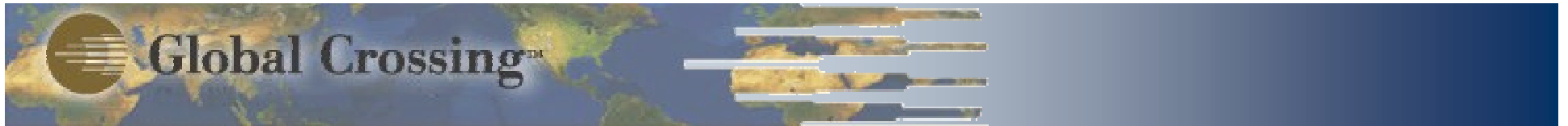




# Agenda Topics

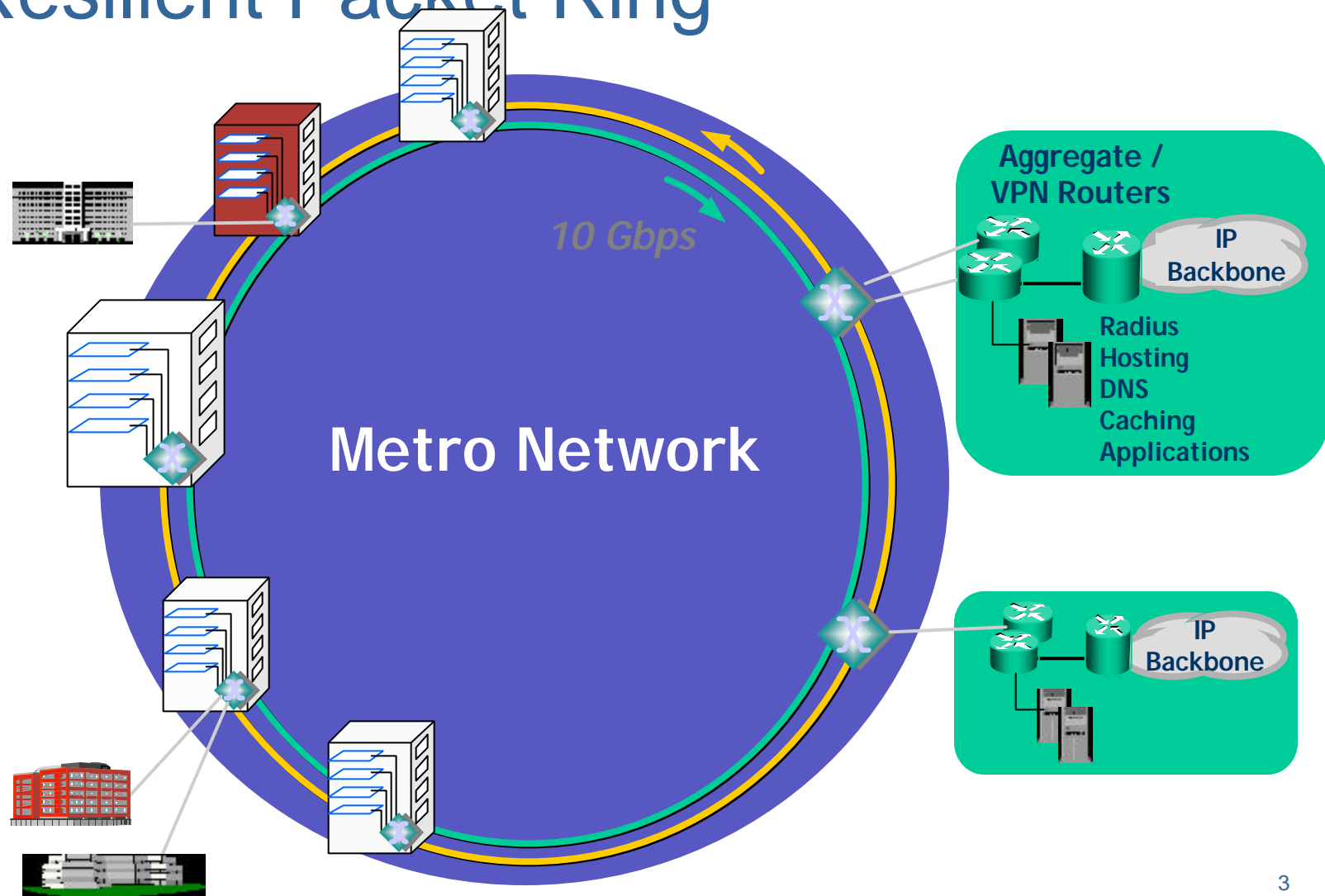
- Business objectives
- Service objectives
- Service classes
- Performance objectives
- Functional objectives
- Operational objectives

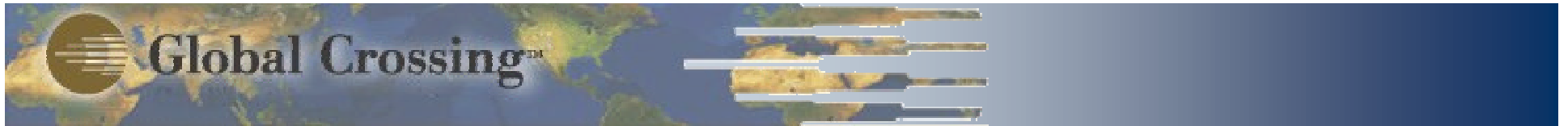


# Carrier's and 802.17

Shannon Silvus  
Chief Architect  
Product Development  
Global Crossing

# Resilient Packet Ring





# Business Objectives

- Deploy MAN infrastructure that
  - Optimizes delivery of metro Ethernet services
  - Achieves cap-ex break-even within fifteen months\*
  - 30% - 50% lower cost than SONET/SDH equivalent
  - Industry-backed standards-based solution
    - No “one-offs”
  - 8+ years technology life



# Service Objectives

- Scalable Ethernet services
  - Ethernet private line
    - Point-to-point virtual private line
    - What's the overhead penalty?
    - What are the drivers to replace Sonet/TDM?
  - Bridged Ethernet
    - Multipoint services: 802.1Q VLANs
    - Support for multicast and broadcast
  - Symmetrical and asymmetrical contracts
    - Committed bandwidth with burst
  - Ethernet interoperability
    - Routers, Ethernet switches, etc.

## Service Objectives (2)

- TDM Services
  - T1/E1 circuit service
    - PBX, Frame relay and ATM access
  - T3 circuit service
    - Frame relay and ATM access



# Service Classes

- Ethernet
  - Three service classes
    - (1) Committed bandwidth,  $< 1$  ms delay (metro)
    - (2) Committed bandwidth, no delay bound
    - (3) Best effort bandwidth, no delay bound
- TDM Service
  - One service class
    - Constant bit rate,  
 $< 1$  msec delay,  $< 500$   $\mu$ sec jitter



# Performance Objectives

- Network availability
  - 99.999%
- Service restoration
  - < 50 msec in event of fiber outage or node failure
- Node addition and removal
  - < 50 msec impact to existing traffic flows  
(assumes ring is in protection mode prior to node addition)



# Functional Objectives

- Topology
  - Support for 150+ km rings
  - Support for 40+ km internodal links
- Ring capacity
  - Dual 10 Gbps
- Service Level Agreements
  - Configurable per subscriber
  - Service separation
    - Secure services, Committed SLAs
  - Weighted fair allocation of unused bandwidth
    - Across all burstable service class

## Functional Objectives (2)

- Facility performance monitoring
  - SONET/SDH-like (L0 and L1) statistics
  - Frame level (L2) statistics
  - Threshold alerts and triggers
- Selective tiered service protection
  - By subscriber
  - Configurable tiered protection (per contract)
    - E.g., 10%, 20%, 50%, fully protected
- Layer 2 transport
  - Transparent to external IP routers



# Operational Objectives

- Network management
  - MIBs
  - OSS's
- Interoperability
- Traffic engineering
  - Ring segment statistics
  - Engineered subscription
- SLA statistics
  - Per subscriber contract
  - SLA violations