

Agenda

- **Need for Policy Networking**
- **CiscoAssure Policy Networking**
- **Achieving End-to-End QoS**
- **Introducing Cisco QoS Policy Manager**
- **QoS Policy Deployment Examples**
- **CiscoAssure QoS Looking Forward**

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Networked Business Applications

Succeeding in the Internet Economy



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IT Service Challenges

“
...By 2000, 20% of major enterprise packaged applications will experience severe performance problems...
”
Gartner Group

- **What if:**

Your salespeople and channel partners can't submit their orders efficiently...

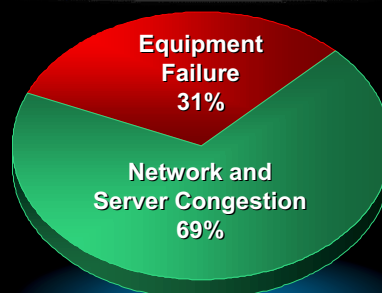
Your CRM deployment stalls because of user complaints about response time...

Email and intranet traffic threaten your on-line Web transactions...

Voice and video cannot be deployed reliably...

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Productivity Loss Due to Application Downtime

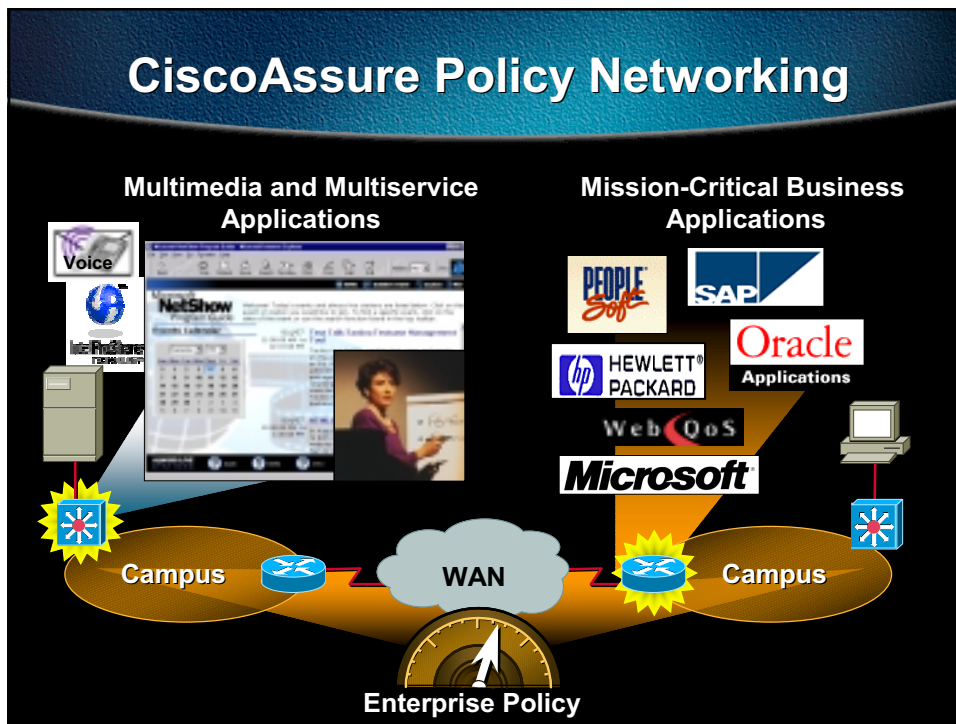


“
Congestion-related performance degradation has been found to cause the majority of network downtime costs
”
Michael Howard

Source: © 1997 Infonetics Research, Inc.,
Business-Centric Network Management and Downtime Costs 1997

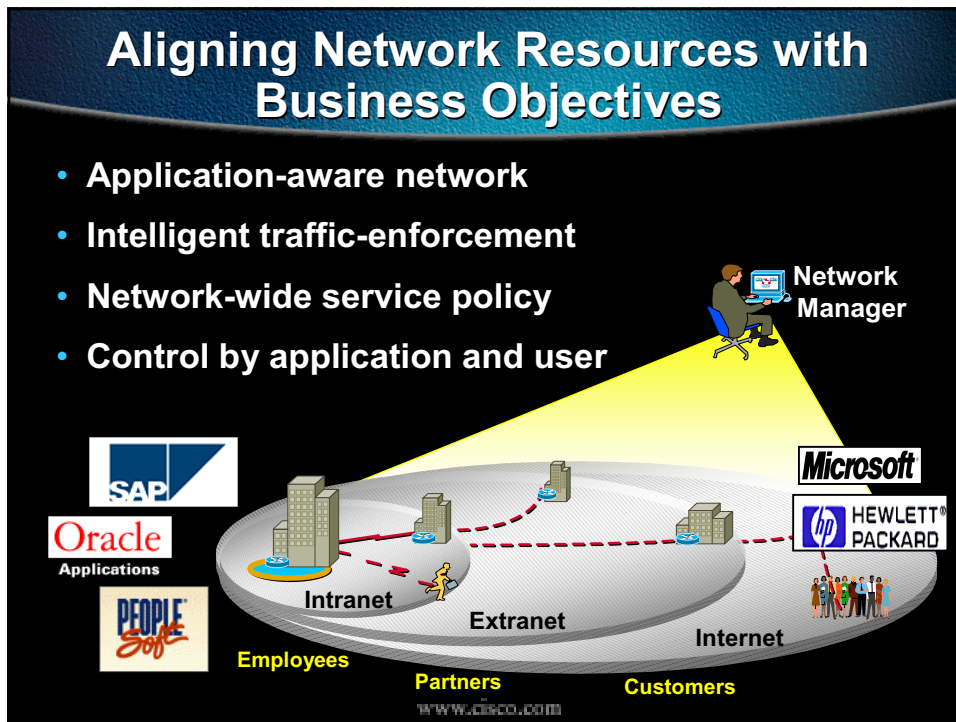
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CiscoAssure Policy Networking



Aligning Network Resources with Business Objectives

- Application-aware network
- Intelligent traffic-enforcement
- Network-wide service policy
- Control by application and user



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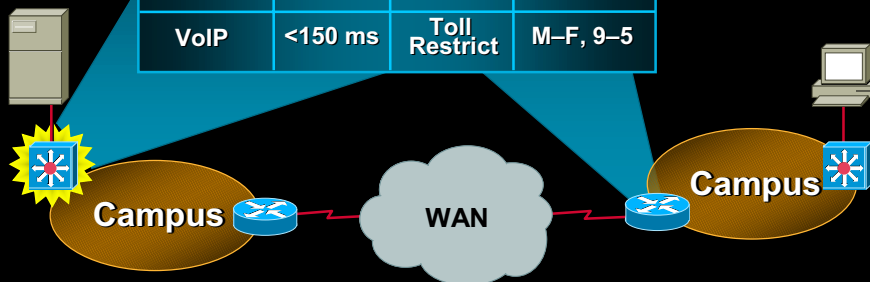
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Setting Network-Wide Policies

Align Network Resources with Business Priorities

What	QoS	Security	When
ERP	High	Encrypt	365 x 24 x 7
Video	<100 KB	Accept	M-F, 9-5
VoIP	<150 ms	Toll Restrict	M-F, 9-5

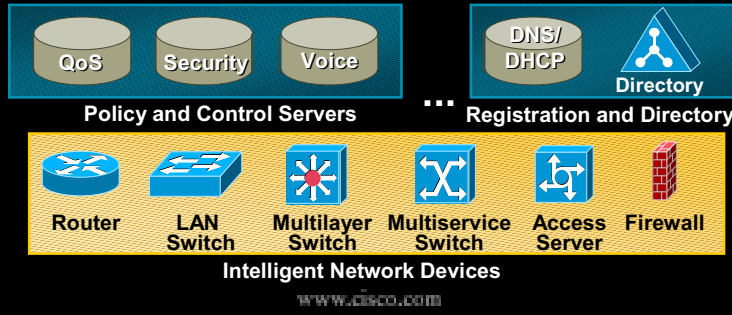


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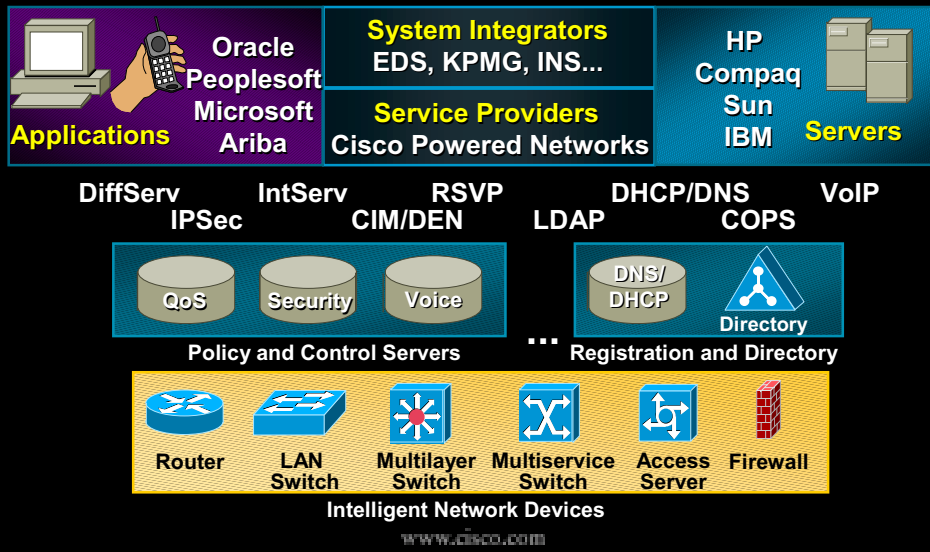
CiscoAssure Policy Networking Policy Networking Solutions

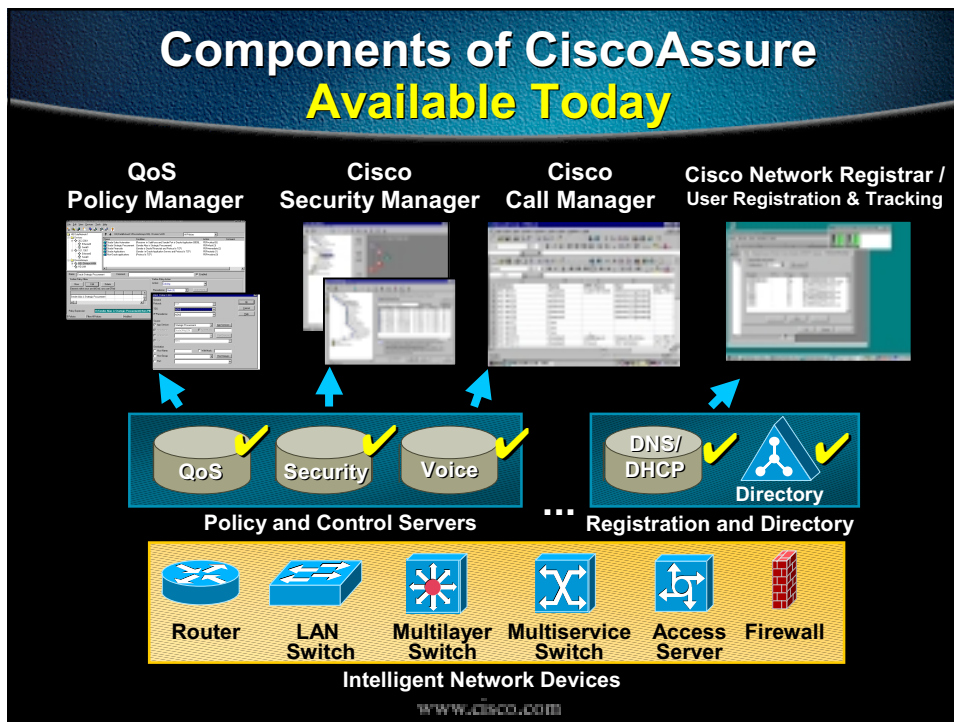
Name	Comments	Preemptable	Priority
MIS priority	Assign higher priority for MIS users	No	5
Video Conferencing	Allocate 128kbps for video conferencing	Yes	3
SQL server	Allow reservation of 64kbps for critical databases for all users	Yes	5
Audio Broadcasting	Limit reservation for Audio broadcasting for AUDIO group	Yes	3
Critical files	Allow reservation for critical files via FTP for all users	No	2

Policy Administration



Open Standards, Key Partnerships





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What Is Quality of Service?

The ability of the network to provide better or “special” service to users/applications.

Data, Video, Voice

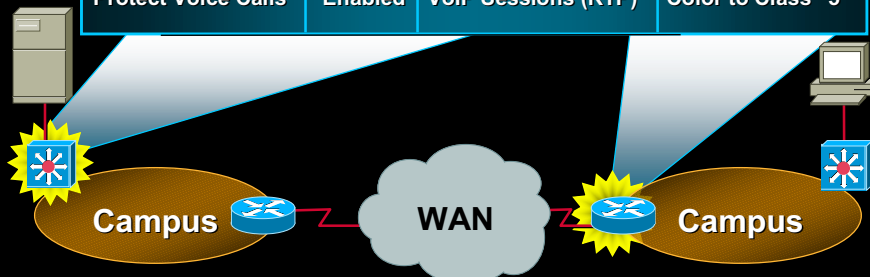


Consistent Predictable Performance

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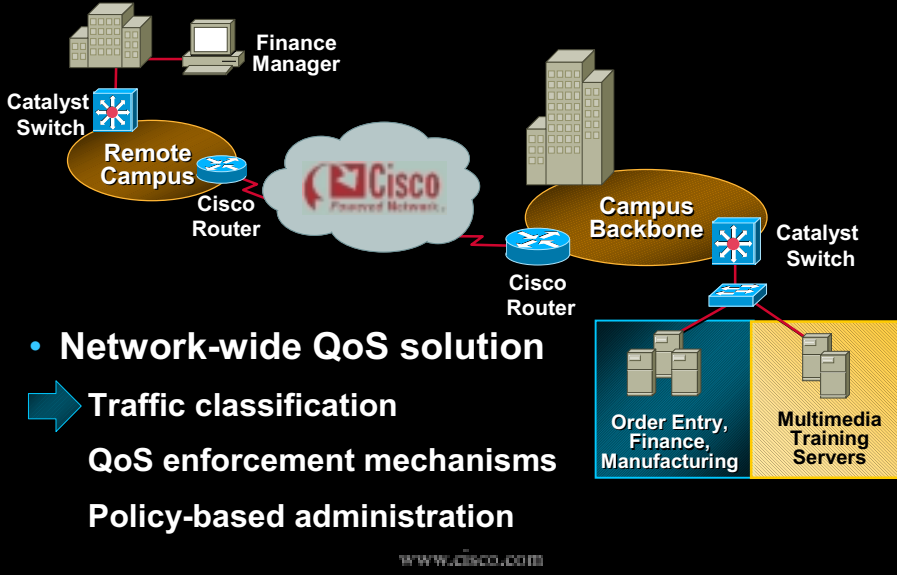
CiscoAssure QoS Policies

QoS Policy			
Policy Name	Status	Filter Condition	Action to Take
Restrict Web Traffic	Enabled	Src=Internet/Port=80	Custom Queue 50%
Protect Voice Calls	Enabled	VoIP Sessions (RTP)	Color to Class “5”

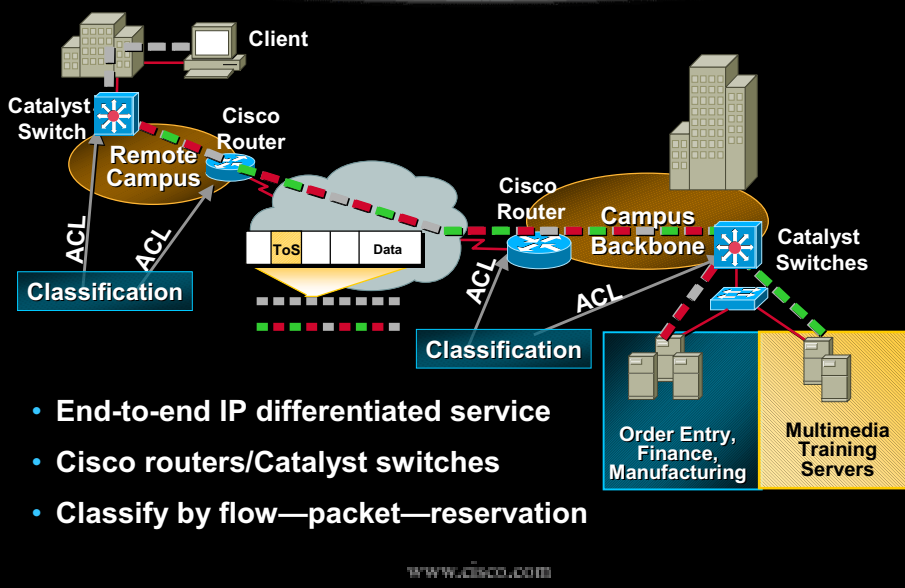


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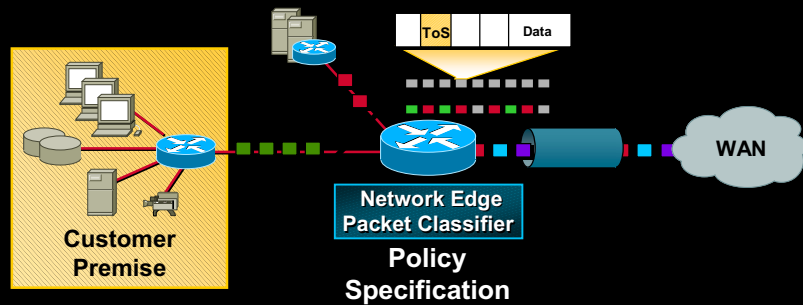
Achieving End-to-End QoS



Traffic Classification



Packet Classification



- Coloring mechanisms controlled by policy specification
- Up to sixty-four traffic classes via ToS bits
- Classification by Layer 3 addresses, Layer 4 port number, URL, application profile, or protocol

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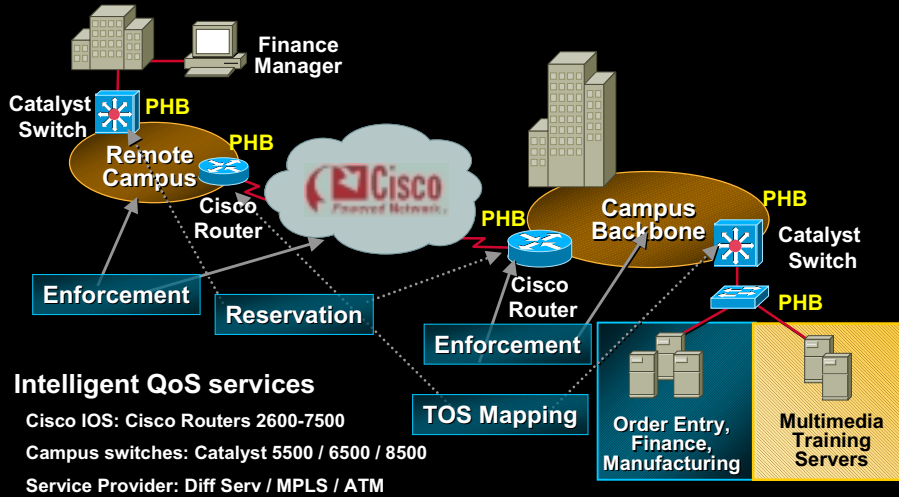
Achieving End-to-End QoS



- Network-wide QoS solution
- ✓ Traffic classification
- ➔ QoS enforcement mechanisms
- Policy-based administration

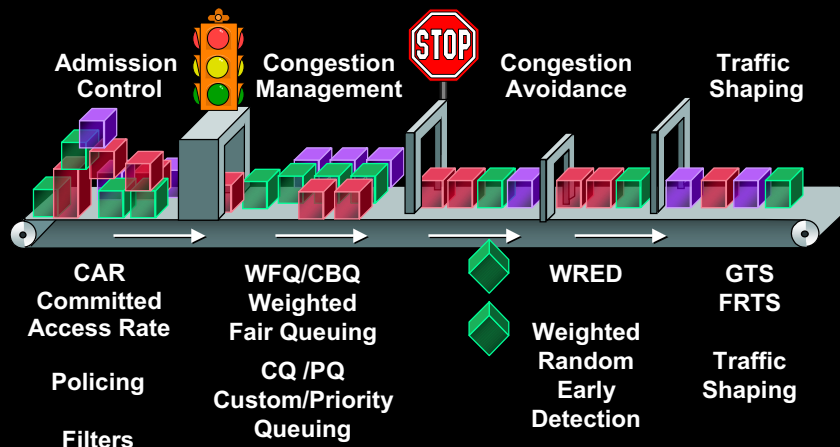
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Protect Mission-Critical Traffic



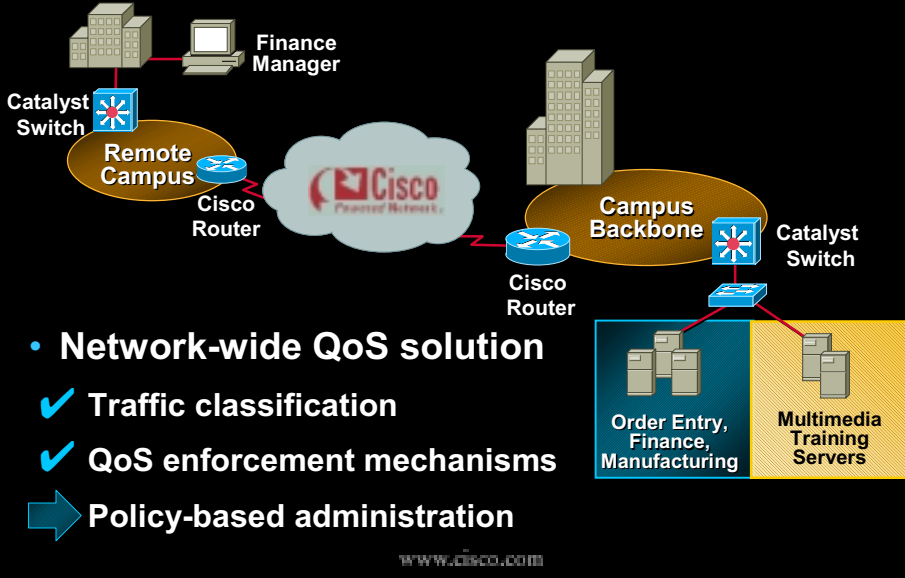
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Proven QoS Enforcement Mechanisms

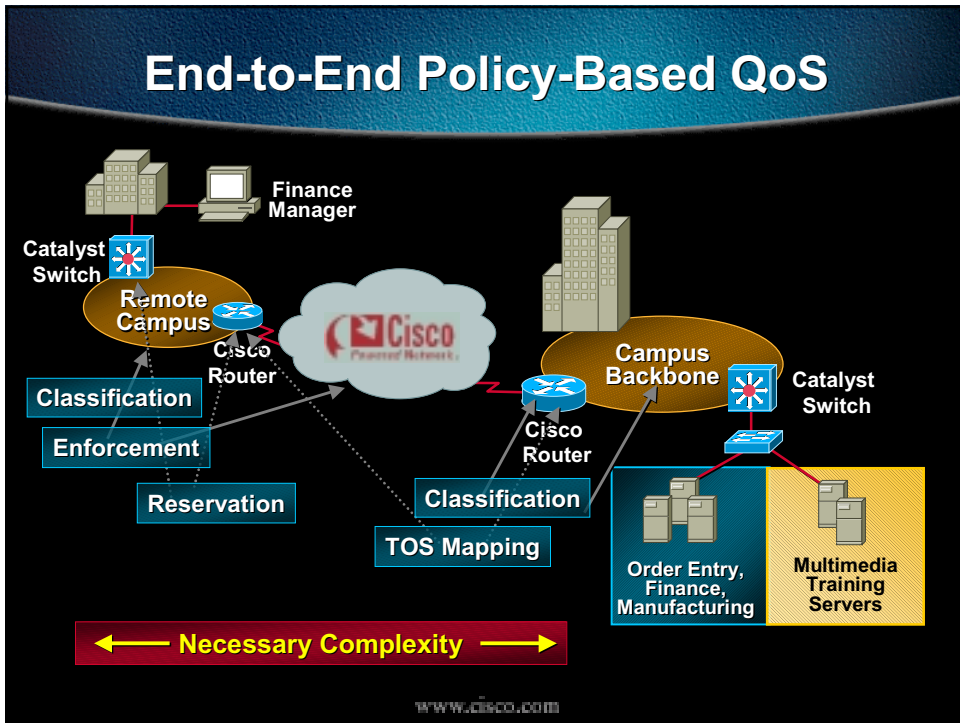


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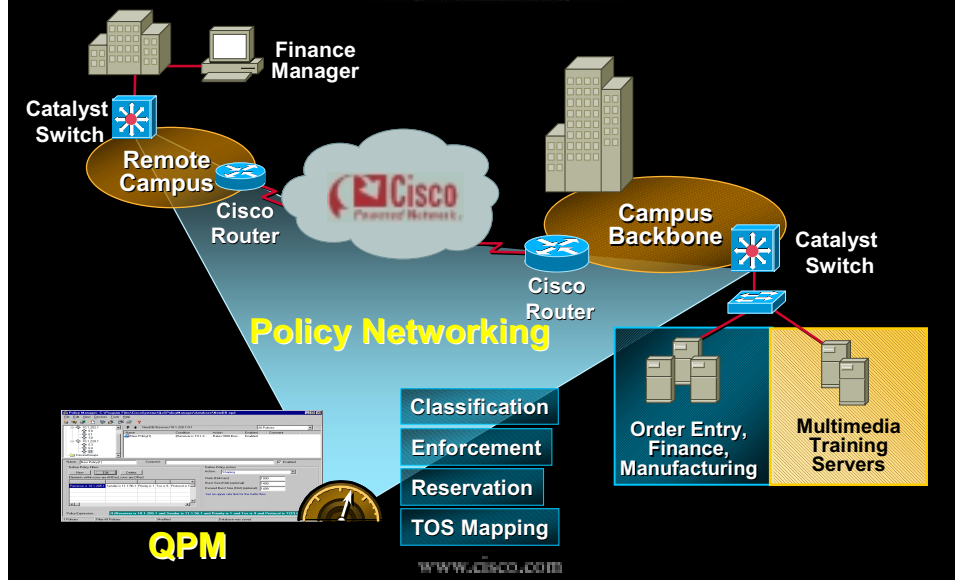
Achieving End-to-End QoS



End-to-End Policy-Based QoS



End-to-End Policy-Based QoS



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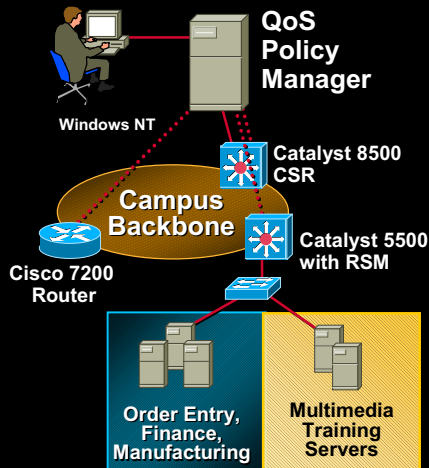
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Network-Wide QoS Policy Administration

- QoS Policy Manager 1.0:**

- Profile key applications
- Define, validate device-level QoS policies
- Enable QoS mechanisms across groups of devices
- Distribute policies
- Report results

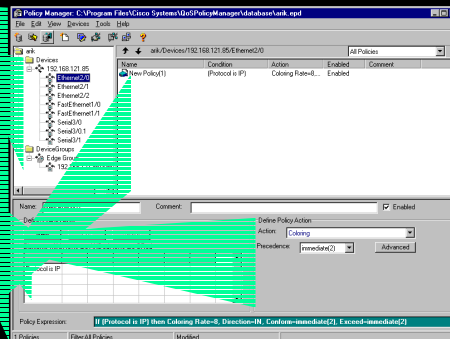


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Flexible Consistent QoS Policy Definition

- Network-wide QoS policy administration
- Integrated validation and checking uses embedded Cisco IOS knowledge-base
- Rule-based traffic selection and action filters
- Automated policy configuration via declarations / properties
- Distributes policies to devices using commands and ACLs

QoS Policy Manager 1.0

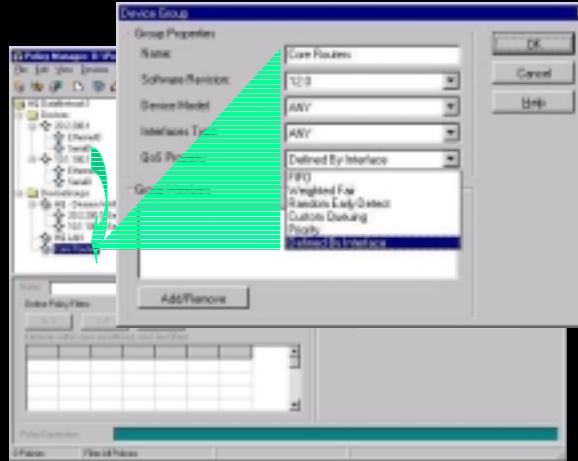


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Define Device Roles and Select QoS Mechanisms

- Import devices from network/element management systems
- Group device interfaces into functional groups or 'roles'
- Select exclusive QoS property by device group, device, or interface

QoS Policy Manager 1.0

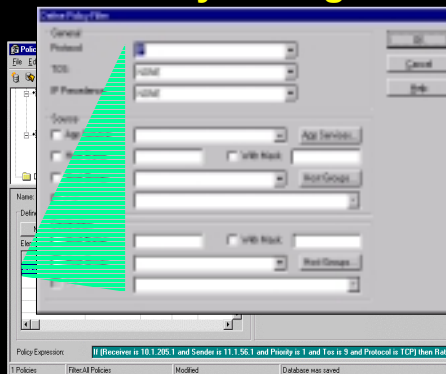


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Select Traffic Classification

- Define applications, services and host groups
- Policy filters combine
 - Application services (profiles)
 - Host groups
 - Source/destination IP address
 - Protocol (IP/TCP/UDP)
 - Layer 4 port (socket) numbers
- Rules-based policy filters generate an ACL statement

QoS Policy Manager 1.0

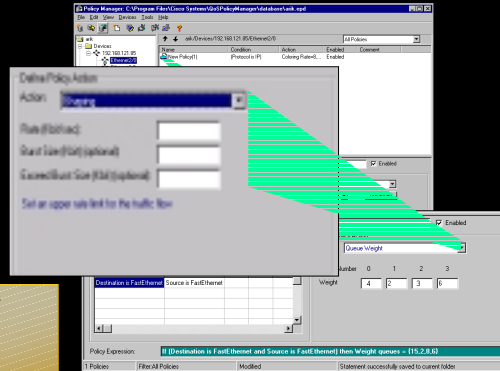


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Activate Policy Enforcement Mechanisms

- Which QoS actions are applied to the traffic
- Actions are coloring, shaping, queuing, rate limiting
- Support for PQ, CQ, WFQ, WRED, GTS, FRTS, CAR limiting, WRR
- User-defined selection of enforcement parameters

QoS Policy Manager 1.0



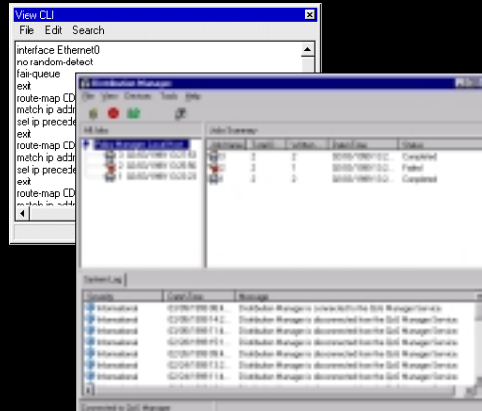
Limit all FTP traffic going to subnet 192.0.0.0 to 300 Kbits.
 Filter:
 protocol=TCP
 Source - port=FTP data (20)
 Destination - Host Name=192.0.0.0
 Mask=255.0.0.0
 Action - Shaping
 rate=300

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Reliable Policy Distribution

- Policy server distributes configuration changes
- Detailed job control, audit, previewing mechanisms
- Incremental configuration updates to devices
- Monitors status of a multi-interface distributions
- Detailed log of device configuration changes
- Maintains a policy change history

QoS Policy Manager 1.0



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Delivery of Cisco QoS Policy Manager Completes Phase Two of CiscoAssure Policy Networking Initiative

Cisco Systems Receives Mier Communications

Award for Best IP Prioritization and Performance Category

Cisco IOS 12.0 and QoS Policy Manager Demonstrate Exceptional Results

“ QoS Policy Manager is a ‘must have’ for setting up traffic shaping/prioritization on Cisco...routers ”

Mier Communications, May 1999 ”

“ Cisco has taken another step toward ensuring that voice and video run seamlessly on a data network infrastructure when it began shipping its QoS Policy Manager ”

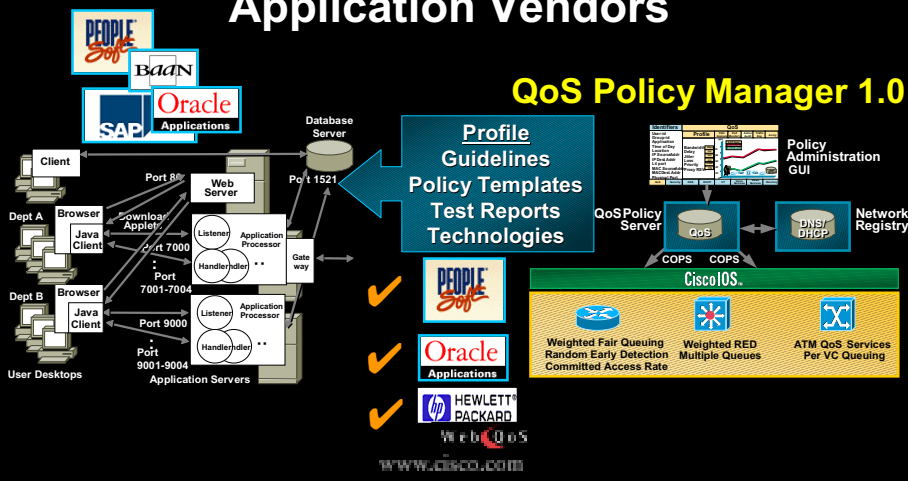
Computer Reseller News, March 1999 ”

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CiscoAssure Application Profiling

Collaborating with Leading Application Vendors

QoS Policy Manager 1.0



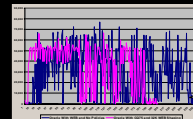
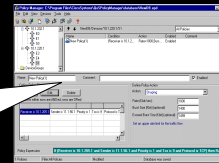
Recommended Practices

- CiscoAssure solutions center joint testing
- Documented knowledge base
- Sales and support cooperation with ISVs
- KPMG as service partner



Implementation Guides

Policy Templates



Test Reports

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Cisco Systems and PeopleSoft Deliver Quality of Service Guidelines for Business-Critical Enterprise Solutions

Cisco Systems and Oracle Team Up for Priority Delivery of Business—Critical Enterprise Transactions

“ We’re recommending that our customers deploy CiscoAssure in PeopleSoft environments since our test results verify significant performance benefits ”

Marc Stillman, VP Alliance Solutions, PeopleSoft

“ The joint efforts of Oracle and Cisco will give our customers the ability to ensure that business-critical Oracle transactions are consistently delivered with priority ”

Ron Wohl, Sr. VP Applications, Oracle

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QPM 1.0 Customer Scenarios

- **Early adopters say:**

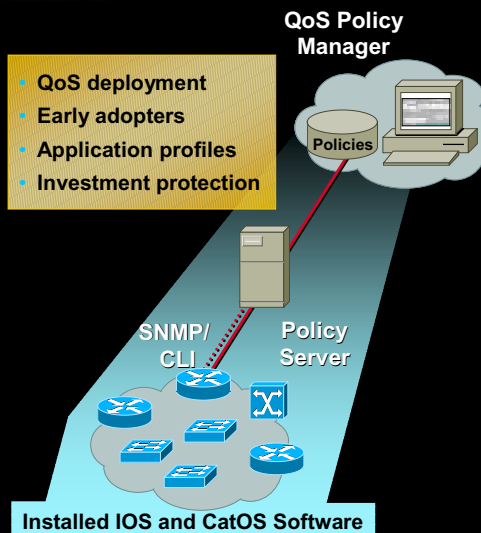
Improves response time for mission-critical ERP transactions

Ensures delay-sensitive traffic gets higher priority

Controls WAN resource contention between real-time and batch traffic

Allocates bandwidth to remote subnets and/or servers

Solves poor video and voice quality during network congestion



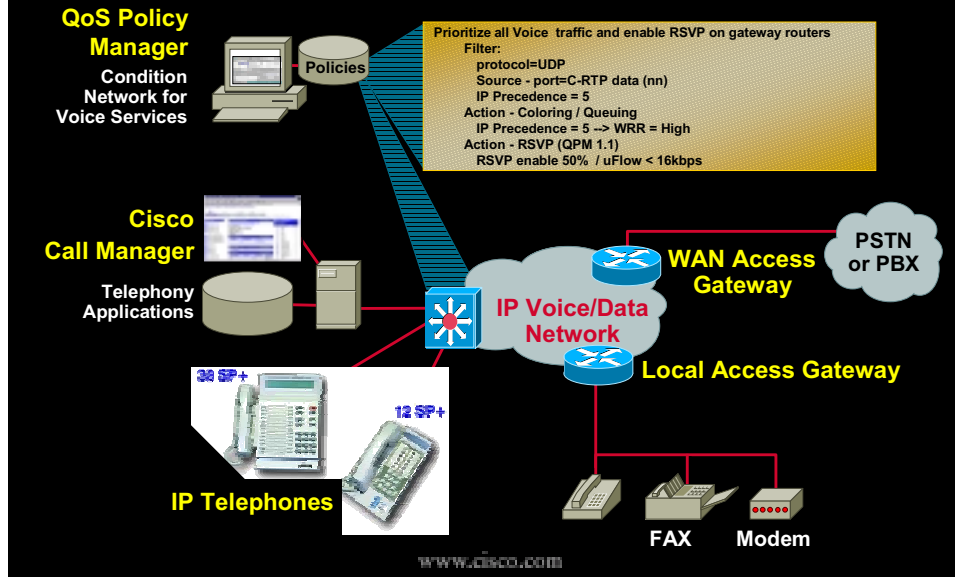
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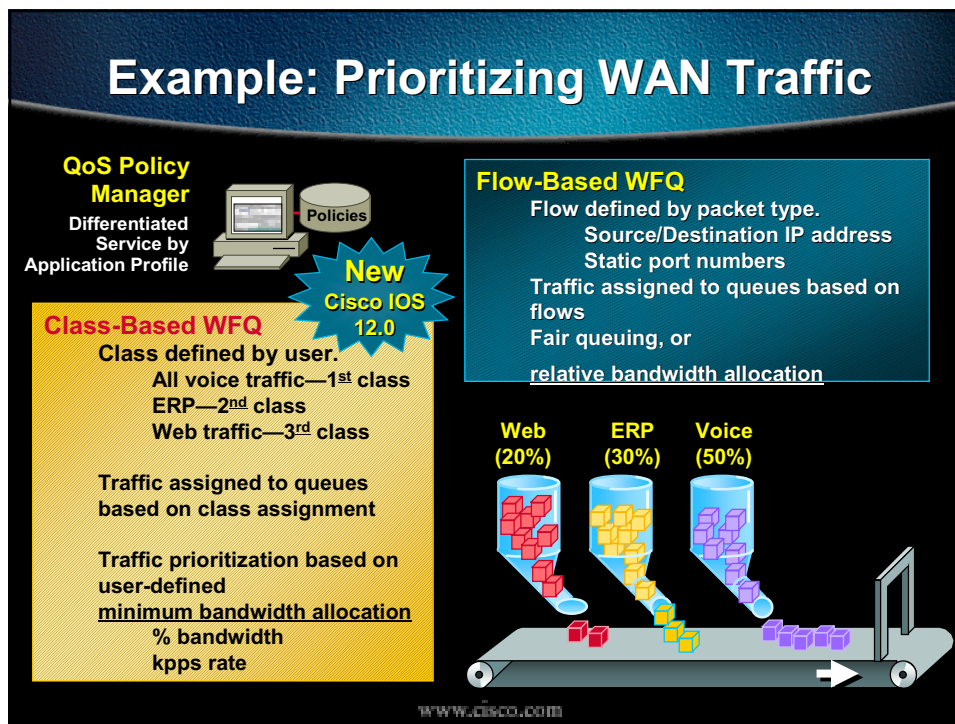
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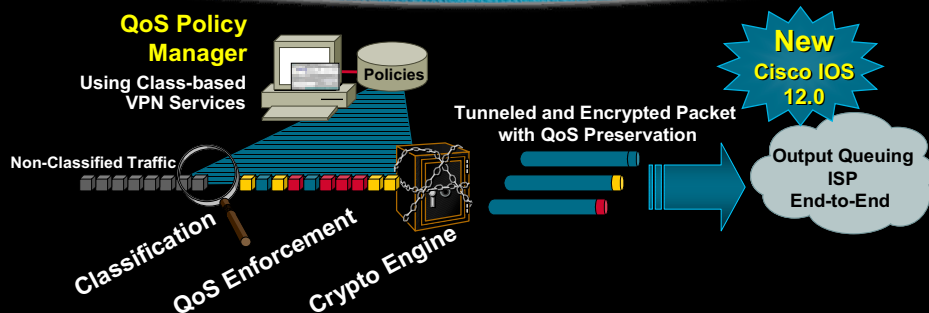
Example: Enabling IP Telephony



Example: Prioritizing WAN Traffic



Example: VPN End-to-End QoS



- **Classification for encrypted and tunneled VPNs (coordinated policies enabled by Cisco IOS Software)**
- **Supports ISP differentiated services offerings**
- **Preserves QoS signaling end-to-end**

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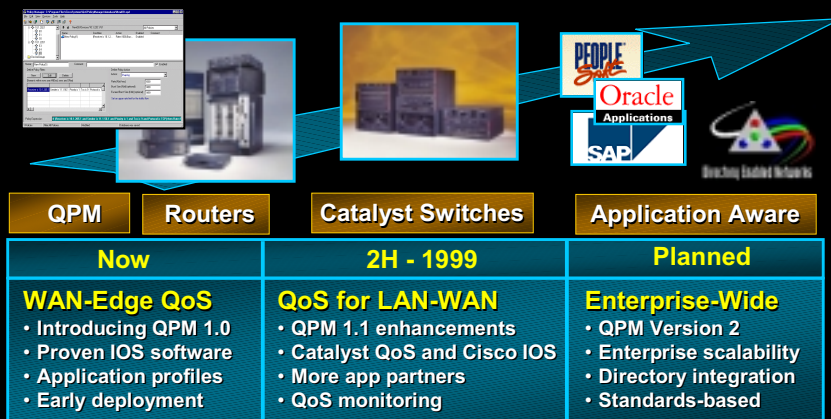
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CiscoAssure Looking Forward

CiscoAssure—Building Application Aware Networks
Protect Mission-Critical Network Resources



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QPM 1.1: QoS into the Campus Fall 1999

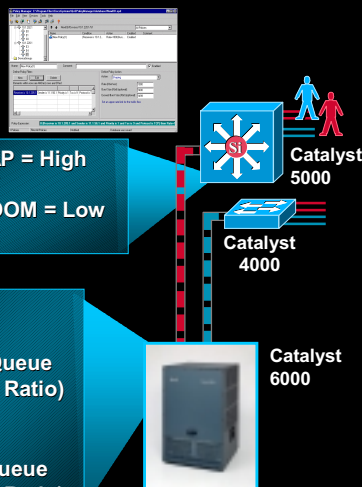
Campus QoS

- **Classification**
Software and ASIC-based
- **Congestion avoidance**
WRED multiple thresholds
- **Scheduling**
IP precedence /Diff Serv, 802.1p and ISL priority
Multiple queues per port
TOS->COS mapping
Traffic policing per port

QPM 1.1

Set SAP = High
TOS=7
Set DOOM = Low
TOS=2

For TOS = 7
Threshold=4
High Priority Queue
(70% Transmit Ratio)
For TOS=2
Threshold=1
Low Priority Queue
(30% Transmit Ratio)

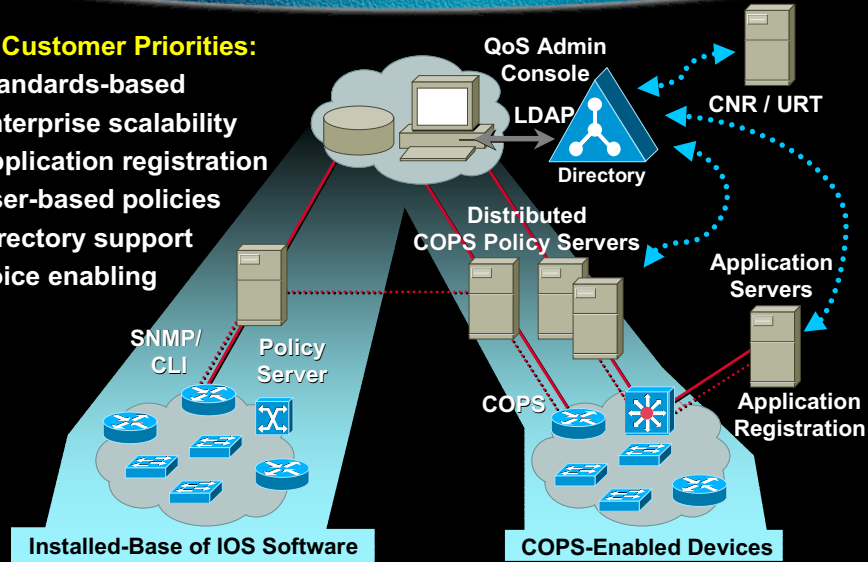


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QPM Version 2: Network-Wide QoS

Key Customer Priorities:

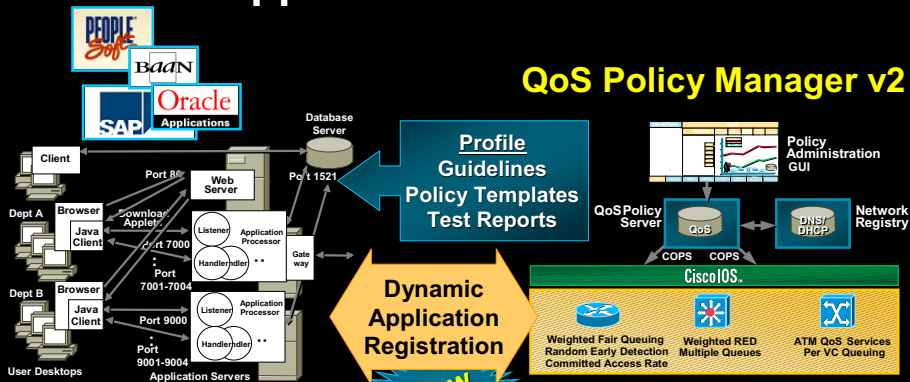
- Standards-based
- Enterprise scalability
- Application registration
- User-based policies
- Directory support
- Voice enabling



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CiscoAssure Application Aware Network CiscoAssure Integration with Applications Vendors

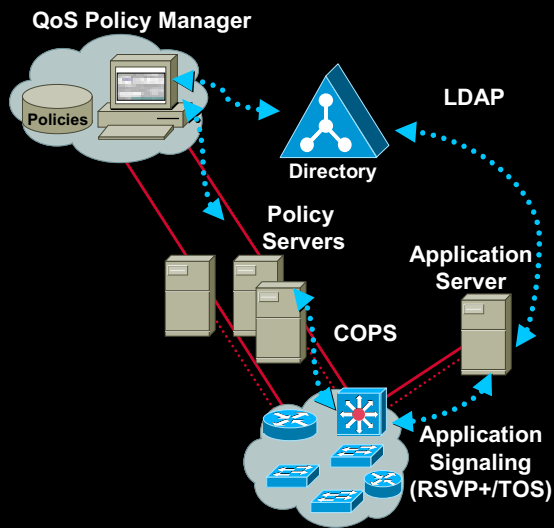
QoS Policy Manager v2



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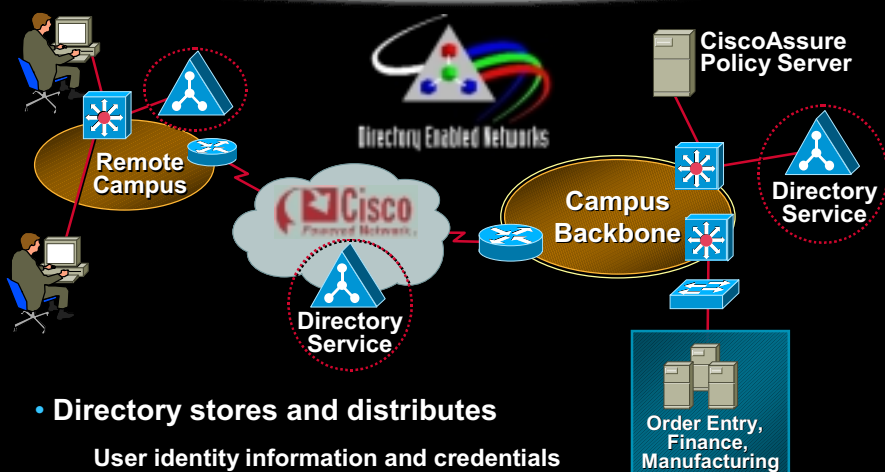
Dynamic Application Registration

- CiscoAssure increases application awareness by registering profile information about applications
- Signaling flows to network via standards-based mechanisms
- Directory provides common binding for application classes to network services



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Directory-Enabled Networks

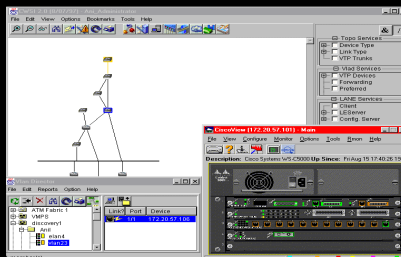


- Directory stores and distributes
 - User identity information and credentials
 - Application, system, network information
 - Administrative roles and permissions

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QoS Monitoring Solutions

- **CW2000 applications**
 - SLA management (2H '99)
 - Traffic management
 - Device-level management
- **Network instrumentation**
 - LAN and WAN probes
 - Network analysis module and embedded RMON
 - QoS MIBs for SNMP management
- **Extensive 3rd party support for Cisco Management Connection**



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CiscoAssure Policy Networking Progress

- 'Best in test' award by Mier Communications in their quality of service (QoS) test bed at N+I (May '99)
- Leading installed base of *policy-ready* intelligent IOS Routers and Catalyst 5000, 6000 and 8500 switches with rich set of QoS, voice, and security features
- Delivered Cisco QoS Policy Manager, Security Manager, Network Registrar and voice CallManager
- IETF policy and QoS standards leadership
- Solution partnerships with PeopleSoft, Oracle, KPMG, Hewlett-Packard, Microsoft, ...



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CiscoAssure Policy Networking

- Create application-aware networks
- Protect mission-critical applications resources
- Deploy applications successfully
- Consistent predictable performance



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Where to Get More Information

A screenshot of the Cisco Connection ONLINE website interface. The page features a navigation menu with links for 'WHAT'S NEW', 'LOGIN', 'REGISTER', 'SITE MAP', and 'HELP'. Below the menu, there are several sections: 'Solutions' with a dropdown menu, 'Corporate News & Information', 'Products & Ordering', 'Software & Support', 'Seminars, Events & Training', and 'Partners & Resellers'. A search bar is located at the bottom left, and a 'Quick Search' bar is at the bottom right. The page also includes a 'Today's News' section with a headline about ISDN technology and a 'Powered Network' logo at the bottom left.

<http://www.cisco.com/ciscoassure>

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Evaluation Form**

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EMPOWERING THE
INTERNET GENERATIONSM

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