



PRESENTS

NETWORLD INTEROP



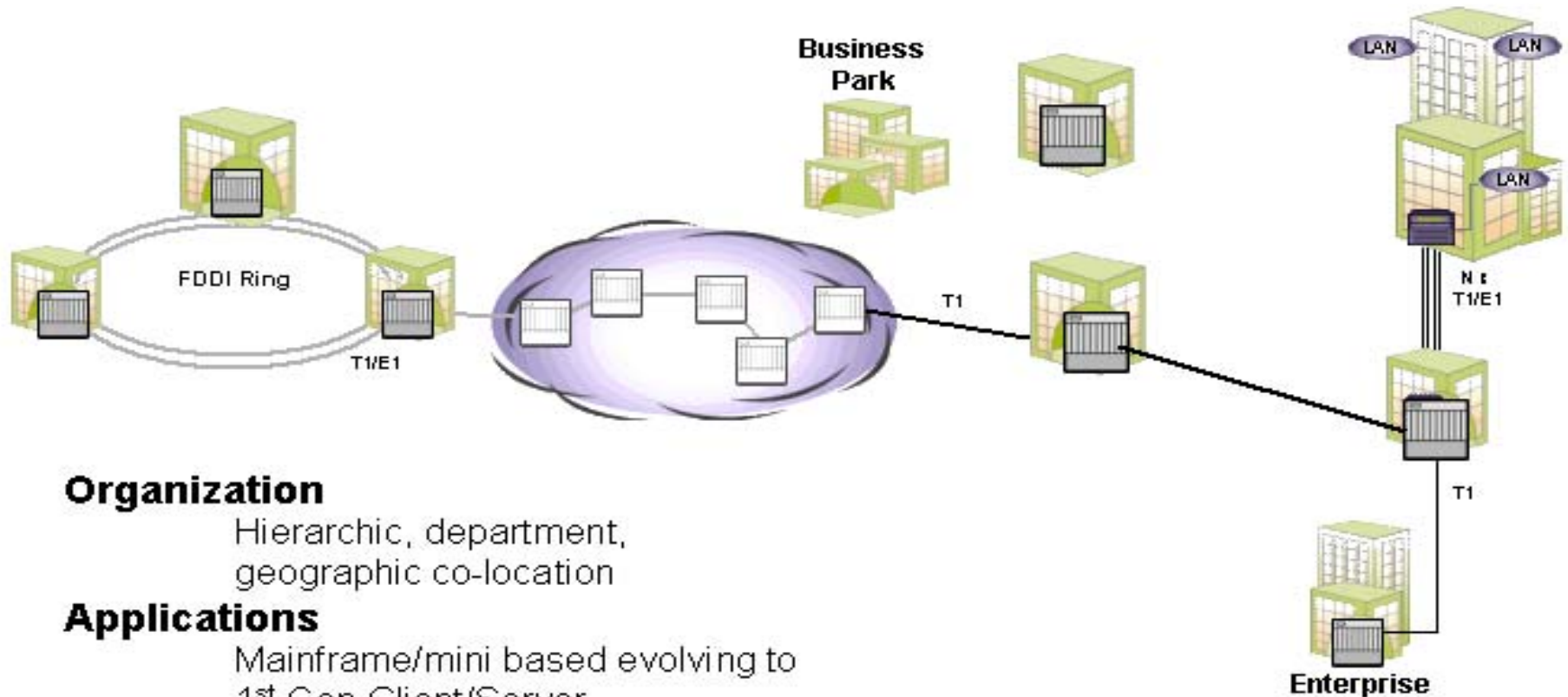
Architecting the LAN Campus Architecture

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Application/Organization Growth



Organization

Hierarchic, department,
geographic co-location

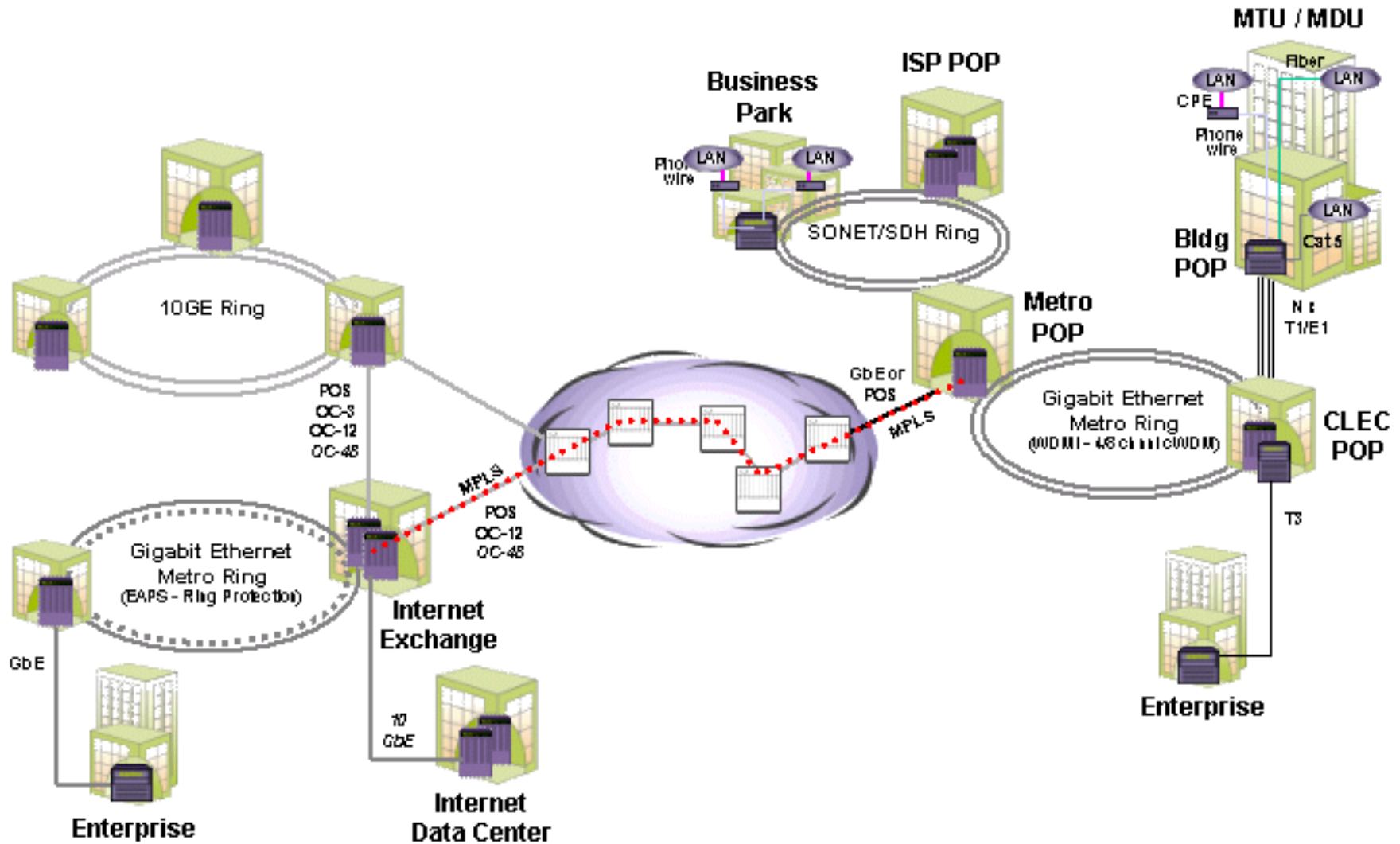
Applications

Mainframe/mini based evolving to
1st Gen Client/Server
Single media only

Infrastructure

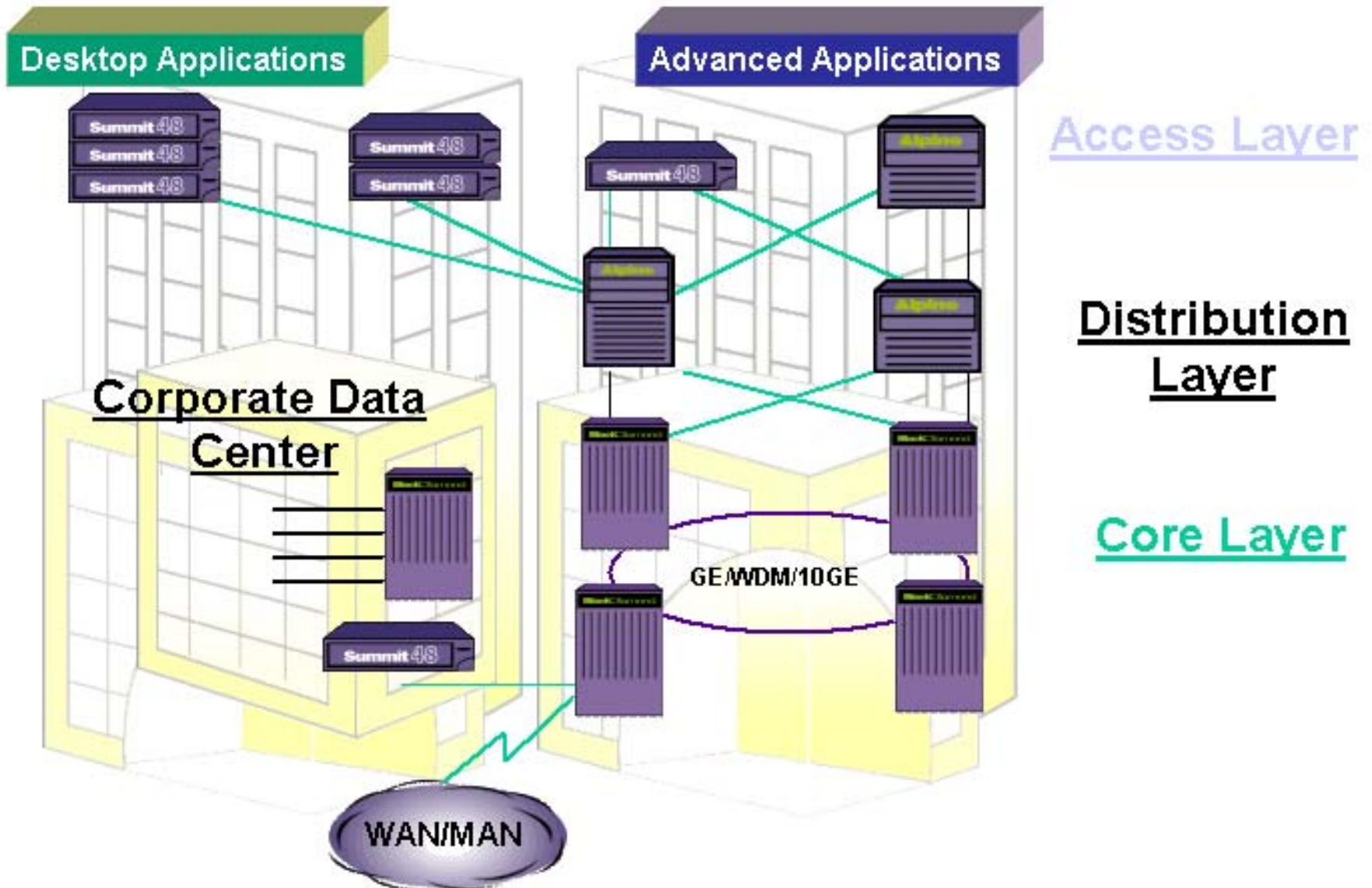
Driven by connectivity
Low bandwidth

The Campus Network of the Future

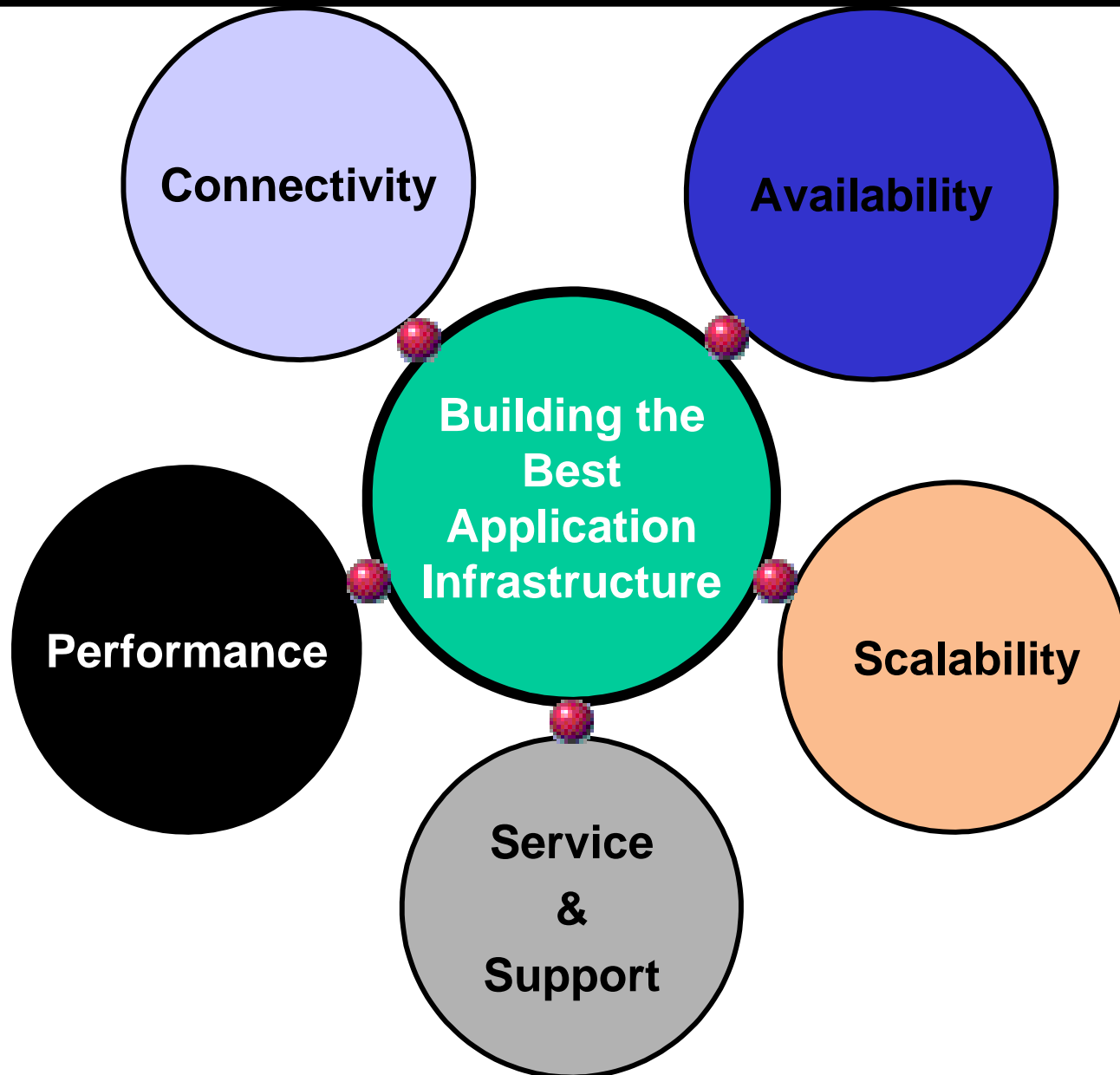


Ethernet / IP Services

Constructing the Campus of the Future



Application Infrastructure



Desktop Applications – Access Layer

▶ **Connectivity** – wide range of low cost connectivity, L2/3, 10/100/1000, security through network logon, 802.1x/address based security

▶ **Availability** – low cost availability at downlink or within stack

▶ **Performance** – wirespeed with QoS for managing application performance

▶ **Scalability** – low cost ports, stackability, same software/UI/Management

Client Applications

ERP, Mail

Web Browsing

File/print

Voice over IP



Advanced Applications – Access Layer

- ▶ **Connectivity** – wide range of low cost connectivity, L2/3, 10/100/1000, security through network logon, 802.1x/address based security
- ▶ **Availability** – low cost availability at downlink or within stack. Modular systems for flexibility, 10GE integration
- ▶ **Performance** – wirespeed with QoS, rate shaping and throttling for advanced application performance
- ▶ **Scalability** – low cost ports, stackability, same software/UI/ Management, easy migration to 100/1000

Client Applications

Image based



Film and TV post
Production

Mobile IP

Product/Technology
Development



Distribution Layer

- ▶ **Connectivity** – 1 Gb Ethernet, 10Gb Ethernet, wirespeed routing of IP (and maybe IPX). Primarily optical interfaces, VLAN aggregation
- ▶ **Availability** – flexible chassis based systems, fixed for rapid deployment in smaller locations – real availability means systems level redundancy
- ▶ **Performance** – wirespeed with QoS, rate shaping and throttling as well as wirespeed accounting capabilities
- ▶ **Scalability** – same architecture as core and edge means coherent and consistent approach to VLANs, accounting and application performance management

Requirements

Distribution Layer – Infrastructure Services

- IP Routing – Capacity, Performance
- Redundancy – physical/logical
- Multicast (PIM (S&D), DVRMP)
- IPX Routing



Core Layer

▶ **Connectivity** – 1 Gb Ethernet, 10Gb Ethernet, wirespeed routing of IP (and maybe IPX). SONET for connection to MAN providers. Interface to firewall/VPNs

▶ **Availability** – flexible chassis based systems, fixed for rapid deployment in smaller locations – real availability means systems level redundancy

▶ **Performance** – wirespeed with QoS, rate shaping and throttling as well as wirespeed accounting capabilities

▶ **Scalability** – same architecture as other layers means coherent and consistent approach to VLANs, accounting and application performance management

Requirements

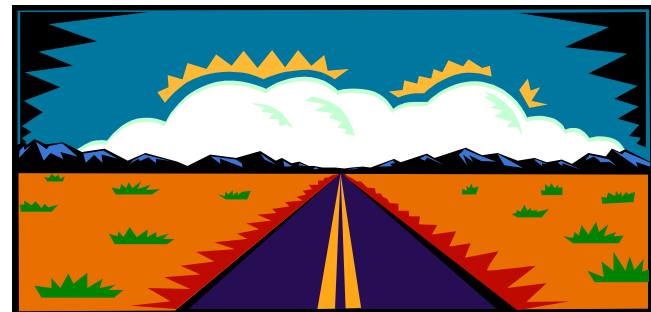
Core Layer – Infrastructure/MAN Services

IP Routing – Capacity, Performance

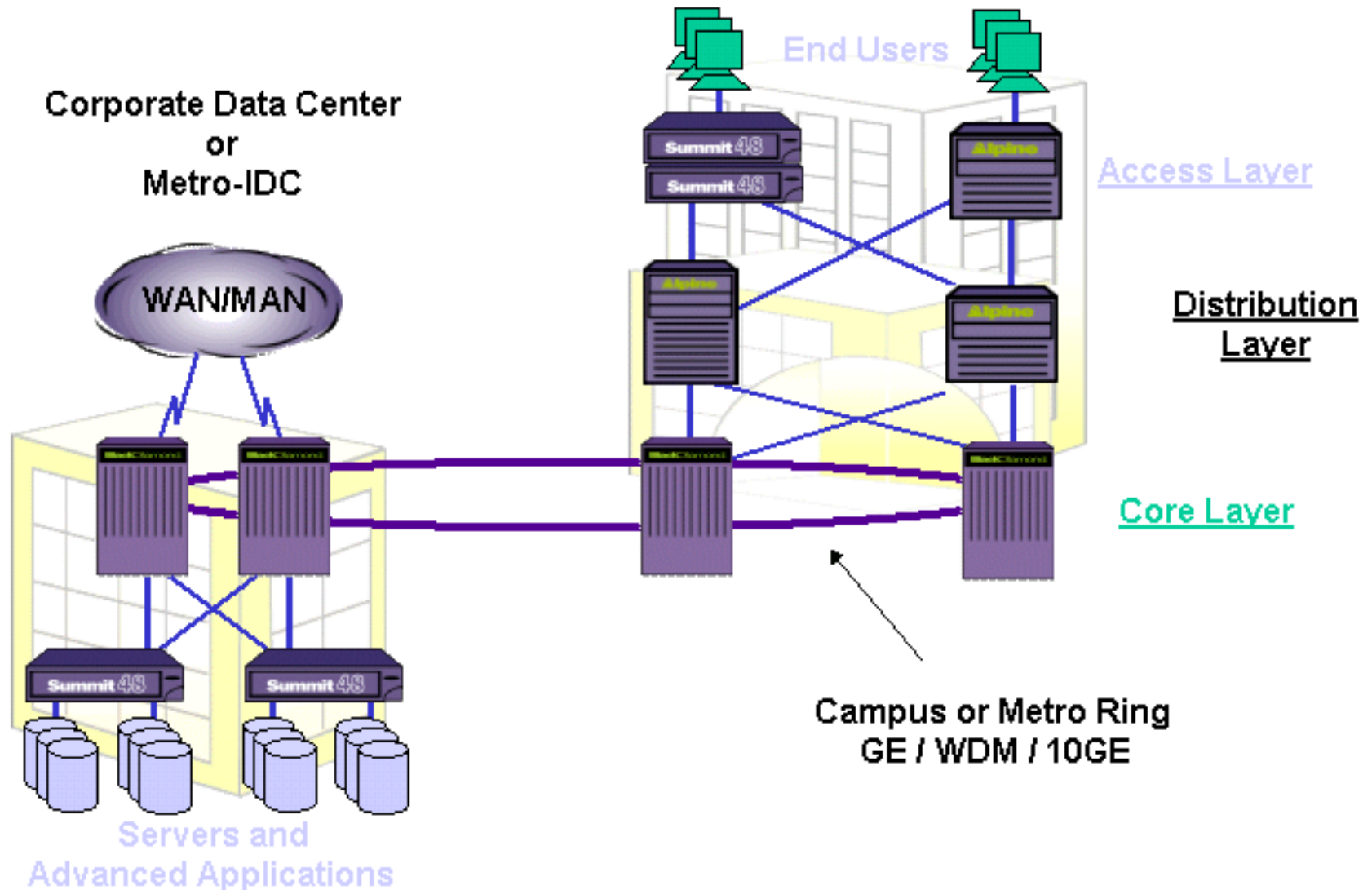
Total Redundancy – physical/logical

Wire rate, non blocking forwarding

MAN Connectivity



Breaking Out the Data Center



Summary

- ATM has proved too complex for Enterprise Campus environments
- Quality of Service is about *Application Performance Management*
 - QoS is NOT just about priority
 - Monitoring tools are also vital
 -and it can be implemented on Ethernet
- Layer 3 at the edge can increase availability
- VLANs are key to coherent application management
- Consistency of architecture will dramatically lower cost of ownership and *should* increase application performance