable satellite based 2-way VSAT system
3. Most efficient use of satellite capacity
4. Fastest return channel in the industry
5. Field tested built-in QoS functionality
6. TCP Optimization over satellite in BOTH directions
7. Built in 3DES encryption

Service providers can easily integrate their MPLS networks with the iDirect solution.

This integration enables service providers with several enhancements and competitive advantages. These are:

1. Integrate a customer's remote location with the rest of their sites to an MPLS backbone. This provides a seamless end-to-end network to all remote customer locations. A network in this configuration can eliminate the need for encrypted VPNs and multiple-hops between remote locations and headquarters. This configuration also allows latency sensitive applications such as video conferencing and VoIP to be used. Figure 1 illustrates an example of two customers with MPLS network connecting all locations together, both terrestrial and satellite based sites. Customer A sites that are shown with a solid line, will have their own LSP(s) with the rest of the terrestrial sites. Customer B sites that are shown with a dashed-line will have their own LSP(s) with the rest of their terrestrial sites. This allows the service provider to design and

implement a completely private network for their customers that have both terrestrial sites and sites served by the iDirect satellite network. Integration of MPLS cloud with the iDirect solution is a very simple process. An MPLS LER, that is connected to the iDirect Hub equipment can be configured to classify and push MPLS Labels onto the packets. This classification can happen either on Source or Destination IP address or 802.1Q VLAN tags, coming form the iDirect equipment. In the future, iDirect will implement a feature to provide LER functionality on the iDirect equipment itself.
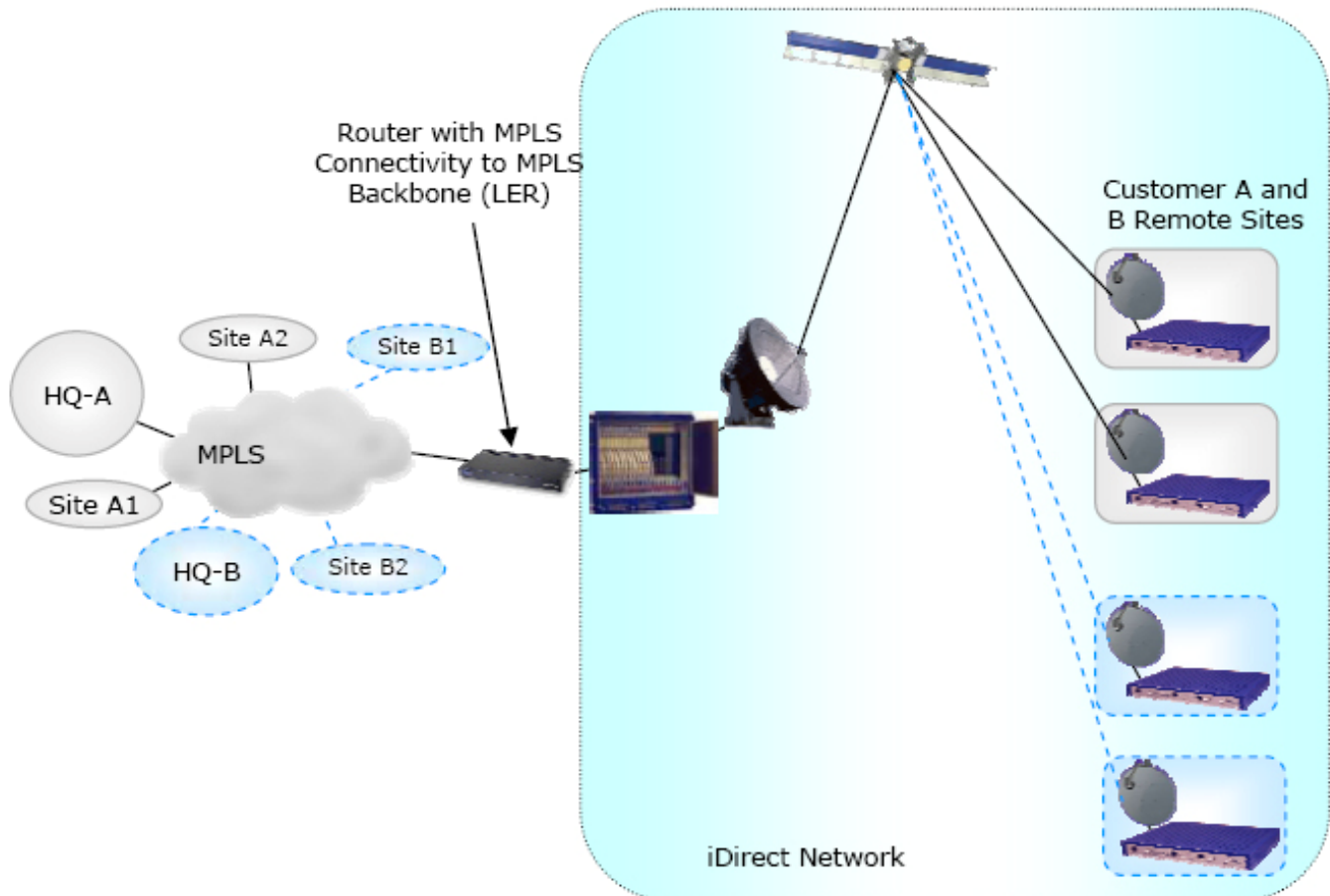

Figure 1: Integrate Customer Sites to MPLS Backbone

2. Map iDirect QoS to MPLS LSPs: iDirect solution provides world class QoS capability on our satellite system, both in the downstream and the upstream direction. QoS can be configured on an application basis per remote site location. QoS rules can be defined based on Source IP, Destination IP, Source TCP Port, Destination TCP Port, DiffServ bits, ToS bits, and certain protocol type.
This functionality can be easily integrated with the MPLS LSPs that carry different types of traffic with varying levels of service. The LER would be configured to classify and push the right labels on the packets, thus providing end-to-end QoS. Figure 2, illustrates a simple QoS configuration to classify VoIP traffic and provide end-to-end QoS and prioritization.
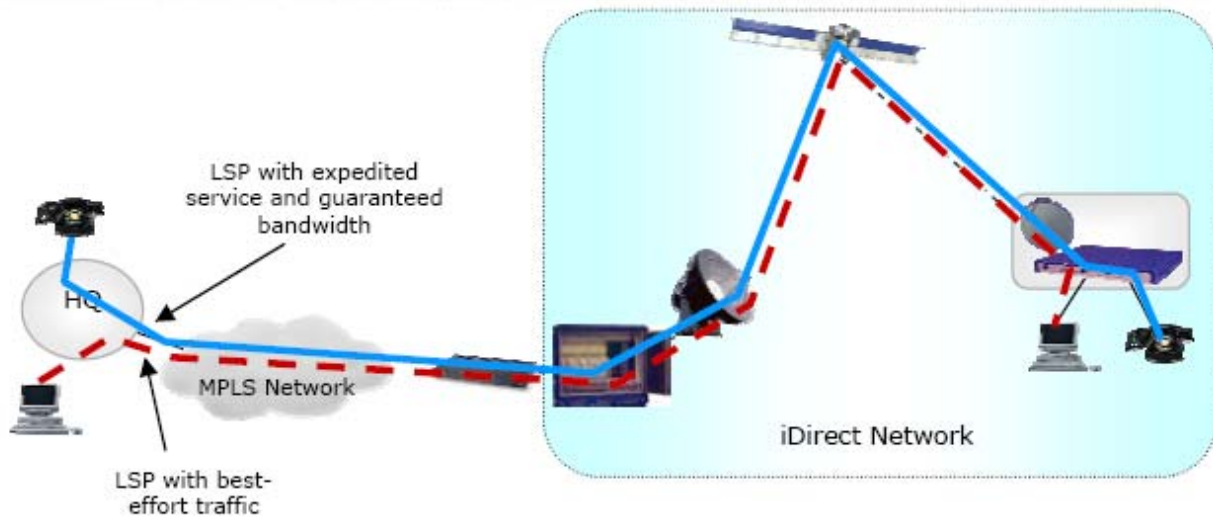
Figure 2: iDirect QoS to MPLS LSP Mapping

3. Extend the reach of MPLS network across the globe: The iDirect solution provides business class IP connectivity to sites that are geographically dispersed, even across continents. This network architecture provides "one-hop" connectivity to remote sites that are thousands of miles apart. A service provider typically has to support customers that have locations spread around the globe and has locations that are hard to reach. The iDirect solution is the answer to this. Not only does it allow the service provider to reach all locations, but also provide a onehop network to geographically distributed sites, as shown in figure 3. In addition, iDirect solution provides all the controls and features needed to provide a business-class solution over the satellite and integrate with the service providers MPLS backbone.
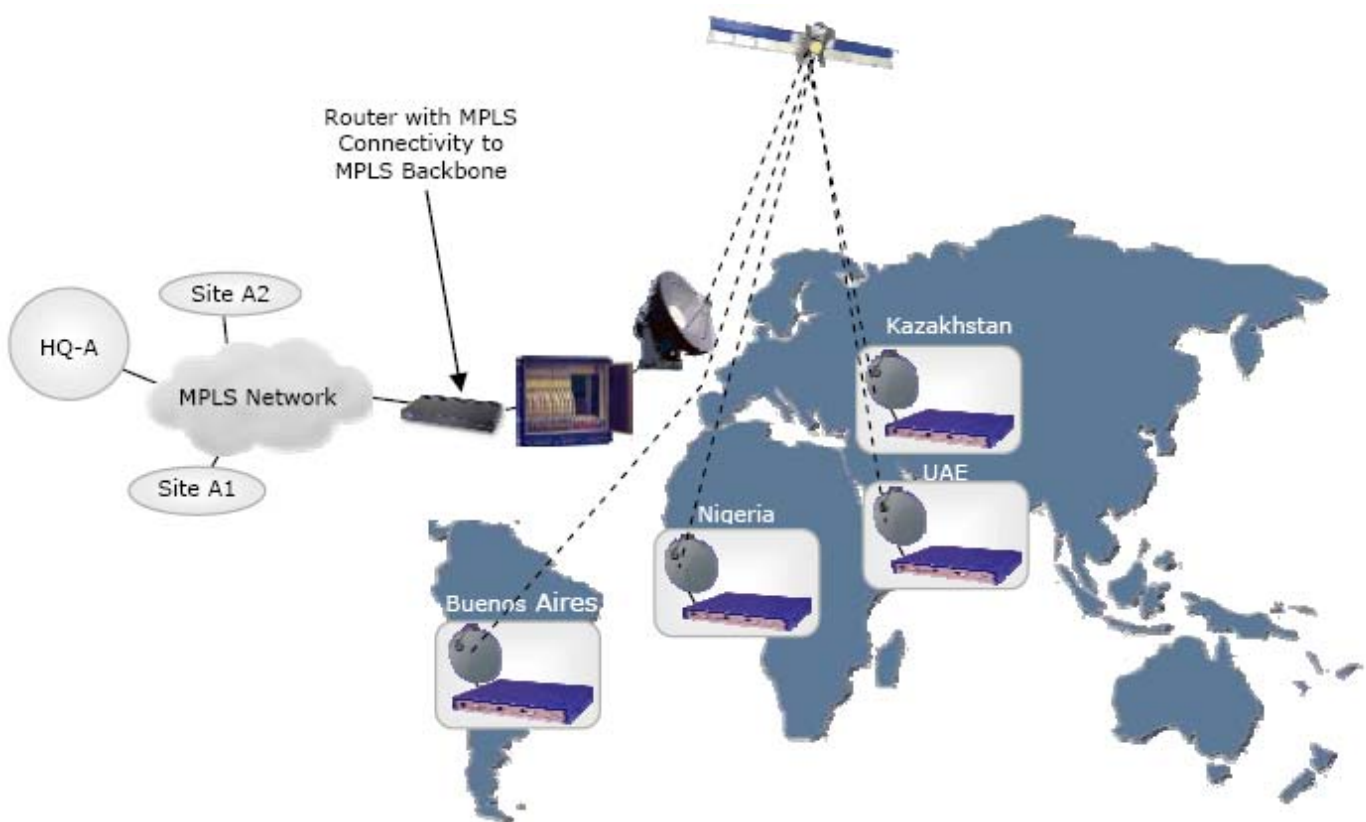

Figure 3: Extend MPLS Cloud Globally