Operations Considerations
Cisco Service Management
Solution - Voice
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Technical Consultant
SPLOB, Asia Pacific
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Agenda
• Introduction
• Fault Management
• Configuration Management
• Accounting Management
• Performance Management
• Security Management
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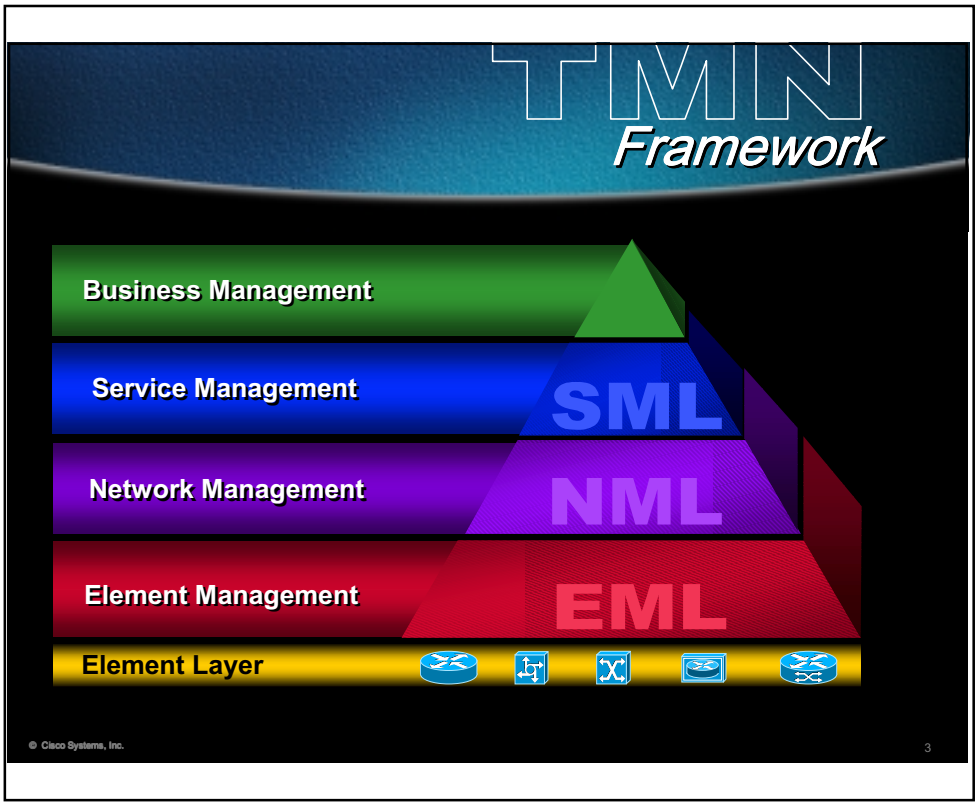

OSS: FCAPS
Functional View based on TMN reference model

	Fault Management	Configuration Management	Accounting Management	Performance Management	Security Management
BML	Alarm policy, Repair processes Test policy, Trouble reporting policy.	Order Management, Provisioning policy, Procurement policy.	Usage process, Pricing policy. Billing Policy.	Service Level Mgt, Exception threshold policy.	Revenue change control, access policy, fraud management.
SML	Service test, Trouble reporting, Trouble ticket query & notification.	Installation, deployment, customer/subscriber service definition.	Feature pricing, Usage charge, correlation, validation & aggregation.	Customer performance reporting, traffic reporting.	Customer profiling, usage patter analysis, customer security administration, service intrusion detection/recovery.
NML	Network fault event correlation & filtering, Network fault isolation, Circuit testing, trouble ticket administration.	Network connection management, network installation management.	Network usage correlation, usage data storage.	Traffic management, network capacity analysis, network performance characterization, network data aggregation & trending.	Traffic pattern analysis, network security alarm. Network security breach detection & recovery.
EML	NE alarm management. NE fault localization and correction. Element log control	NE loading, installation, administration & status generation.	NE usage data collection, usage data validation.	NE trend analysis. NE capacity planning, performance collection and analysis.	NE security alarm management, NE audit trial management.
NEL	Failure event detection, reporting.	Configuration enforemenct. Parameter validation, reporting and enforcement.	Element Probe. Usage data generation and storage.	Element probe. Detection and reporting of state change.	Element access control, intrusion detection, reporting and auto-recovery.

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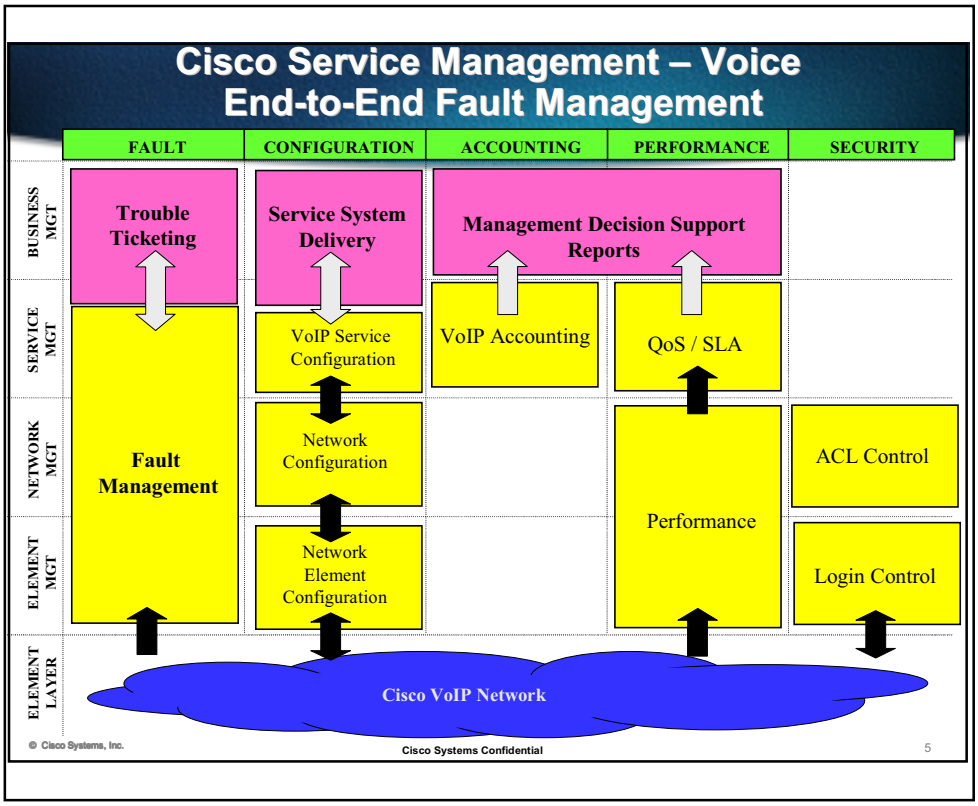
Cisco Service Management – Voice
End-to-End Fault Management
FAULT
CONFIGURATION
ACCOUNTING
PERFORMANCE
SECURITY
BUSINESS MGT
SERVICE MGT
NETWORK MGT
ELEMENT MGT
ELEMENT LAYER
Trouble Ticketing
Service System Delivery
Management Decision Support Reports
VoIP Service Configuration
VoIP Accounting
QoS / SLA
Fault Management
Network Configuration
Performance
ACL Control
Network Element Configuration
Login Control
Cisco VoIP Network
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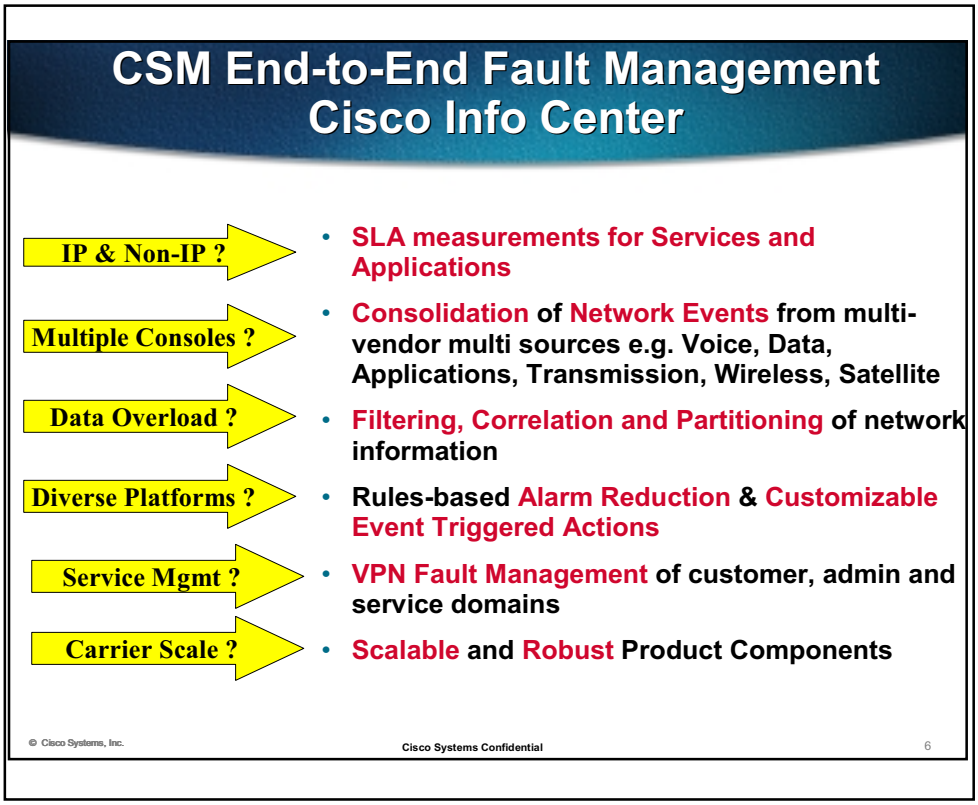
CSM End-to-End Fault Management
Cisco Info Center
IP & Non-IP ?
Multiple Consoles ?
Data Overload ?
Diverse Platforms ?
Service Mgmt ?
Carrier Scale ?
• SLA measurements for Services and Applications
• Consolidation of Network Events from multi-vendor multi sources e.g. Voice, Data, Applications, Transmission, Wireless, Satellite
• Filtering, Correlation and Partitioning of network information
• Rules-based Alarm Reduction & Customizable Event Triggered Actions
• VPN Fault Management of customer, admin and service domains
• Scalable and Robust Product Components
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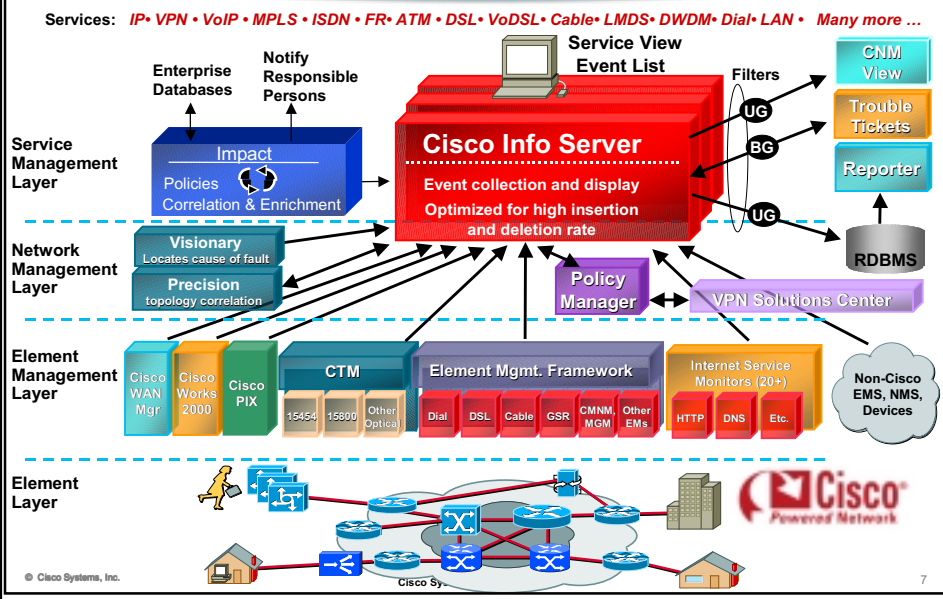
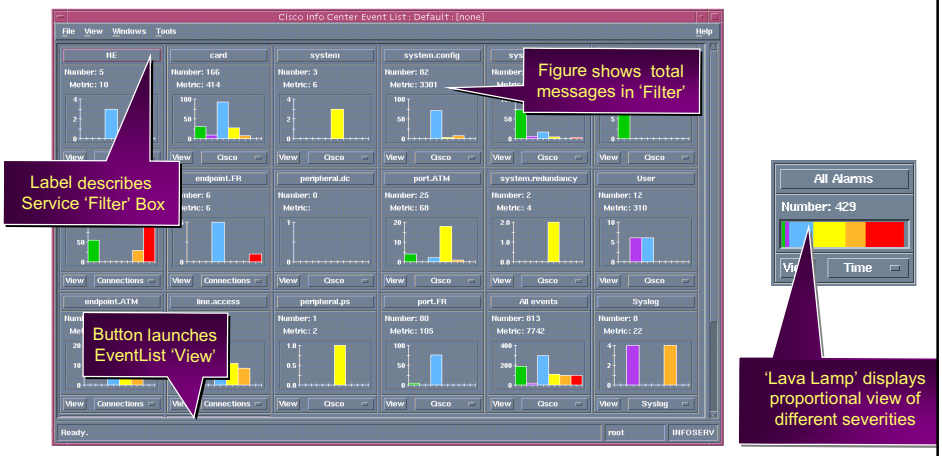
CSM End-to-End Fault Management
Cisco Info Center – Functional Architecture



CSM End-to-End Fault Management
CIC Event List Service Console



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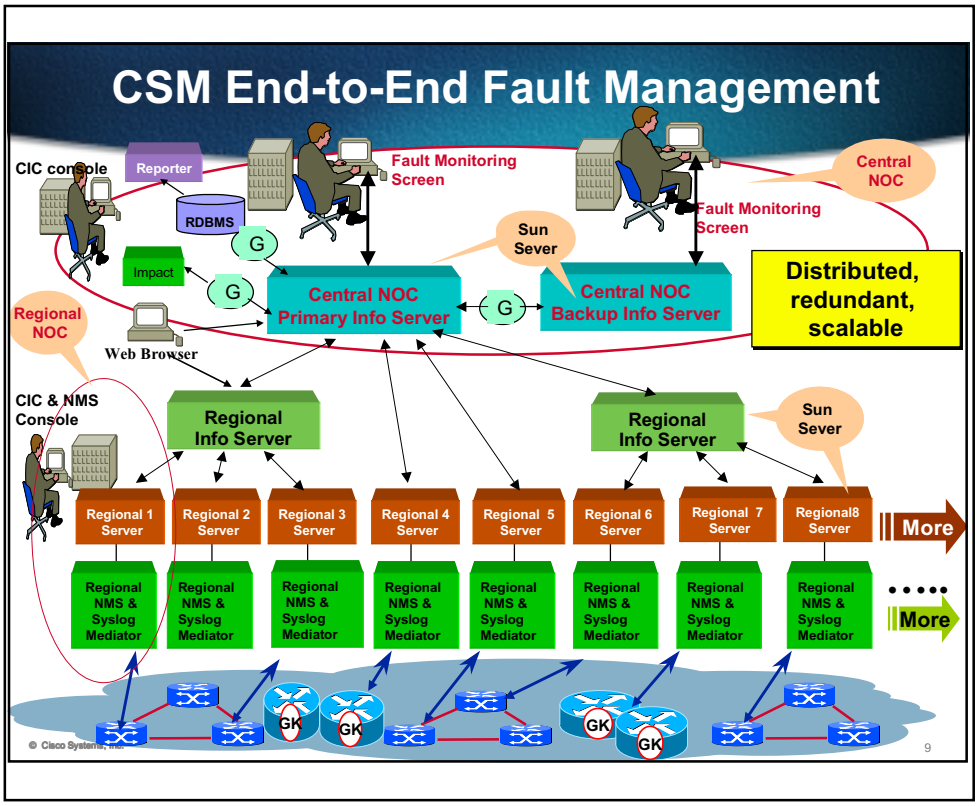
CSM End-to-End Fault Management
CIC console
Reporter
RDBMS
Impact
Fault Monitoring Screen
Central NOC
Fault Monitoring Screen
Sun Sever
Distributed, redundant, scalable
Central NOC Primary Info Server
Central NOC Backup Info Server
Regional NOC
Web Browser
CIC & NMS Console
Regional Info Server
Regional Info Server
Sun Sever
Regional 1 Server
Regional 2 Server
Regional 3 Server
Regional 4 Server
Regional 5 Server
Regional 6 Server
Regional 7 Server
Regional8 Server
More
Regional NMS & Syslog Mediator
More
GK
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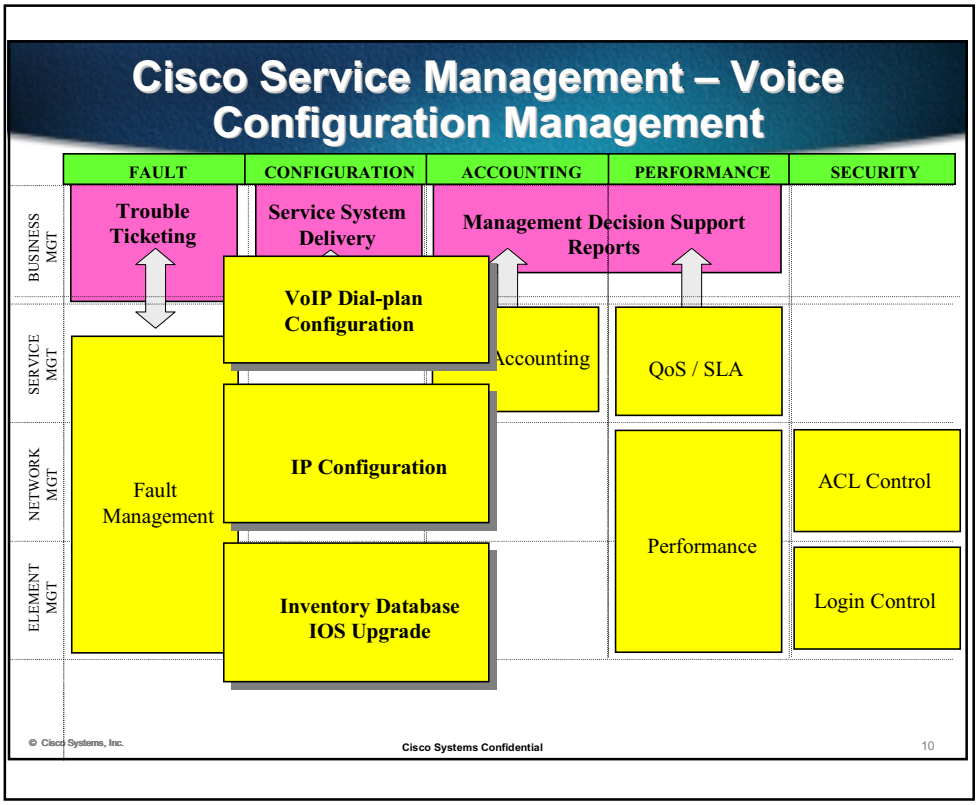
Cisco Service Management – Voice Configuration Management
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Management Decision Support Reports
VoIP Dial-plan Configuration
Accounting
QoS / SLA
Fault Management
IP Configuration
Performance
ACL Control
Inventory Database IOS Upgrade
Login Control
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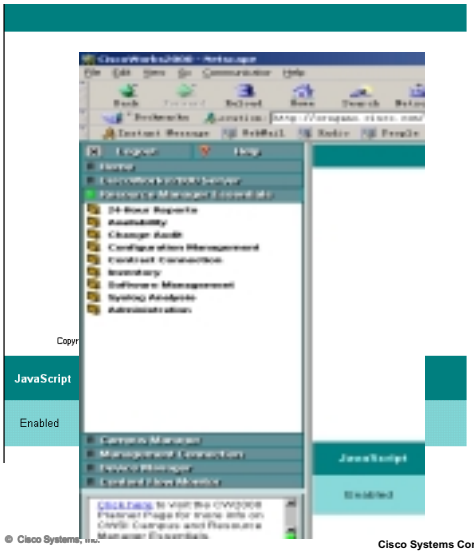
CSM Configuration Management
CW2000 Configuration Management Suite



Device Configuration **-** Archive, search, compare, and export Config files for routers and switches

Change Audit Services **-** audit logging and reporting of network changes

Inventory Manager - Capacity planning tools and inventory details

Software Image Manager **-** Distribution, archiving and defect assessment of image software

Availability Manager **-** reachability, reloads, response time and Stack decoder

Syslog Analyzer **-** Filtered, flexible syslog error reporting

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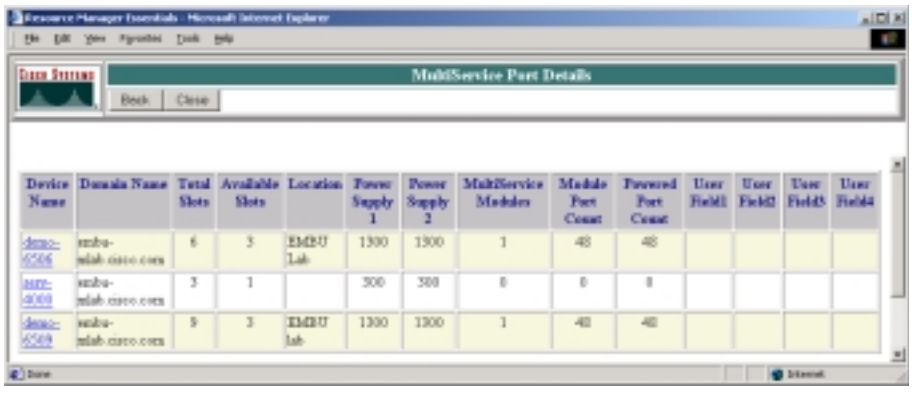
CSM Configuration Management
Inventory Management

Inventory Report showing number of powered line cards & ports in Catalyst switches



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CSM Configuration Management
Software Image Management

- Download IOS image from CCO into software library
- Checks image against device to determine if prerequisites are met
- Distributes software images to groups of routers and switches using wizards
- Reporting of download status and job details

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CSM Configuration Management
Web-based Element Configuration Management

- Web-based browser interface for all Cisco platforms
- Distributed & multi-user enabling collaborative management
- Open Web interfaces for integration into Network Management systems
- Consistent interface that supports Gateways, Gatekeepers, Routers, Switches

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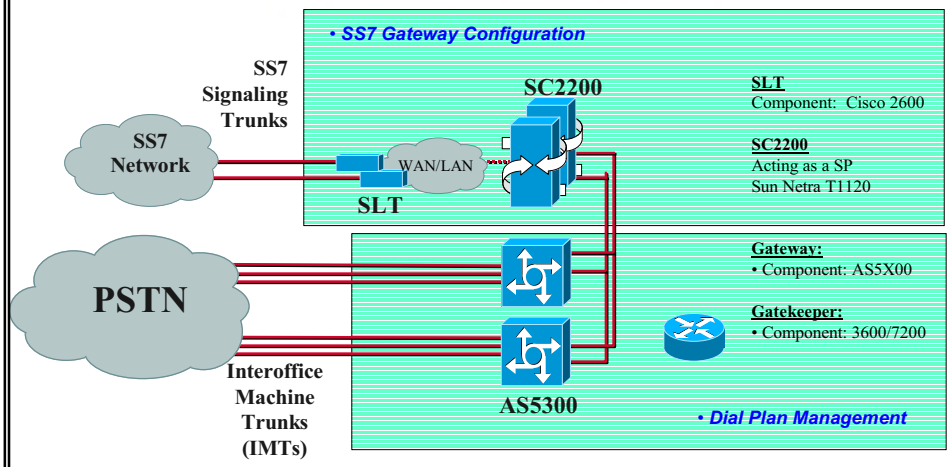
CSM Configuration Management Solution Components



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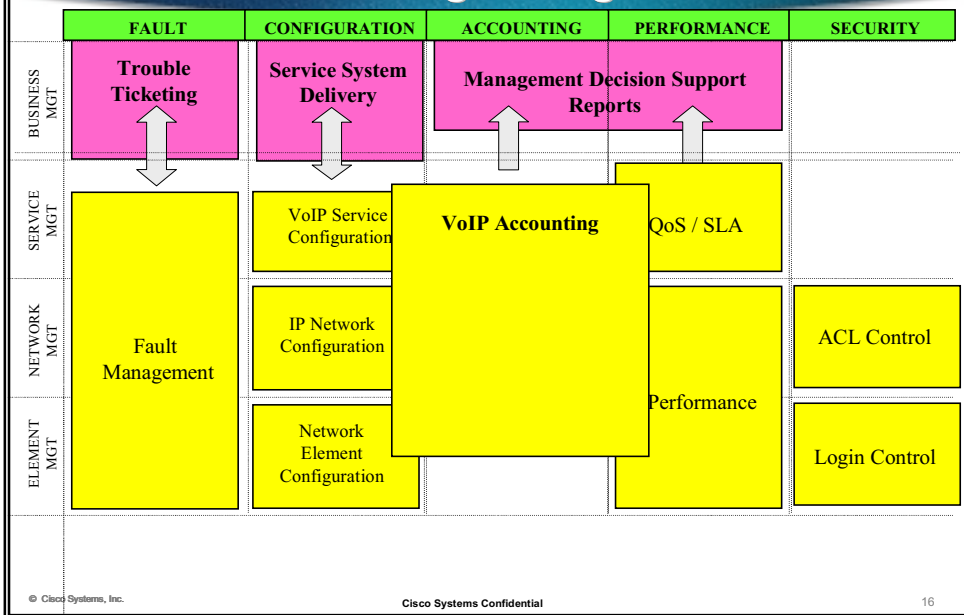
Cisco Service Management – Voice Accounting Management



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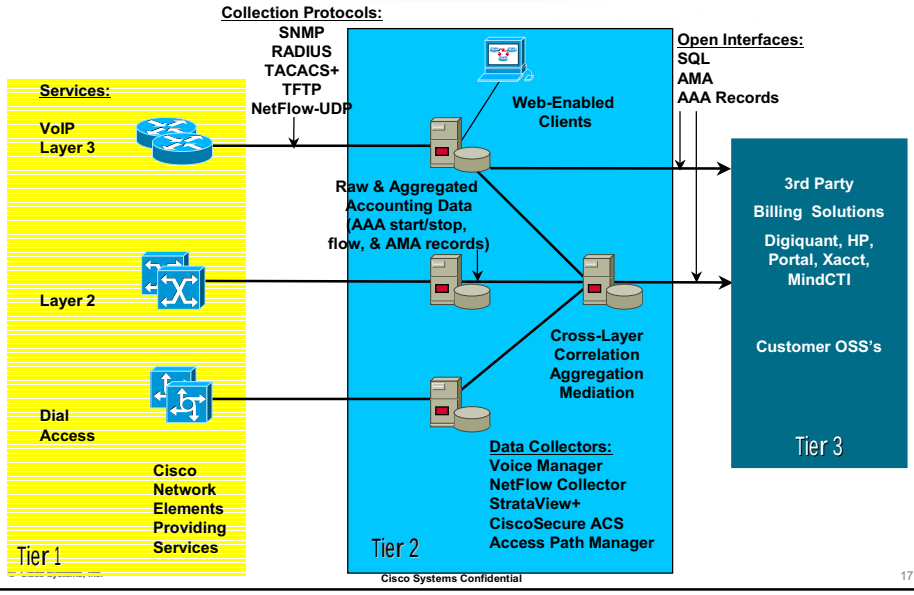
Components of Cisco's Billing Architecture



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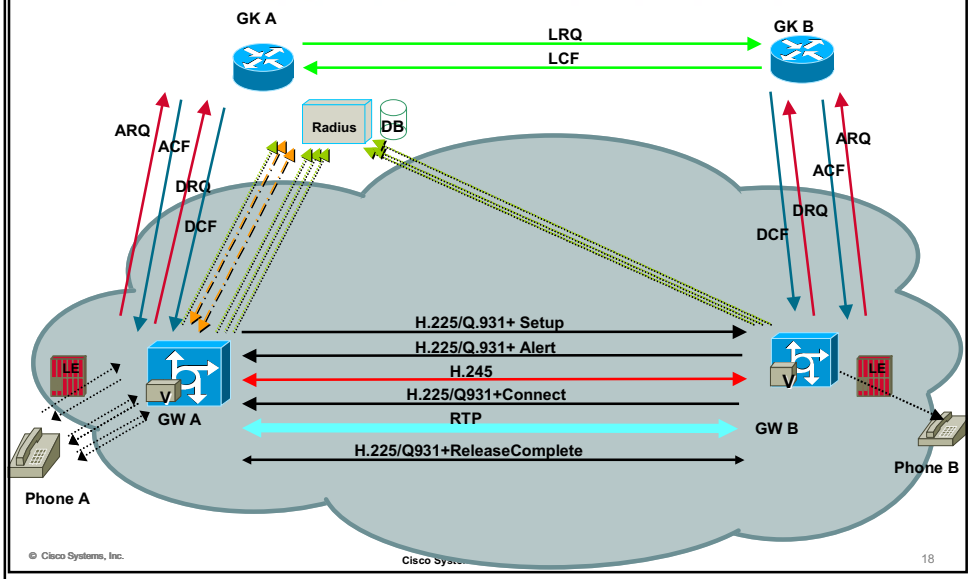
H.323 Call Flow & VoIP Accounting



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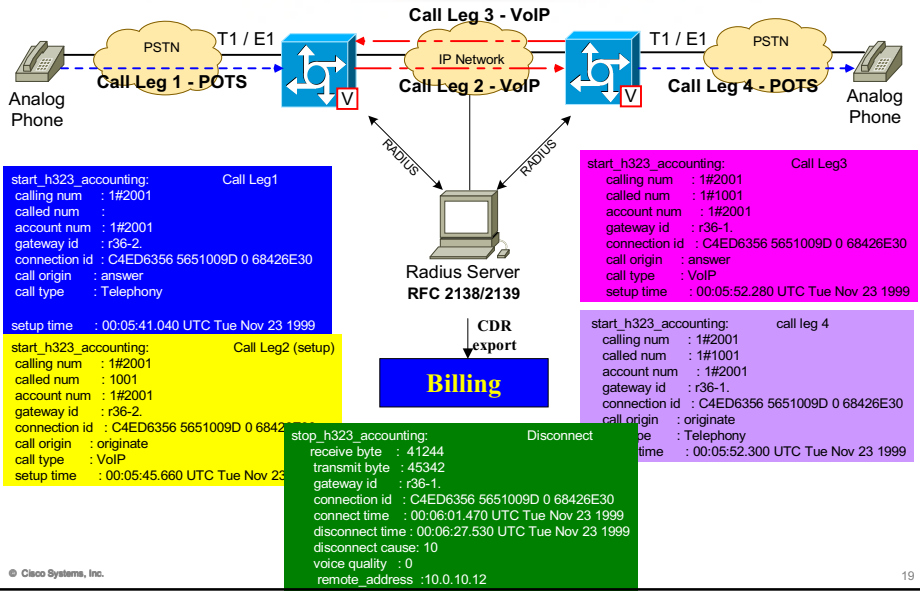
VoIP Accounting & Billing Architecture



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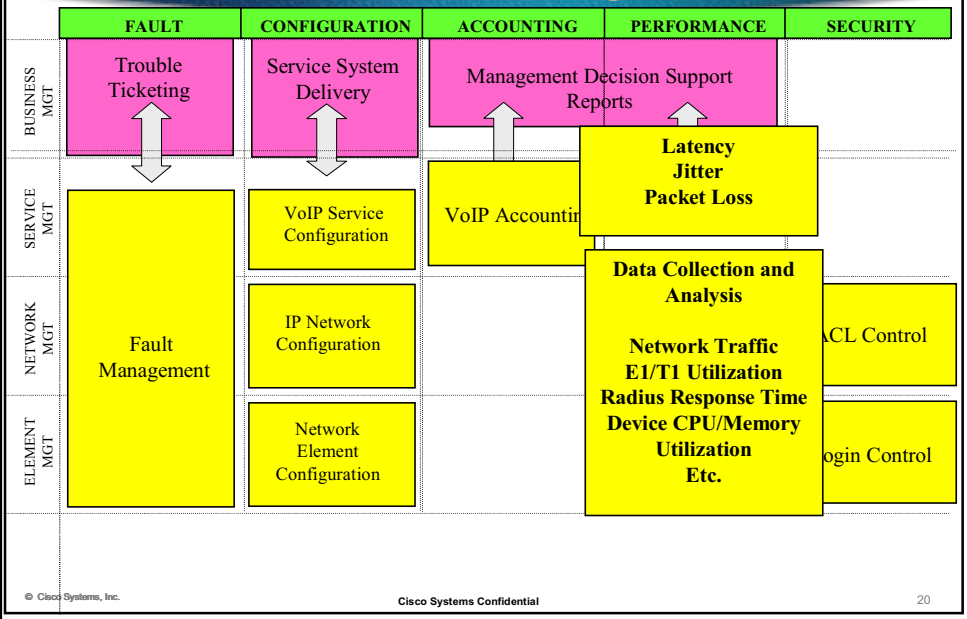
Cisco Service Management – Voice Performance Management



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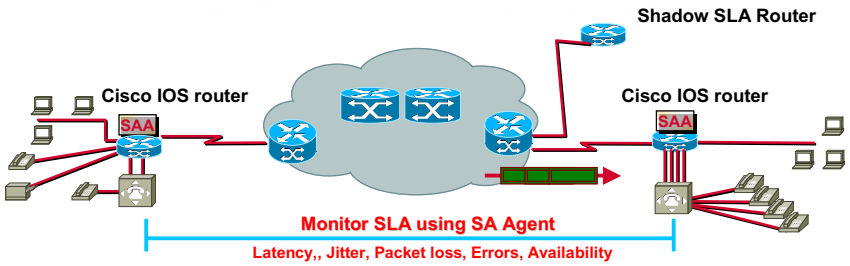
CSM End-to-End Performance Management

Cisco Service Assurance Agent



- SA Agent's source and responder are embedded in all IOS-based Cisco devices
- Synthetic test packets are sent using real VoIP UDP packets
- Cost effective SLA monitoring to ensure upper limit on round-trip delay
- Effectively monitor Jitter (variations in interpacket arrival time)
- Track service affecting packet errors and loss

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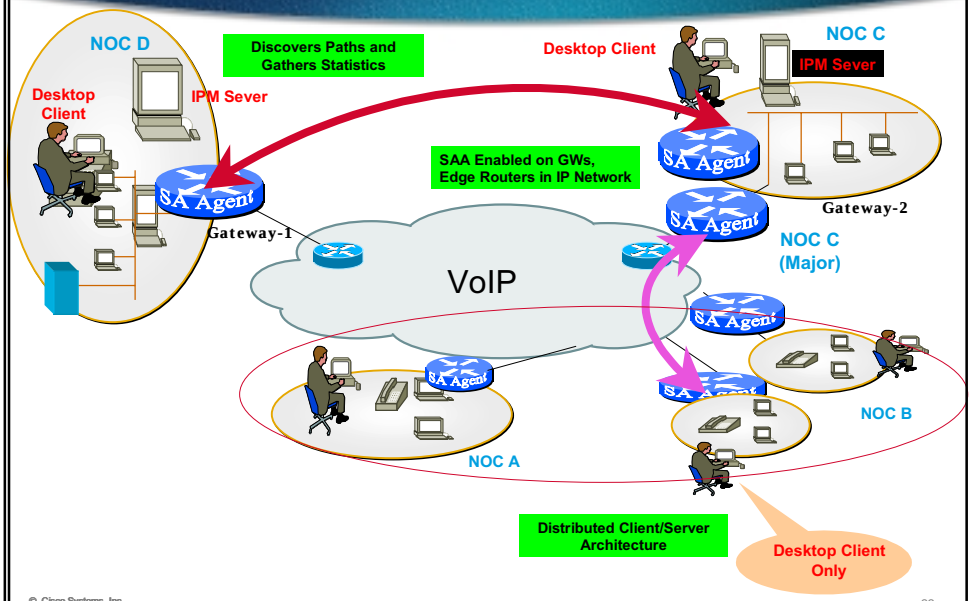
QoS Metrics Monitoring

CiscoWorks2000 Internet Performance Manager (IPM) and Service Assurance Agent (SAA)



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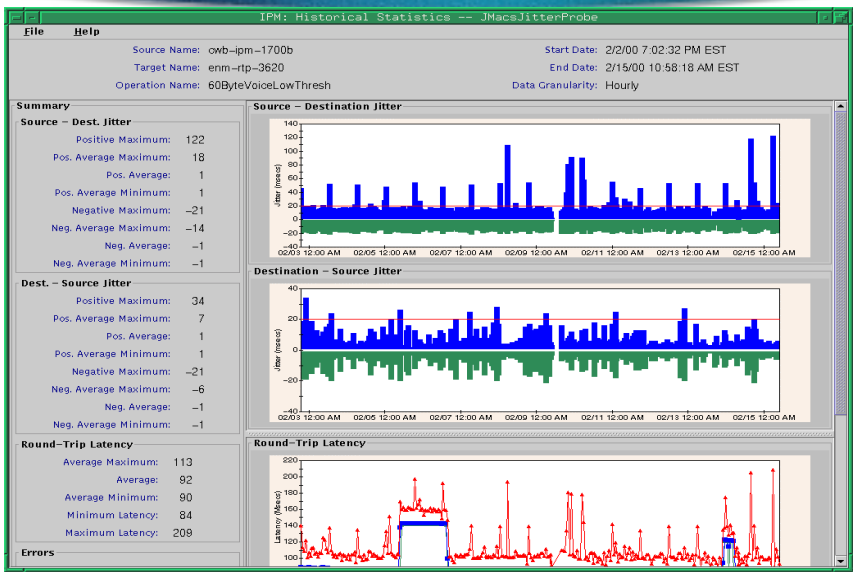
CSM Performance Management
Measuring VoIP Jitter



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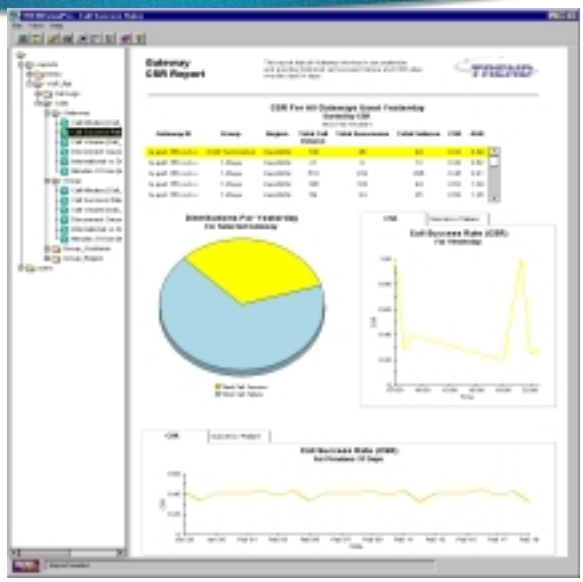
Distributed Performance Reporting Management

- CVM extracts and exports GW data
- SP Proven reporting partner customizes VoIP Reports
- VoIP reports:
  - Call Success Rate (CSR),
  - Answer Seizure Rate (ASR),
  - Success Call Volume,
  - Failure Call Volume
  - Domestic and international call volume,
  - Minutes Of Use (MOU)
- Centralized and regional reporting



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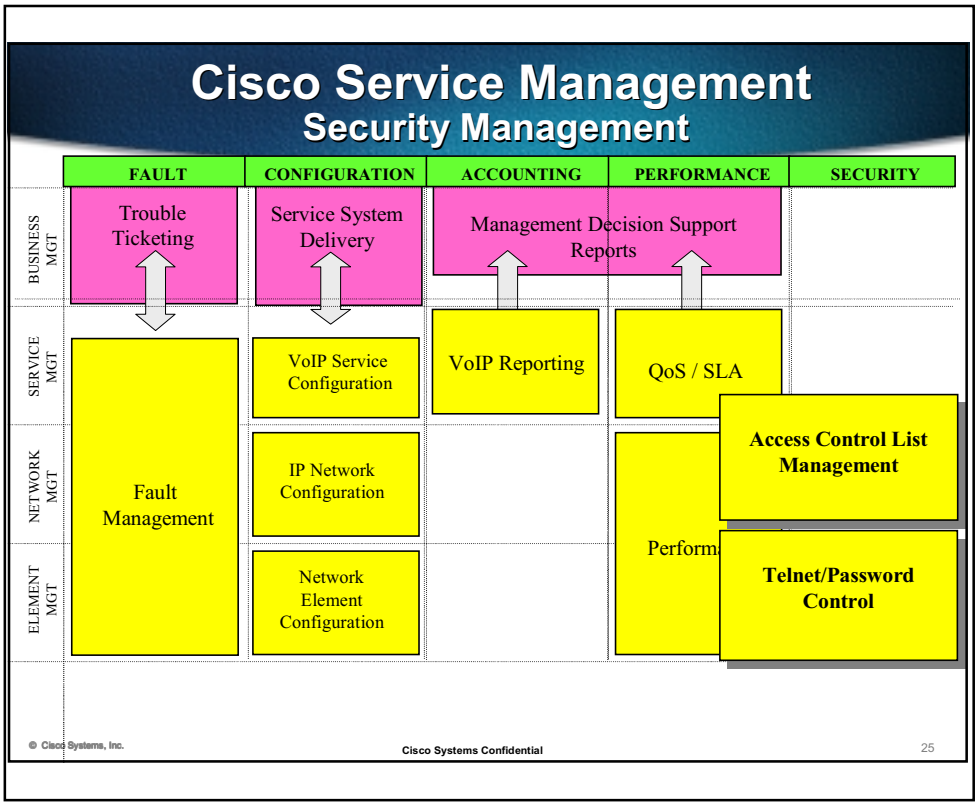
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IP Network Configuration
Access Control List Management
Perform
Network Element Configuration
Telnet/Password Control
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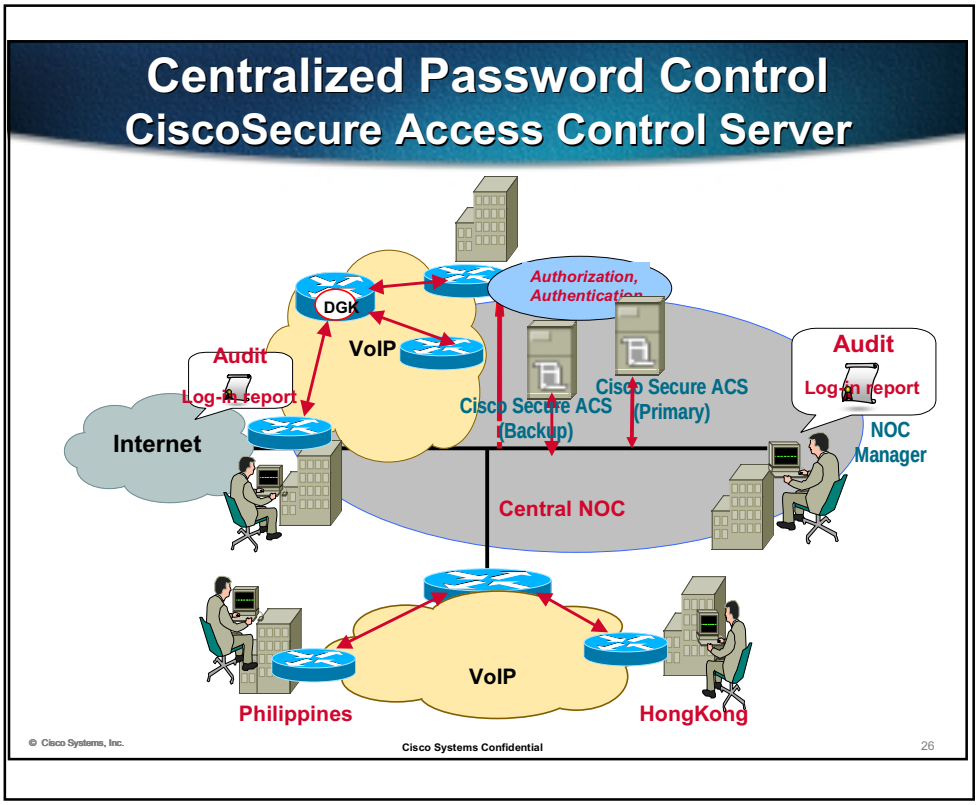
Centralized Password Control
CiscoSecure Access Control Server
DGK
VoIP
Authorization, Authentication
Audit
Log-in report
Internet
Cisco Secure ACS (Backup)
Cisco Secure ACS (Primary)
Audit
Log-in report
NOC Manager
Central NOC
VoIP
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Summary

- Cisco Service Management for Voice provides
  - End-to-end Fault management
  - End-to-end Configuration management
  - End-to-End Accounting management
  - End-to-End Performance management
  - End-to-End Security management
- Cisco's network, accounting/billing and management solutions delivers revenue generating and innovative applications and services

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Thank You

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