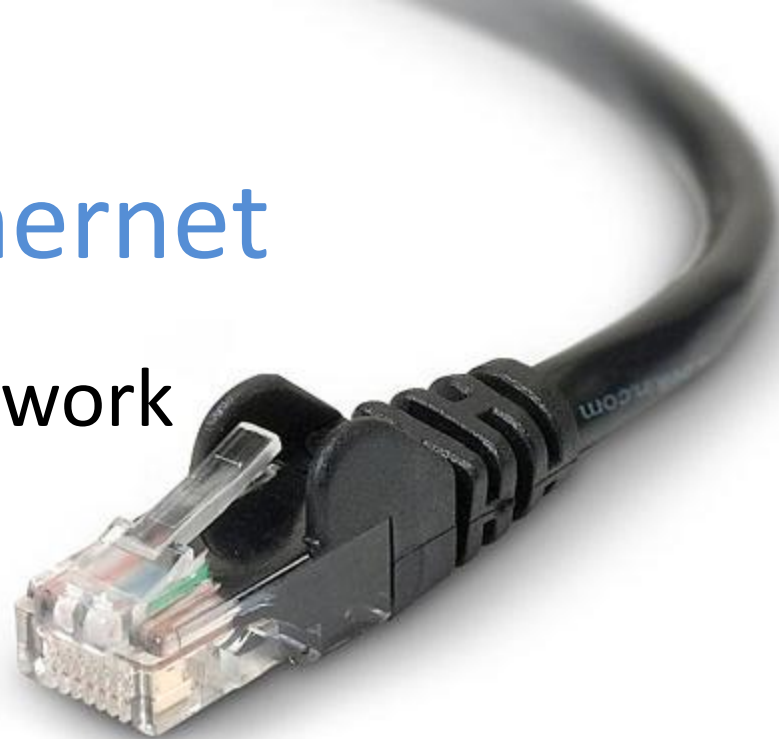


# Leveraging Active Ethernet

## In The Service Provider Network

Presented by Greg Johnson  
Manager, IP Services  
[greg.johnson@fecinc.com](mailto:greg.johnson@fecinc.com)



48<sup>th</sup> Annual Summer Convention  
July 23-27, 2011  
Hyatt Regency Minneapolis, Minn



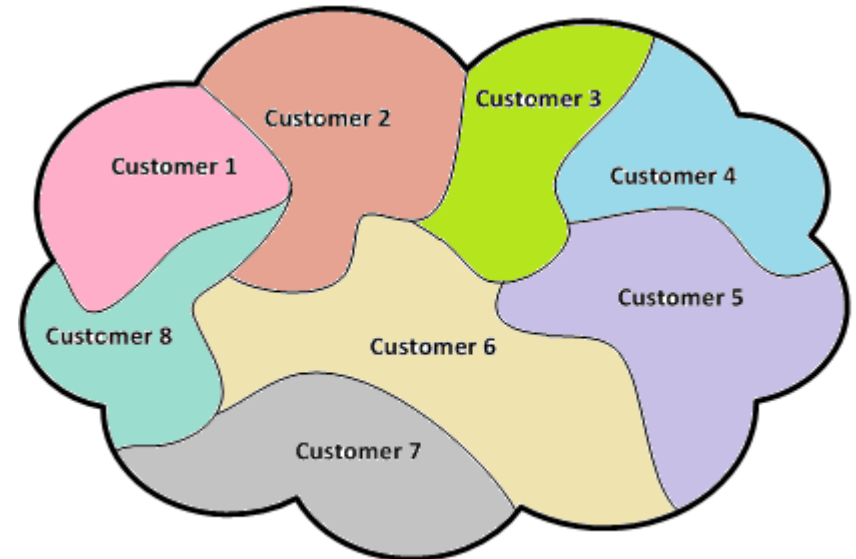
# Leveraging Active Ethernet

In The Service Provider Network



## Network Virtualization

- Traffic Isolation
- Transparency to End User
- Security
- Traffic Engineering
- Resiliency





# Leveraging Active Ethernet

In The Service Provider Network

## Common Core Network Technologies for the Delivery of Active Ethernet

- Native Ethernet
- IP/MPLS

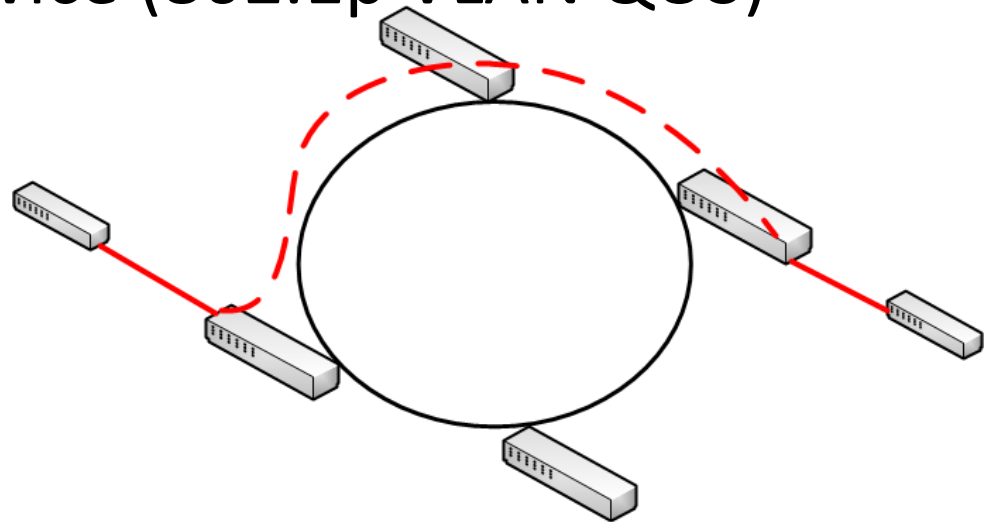


# Leveraging Active Ethernet

In The Service Provider Network

## Native Ethernet

- Easy to deploy and provision
- Inherent redundancy in most vendor ring architectures
- Basic Quality of Service (802.1p VLAN QOS)



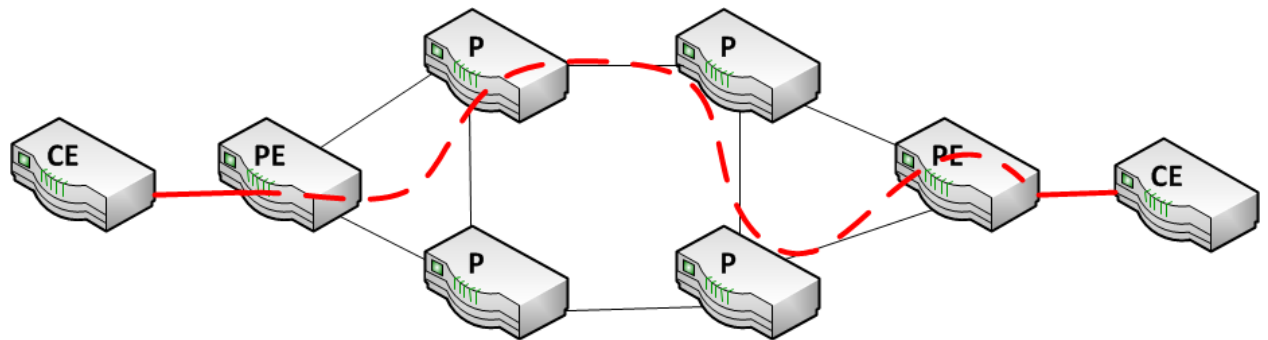
# Leveraging Active Ethernet

In The Service Provider Network



## IP/MPLS

- Based on IP core
- Scalable architecture
- Granular Traffic Engineering and QOS (RSVP-TE, CSPF as well as layer-2 802.1p and layer-3 DSCP QOS at the PE-CE edge)



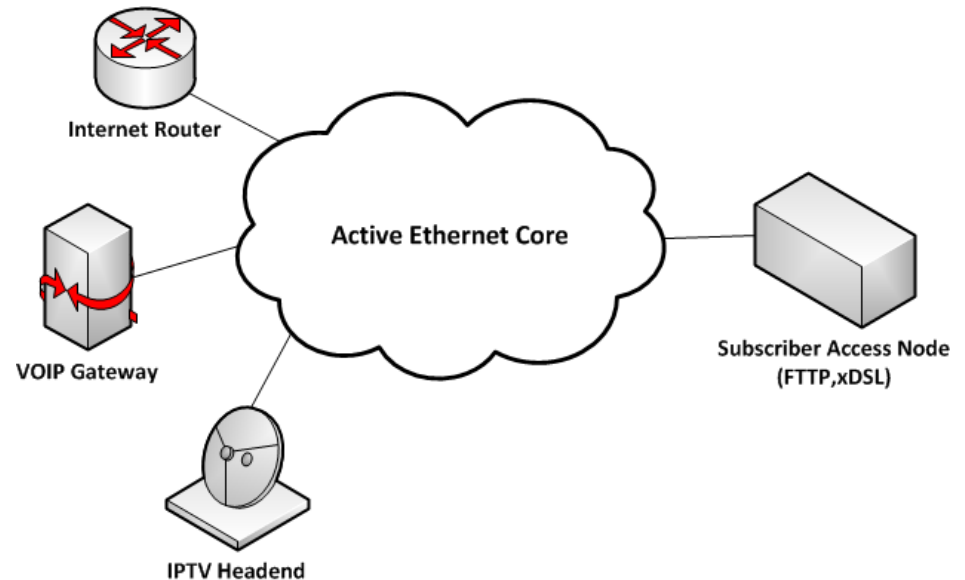
# Leveraging Active Ethernet

In The Service Provider Network



## Common Uses of Active Ethernet Core By Service Provider

- Transport Internet traffic
- IPTV multicast distribution
- VOIP transport





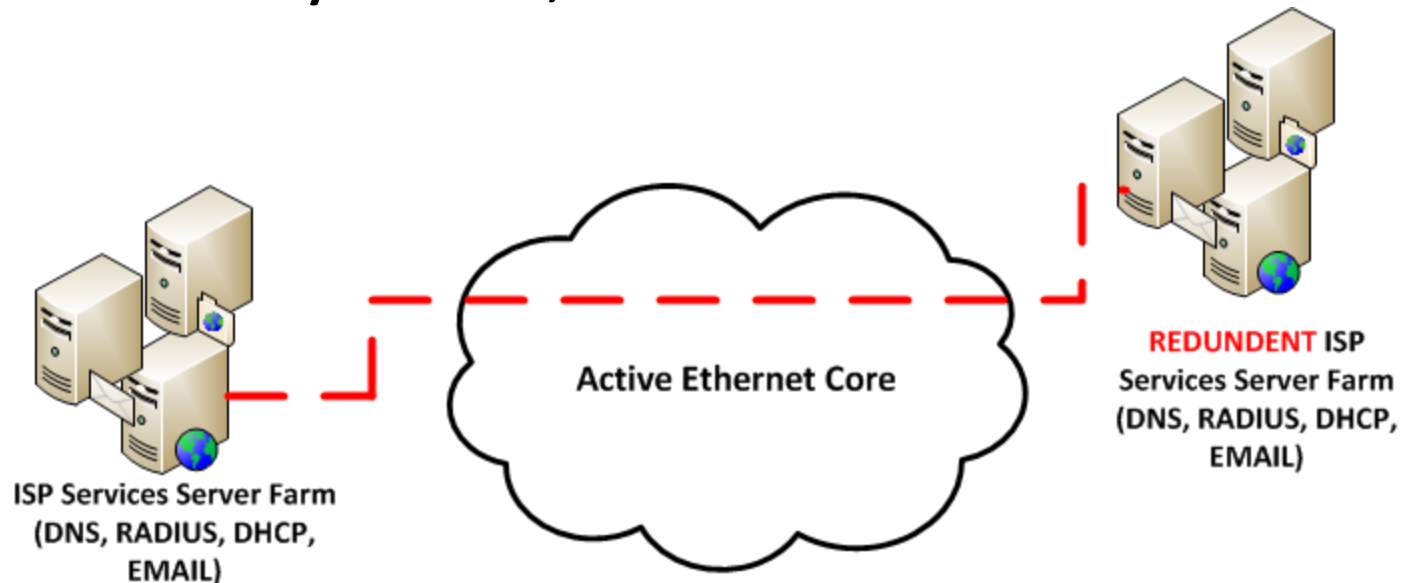
# Leveraging Active Ethernet

In The Service Provider Network

## Other Service Provider Uses Of Active Ethernet

ISP services redundancy (Email,DNS,Web)

- Storage replication
- Secondary Email, DNS and RADIUS servers



# Leveraging Active Ethernet

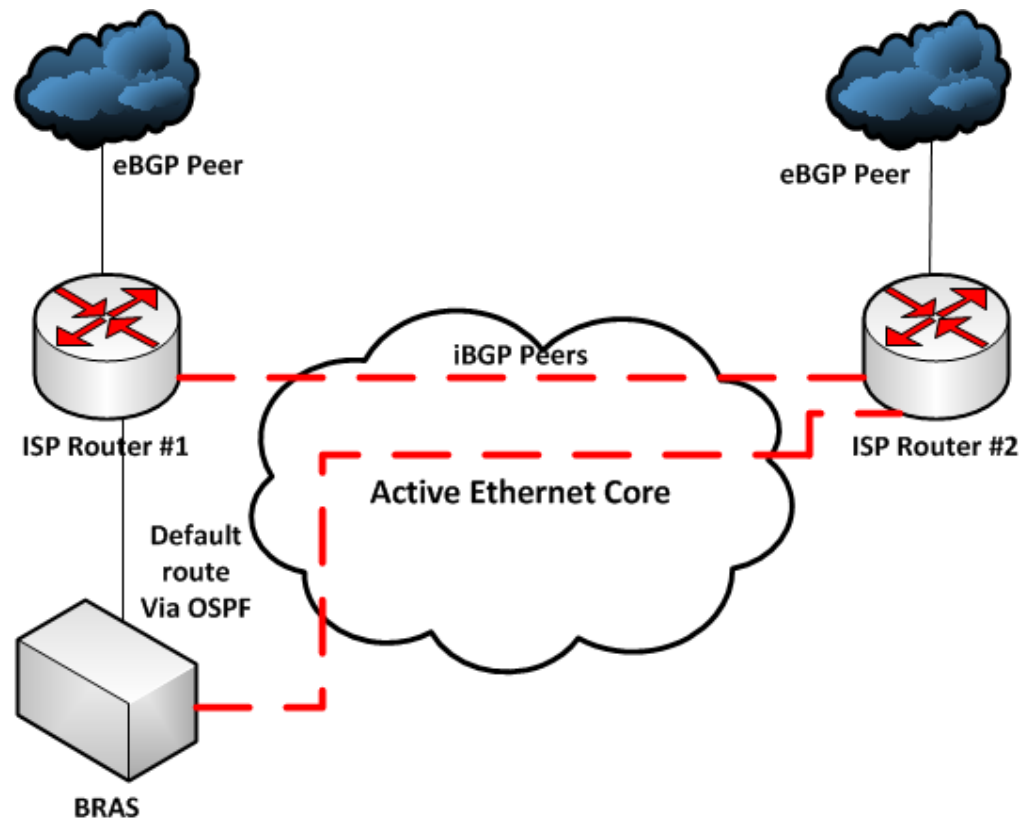
In The Service Provider Network



## Other Service Provider Uses Of Active Ethernet

Internet Bandwidth  
Redundancy

- Multi-home to multiple service providers
- Internet gateway physical location redundancy



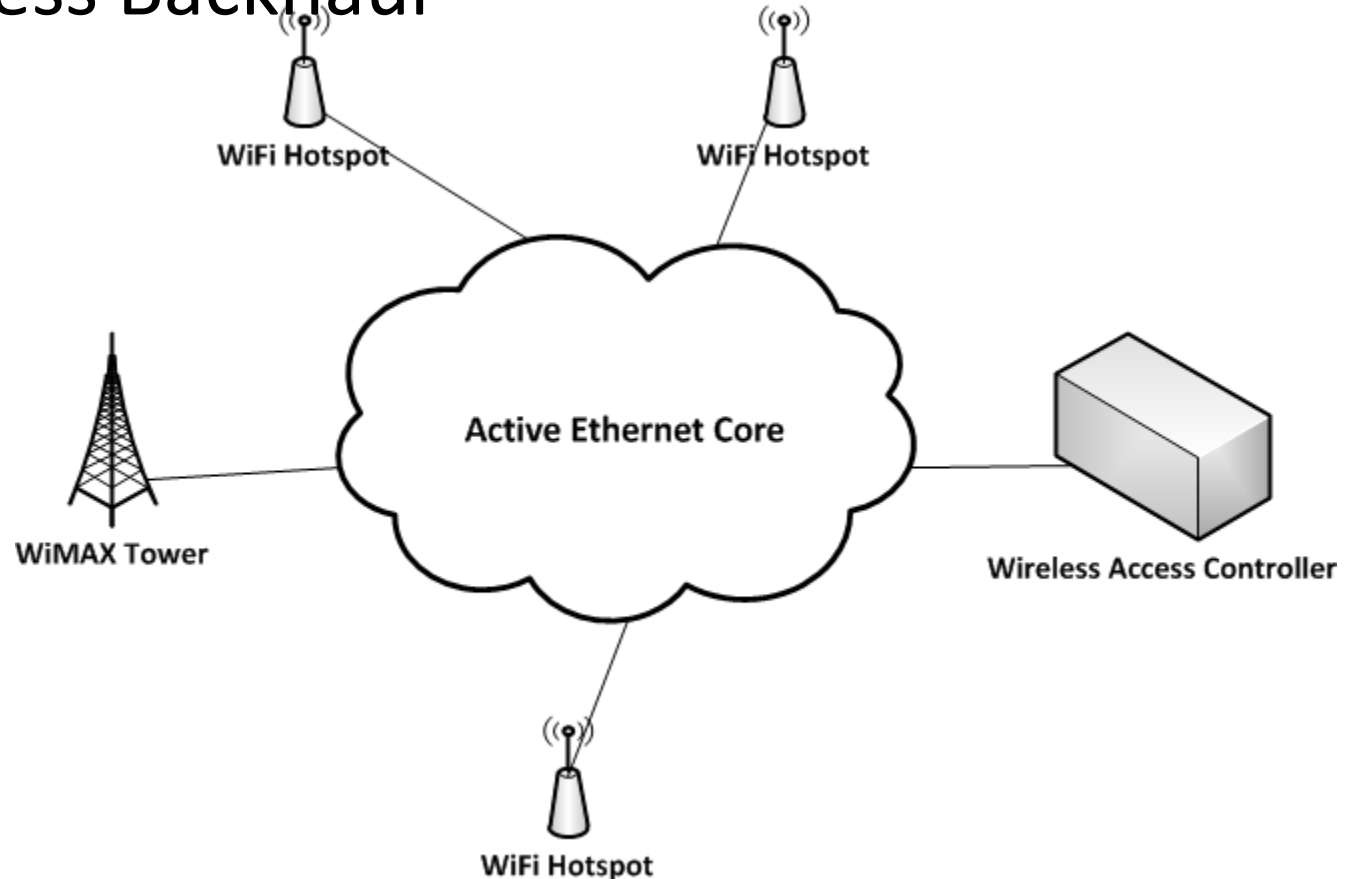
# Leveraging Active Ethernet

In The Service Provider Network

## Other Service Provider Uses Of Active Ethernet

### Fixed Wireless Backhaul

- Wi-Fi
- WiMAX

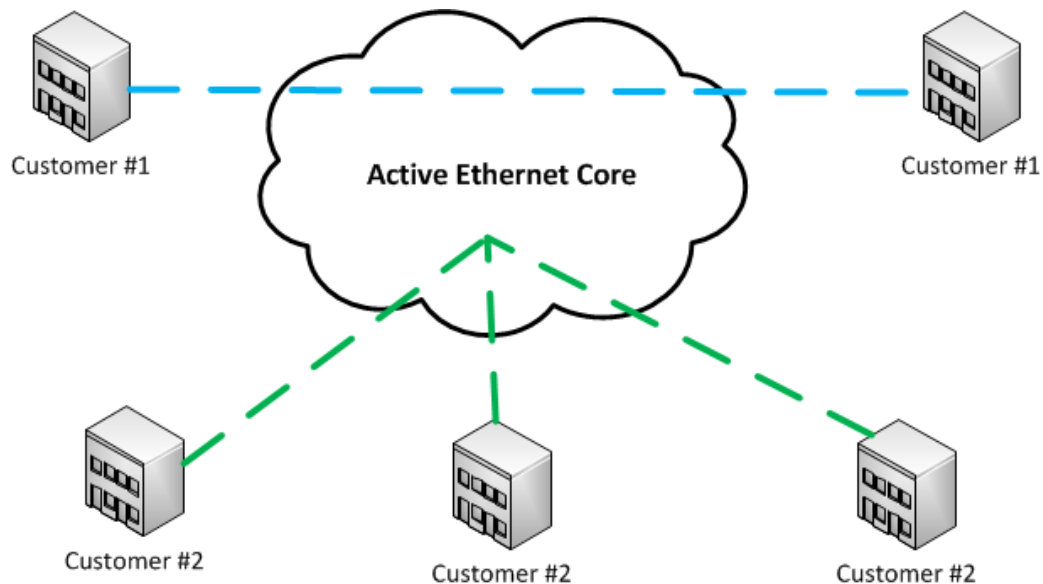


# Leveraging Active Ethernet

In The Service Provider Network

## Enterprise Transparent LAN Services

- Connect remote locations
- Replace point-to-point T1 services
- Both E-Line and E-LAN services



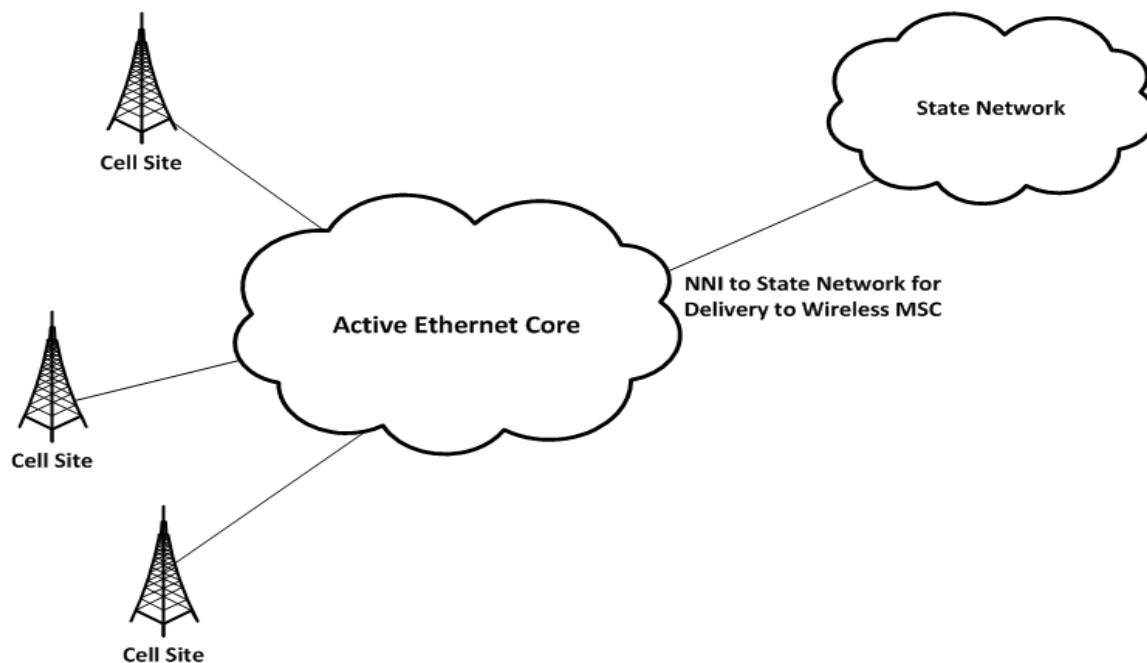
# Leveraging Active Ethernet

In The Service Provider Network



## Cell Site Backhaul

- Connect tower locations to Wireless MSC
- Partner with State and Regional Networks



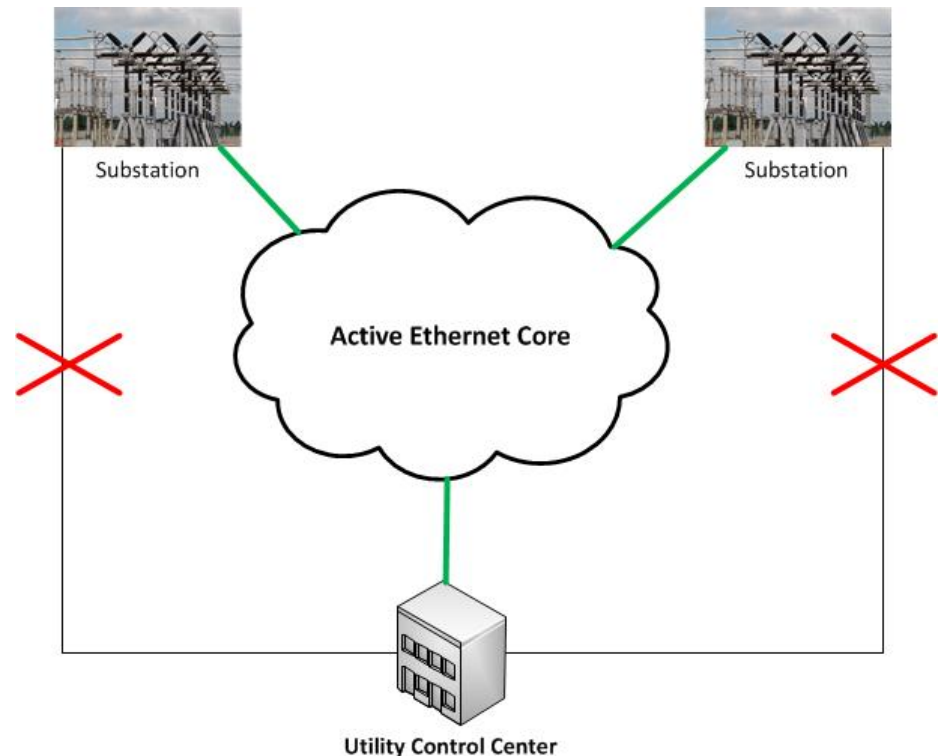


# Leveraging Active Ethernet

In The Service Provider Network

## Utilities Backhaul

- Offer network redundancy to utility company
- Managed and secure network access





# Leveraging Active Ethernet

The Service Provider Network

## Service Level Agreement (SLA) Considerations

A prospective customer may request the following network attributes be monitored and covered in an SLA:

- Packet Loss
- Delay
- Jitter
- Network Availability

A prospective customer may have delay and jitter sensitive traffic such as VOIP riding your network

Most SLAs are based upon a monthly average, therefore historical data storage and retrieval is normally required



# Leveraging Active Ethernet

The Service Provider Network

## Monitoring Reporting and other SLA Considerations

- 24/7 SNMP link utilization and trap monitoring is a must
- 802.1ag and Y.1731 both define OAM standards for connectivity fault management
- Embedded IP SLA monitoring and trap notifications are common in IP/MPLS network solutions