

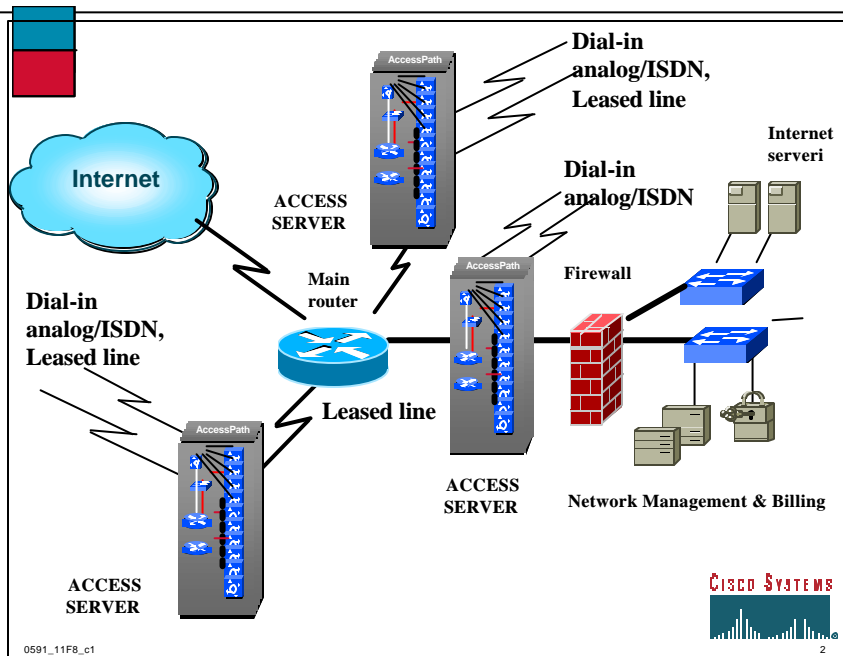


Komunikasiona oprema na Internetu



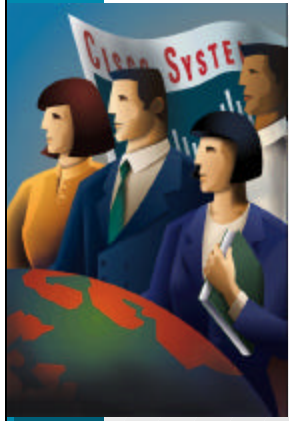
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Carrier-Class Access Servers



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Agenda

- **Service Provider Requirements**
- **Dial Access Stacking Architecture (DASA)**
- **AccessPath™ -TS3 and AccessPath-LS3**
- **Distributed POP Management**



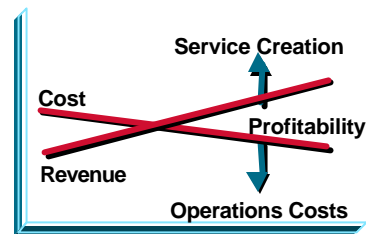
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Service Provider Requirements

- **Market share**
 - Time to market
 - Quick expansion
- **Profitability**
 - Differentiated services
 - Reduced operating costs



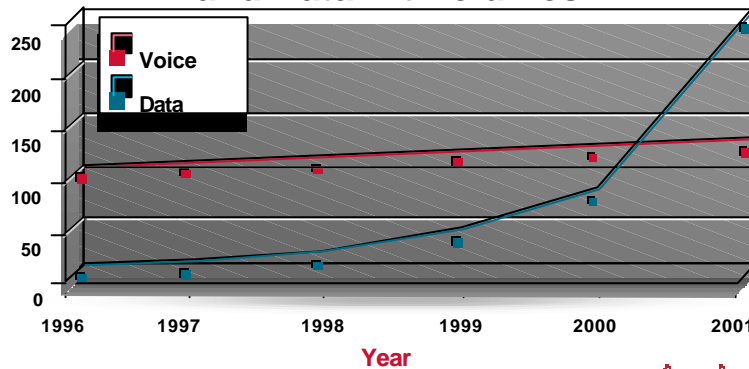
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Growth of the Internet

Traffic Projections for Voice and Data Bit Volumes



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Carrier-Class Dial Solution Requirements

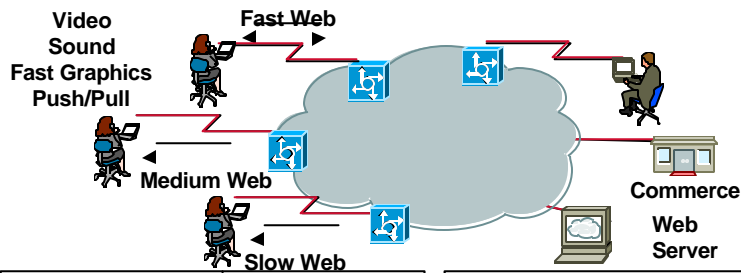
Requirements	Benefits
Maximum Number of Ports	Thousands of Ports in a single Hunt group
Fully Redundant	No single point of failure
Router and Switch Integration	Complete solution
Common OS	Minimal training costs; maximum service offerings
NEBS Compliance	CO ready
Performance Scalability	Can handle new applications and new users
Distributed System Controller	Scalable network management
Flexible Architecture	New generation of products and technologies
Pre-Engineered Configurations	Minimal deployment time
Ready to Deploy	Minimal deployment time
Legacy Support	Investment protection

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High-Performance Bandwidth



User Applications	Performance Need	Technology	Max Speed
Fast Web, Integrated Apps., VPN Tunneling, Encryption, Net Conferencing, Gaming	50-100 pps/user	128K ISDN	63 pps
		84K Compressed Modem	42 pps
		64K ISDN Modem	31 pps
Medium Web- Attachment E-mail	15-30 pps/user	56K Modem	27 pps
		42K Modem	21 pps
Slow Web/Text E-mail	5 pps/user	28.8K Modem	14 pps

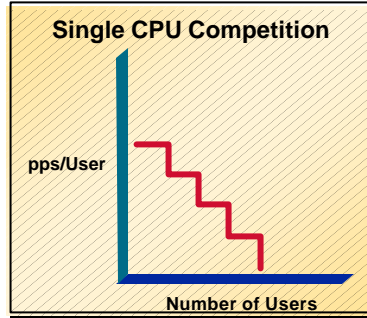
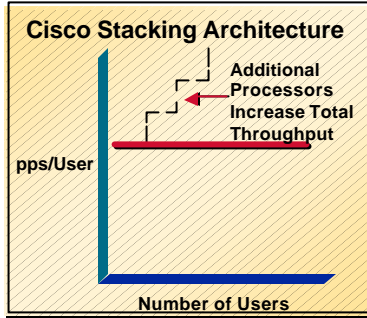
* 256-byte packets

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Scalable Performance



- Multiprocess
- n x dial shelves
- n x router shelves
- Scalable switch fabric

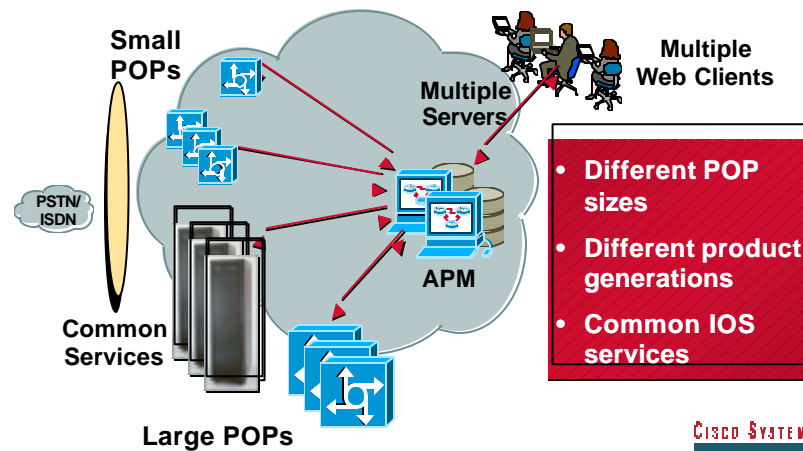


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Single Fabric, Multiple Platforms

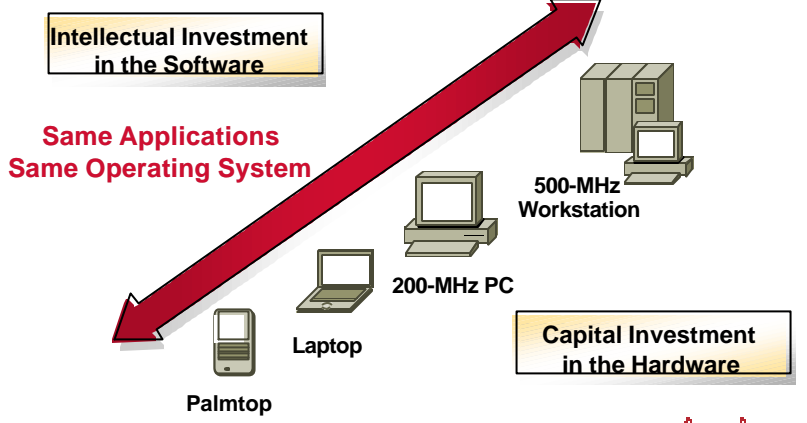


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Scalability and Future-Proofness

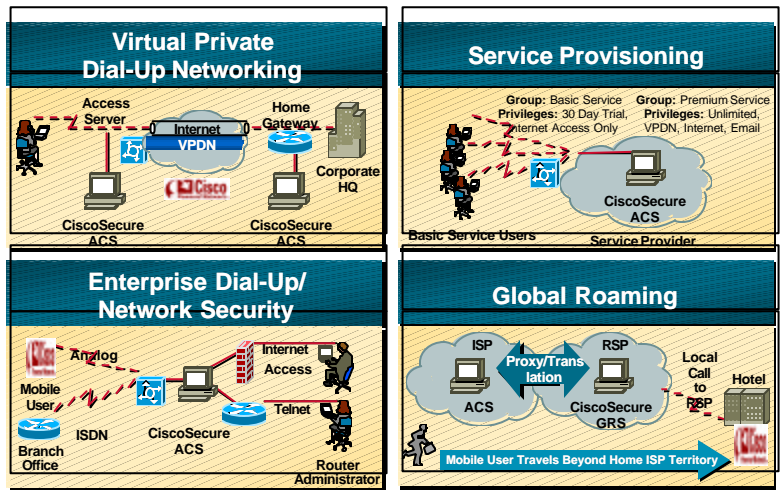


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Cisco IOS™ Services



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Dial Access Stacking Architecture (DASA)

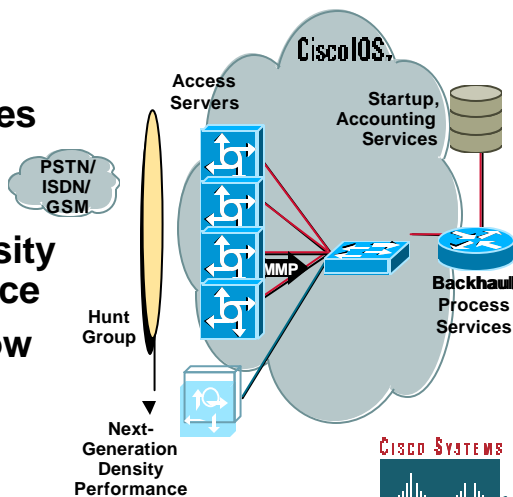


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Dial—The Next Generation

- New dial shelves into existing stack group
- Increased density and performance
- Pay as you grow



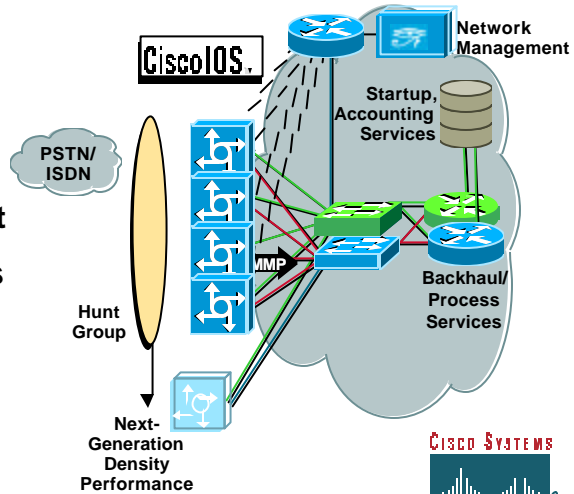
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Building Resilience with DASA

- Redundant design
- Integrated network management
- Carrier class
 - Scalable
 - Performance
 - Resilience

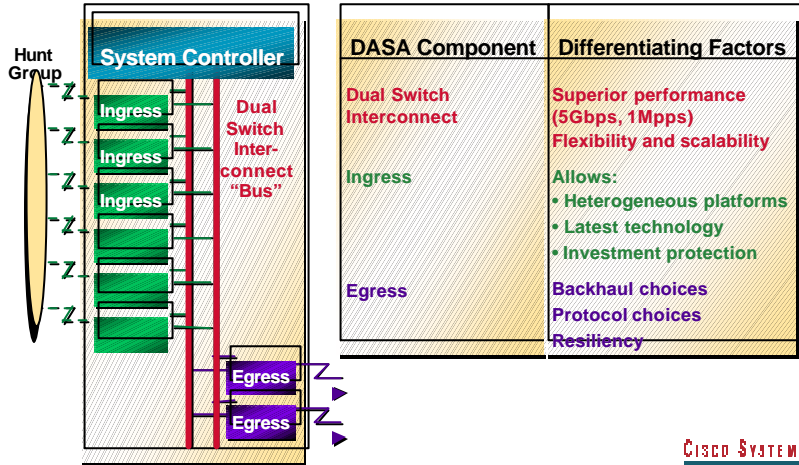


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DASA—Physical Architecture

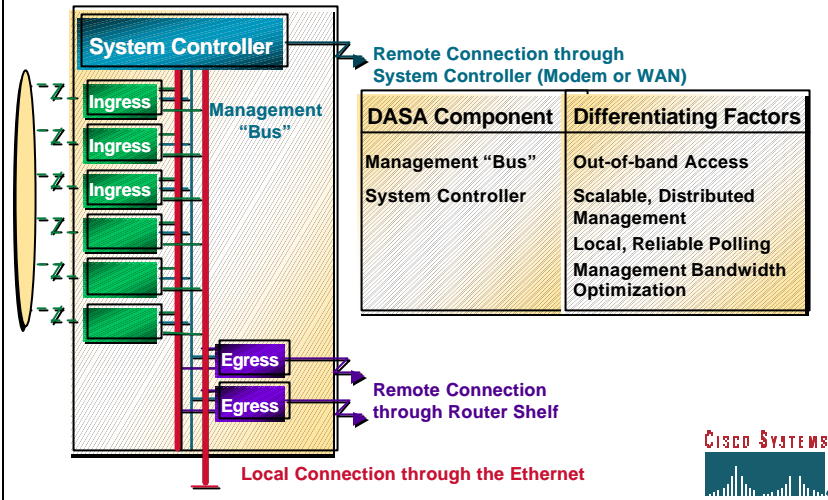


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DASA—System Controller



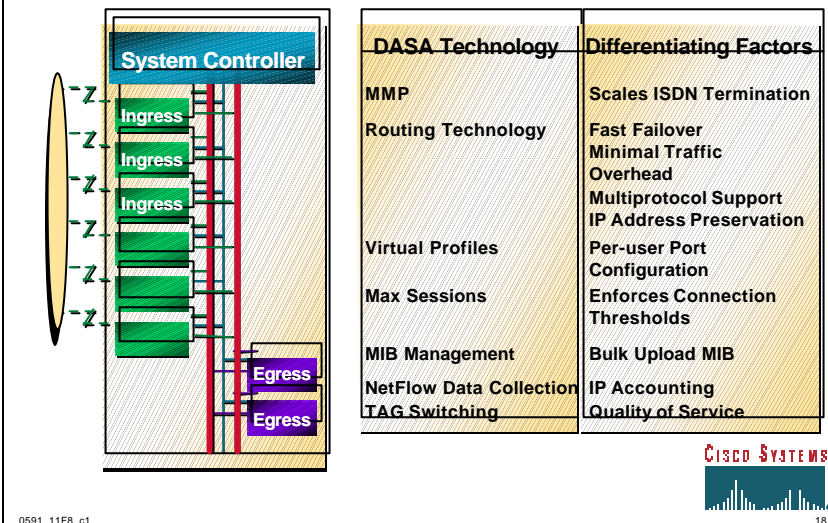
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DASA—Technologies



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AccessPath-TS3 and AccessPath-LS3



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Target Markets

- **AP-TS3**
 - Large points of presence
 - Carrier class
 - Integrated
- **AP-LS3**
 - Smaller points of presence
 - Price/performance leadership

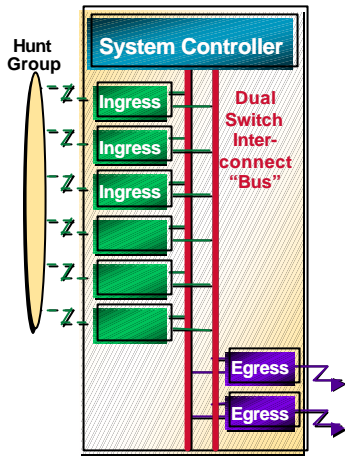


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AccessPath-TS3 Logical View



- Ingress=AS5300
- Switch interconnect=Catalyst® 5002
- Egress=Cisco 7206
- System controller=Cisco 3640



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AccessPath-TS3 System Overview

- **Carrier class**
 - Scalability
 - CT1/PRI port capacity: 192 to 2016 (3*T3)
 - CE1/PRI port capacity: 240 to 2520
 - High availability
 - Hot swap
 - No single point of failure
- **Completely integrated solution**
 - Dial, switching, backhaul routing, system controller
 - Preloaded software configuration
- **Point-of-deployment management**



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AccessPath-TS3 Dial Shelves

- **Based on AS5300**
 - Up to four Cx1/PRI
 - One 10/100-MB and one 10-MB Ethernet interface
- **Leadership modem technology**
 - Up to 120 MICA DSP universal port engines, or 48 Microcom modems
 - Managed modems
- **Leadership performance**
 - Fast, 150-MHz R4700 RISC CPU
 - 120 concurrent sessions at or near line speed



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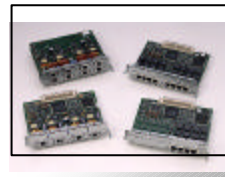
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AccessPath Router Shelf

- **Cisco 7200 based**
 - RISC CPU—150 kpps
 - Dual PCI buses—600 Mbps
 - Six slots per chassis
 - One backhaul slot in single RP case
 - Six backhaul slots in dual RP case
- **High-end port adapters**
 - Ethernet FastEthernet, FDDI, ATM, HSSI, Token Ring, serial...

Cisco 7206



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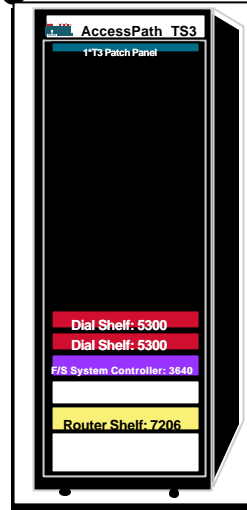


AccessPath-TS3 Entry System, Physical Architecture

- Shelves
 - Dial shelves: two to seven AS5300s
 - Router shelf: Cisco 7206
 - System controller: Cisco 3640
 - Switch: Catalyst 5002
 - CC patch panel (T1 systems)
- Cabinet (sides, back, and door)
 - 80" x 19"x 30" (H/W/D)
 - Signal and power harness
- R2 signaling (E1)
 - Integrated on dial shelves

CC = Carrier Class

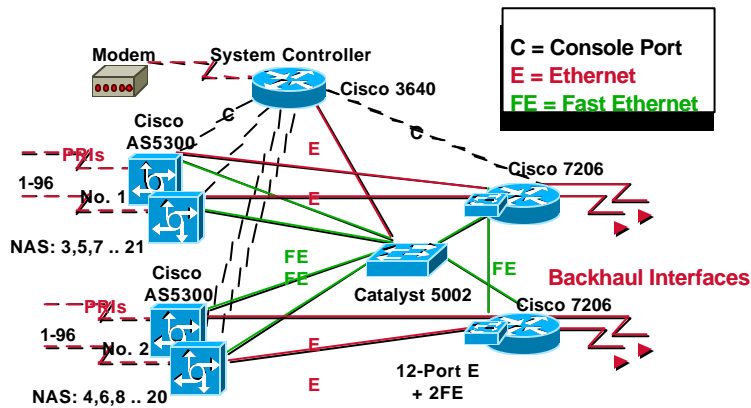
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AP-TS3 High-End Configuration



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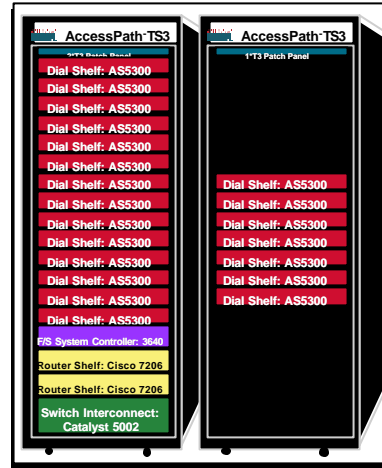


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AccessPath-TS3 High-End System, Physical Architecture

- **Carrier class**
 - High scalability—up to 21 dial shelves
 - High availability—NO single point of failure
 - Traffic segregation at the backhaul
- **AccessPath Manager**
 - Manages AP-TS3 as a single entity
 - Designed to manage large dial pools



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AccessPath-LS3

- **Complete solution for smaller POPs**
 - Price/performance leadership
 - Scalability
 - CT1/PRI port capacity: 96 to 384 ports
 - CE1/PRI port capacity: 120 to 480
 - Switch interconnect
 - 8 port 100BaseTX
 - Backhaul
 - 4 port serial
 - Optional out-of-band management
 - Available documented configurations
- **AccessPath Manager**
- **Dial access stack architecture (DASA)**



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Distributed Dial POP Management

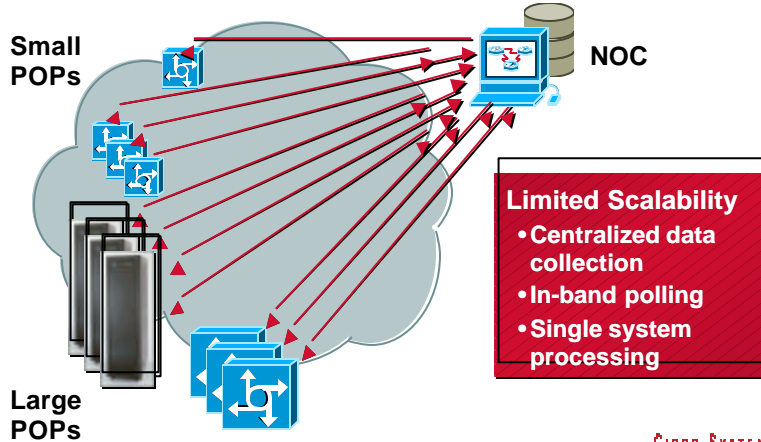
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Before Dial System Management



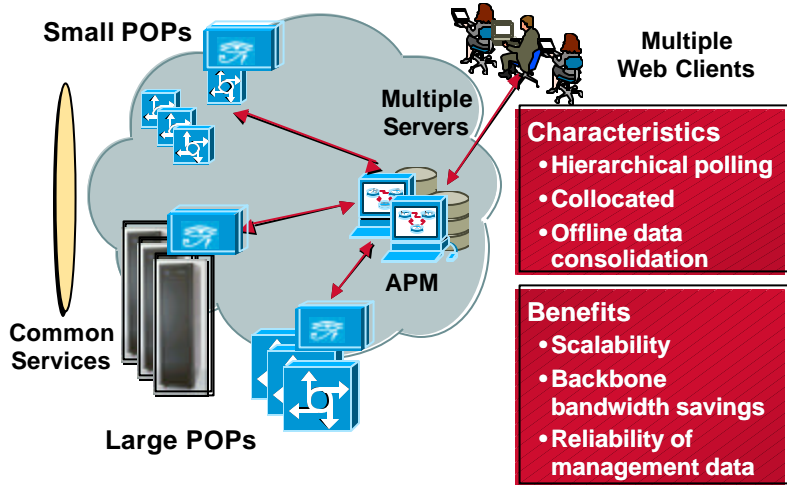
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Cisco Dial System Management

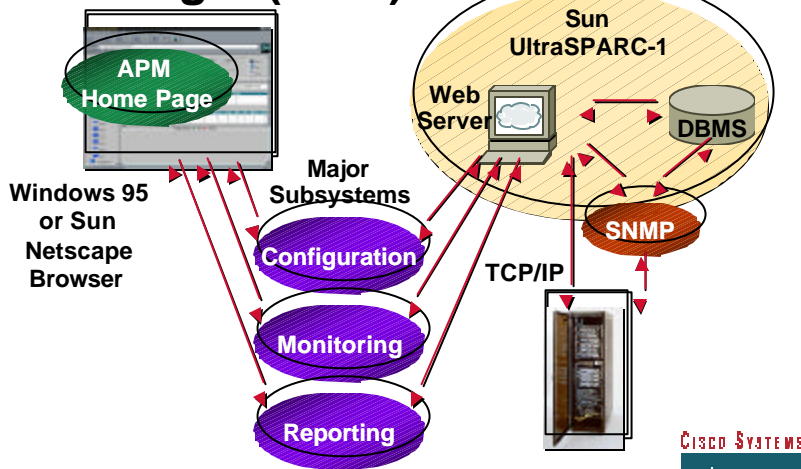


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Cisco AccessPath Manager (APM)



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Final Thoughts

Density without performance is nearly worthless to a service provider. To be truly carrier-class, remote access platforms must deliver the same performance to the dial user, whether one port, 48 ports, or 96 ports are in use. The user's service level cannot be dependent on the number of ports in use at any moment.

Michael Howard
Infonetics Research, Inc.

