

Troubleshooting Converged Networks

Interop New York 2008

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Agenda

> What I'm hearing

> Network *and* Voice Management

- Quality of Voice or Quality of *Service*
- Voice Management *and* Network Management
- Key metrics
- Cost Considerations

What CIOs & IT Managers Tell Us

IT Strategy Drivers

- > We need to define service levels, and measure and report against them
- > We need to predict service degradation before end users are impacted, including the need to have better control over network device configurations and changes in order to avoid unintended consequences
- > We need to identify and resolve problems quickly to reduce the impact of service disruption on my business
- > We need to reduce CapEx and OpEx by maximizing network asset utilization thru ongoing capacity analysis

What Network Managers Tell Us

IT Operational Drivers

- > Make the solution easy to install and administer
- > Provide me out-of-box support and intelligence across multiple network vendor devices
- > Filter out nuisance alarms so my staff isn't constantly chasing minor problems
- > *Identify what services, users and assets are impacted when problems occur to help us prioritize*
- > *Help me prevent human error*

What Financial Managers Tell Us

IT Economic Drivers

- > IT spending under pressure
 - 6% growth in '08 vs. 12% growth in '07 (Forrester)
 - Growth down 15% '07 to '08 (IDC)
- > Cost of network convergence is higher than expected, and ROI has yet to meet expectations
 - Network upgrades almost always required
 - VoIP systems remain expensive
- > IT spends 80% of time fixing problems; addressing this gets attention
- > Time to value & total cost of ownership also gets attention

Many Ways to Measure QoS/MOS

- > 1. Stats from call/communication manager or phone
 - Actual call statistics as reported by the phones
 - Post processing for MOS calculation
- > 2. Specialized voice quality assessment tool
 - Measures actual call data “on the wire”
 - Can detect poor quality from cell phones and off-network calls
- > 3. Specialized ‘proactive’ tool
 - Proactive – Sends simulated voice traffic
- > 4. Router-to-router response tests
 - Simulated voice packets from router to router
 - I.e IPSLA tests for Cisco IOS switches/routers

Is This the Real Definition of QoS?

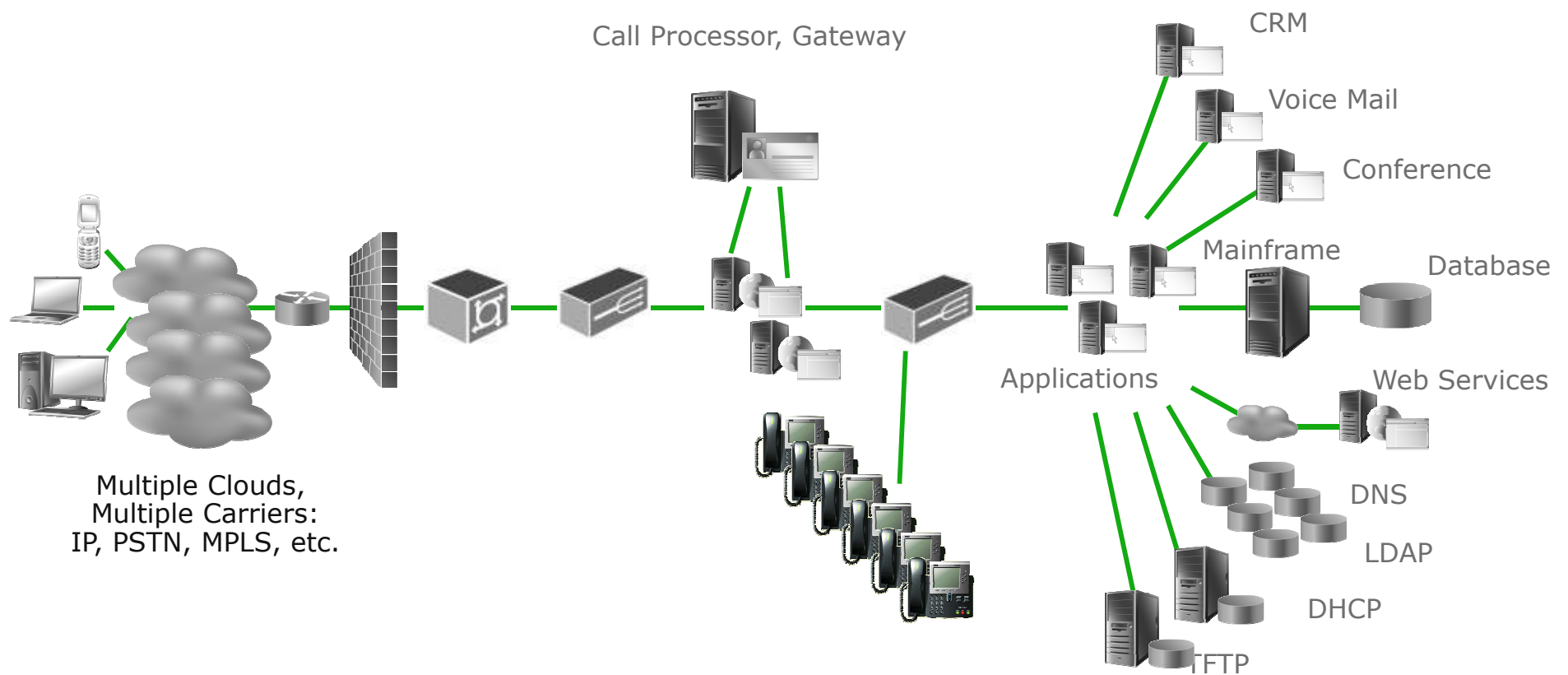
- > In the field of telephony, quality of service was defined in the ITU standard X.902 as "A set of quality requirements on the collective behavior of one or more objects". Quality of Service comprises requirements on all the aspects of a connection, such as *service response time, loss, signal-to-noise ratio, cross-talk, echo, interrupts, frequency response, loudness levels, and so on.*
- > Source: http://en.wikipedia.org/wiki/Quality_of_service
- > *Emphasis added*

Or Is It “Classification”

- > In the field of computer networking and other packet-switched telecommunication networks, the traffic engineering term quality of service (QoS), refers to *resource reservation control mechanisms* rather than the achieved service quality.
- > Source: http://en.wikipedia.org/wiki/Quality_of_service
- > *Emphasis added*

Or Is It Everything Else?

Lots of Moving Parts in VoIP Implementation



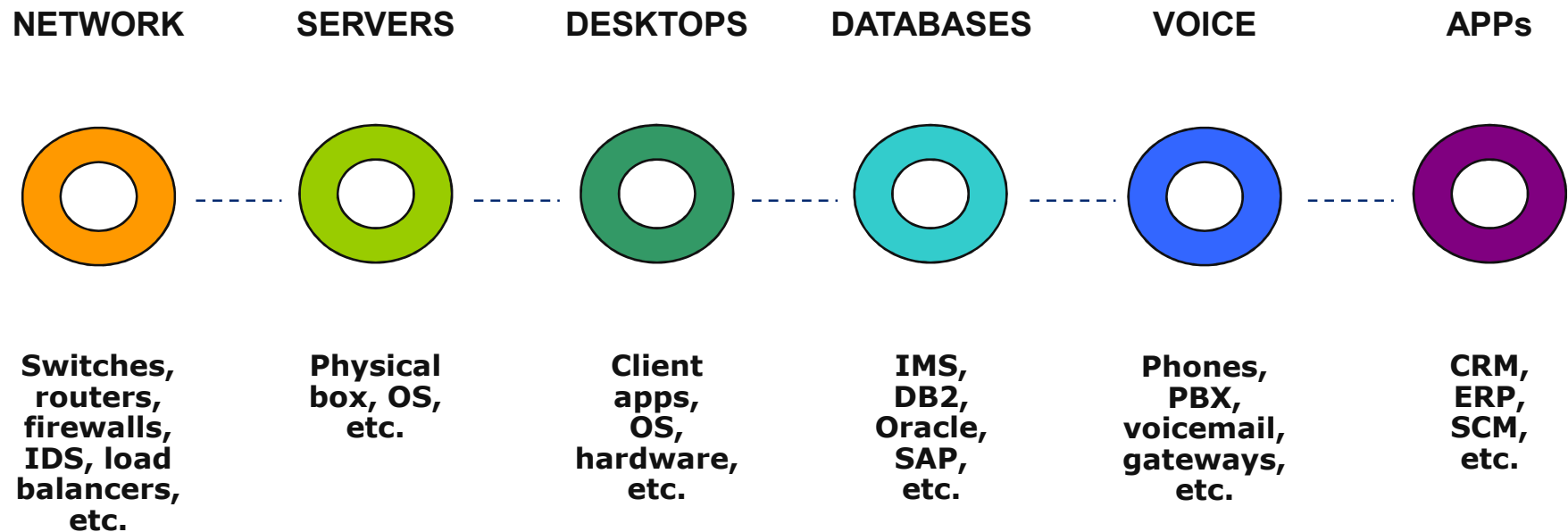
For IT, It's More than MOS for Sure

How can I improve quality of *voice service*?

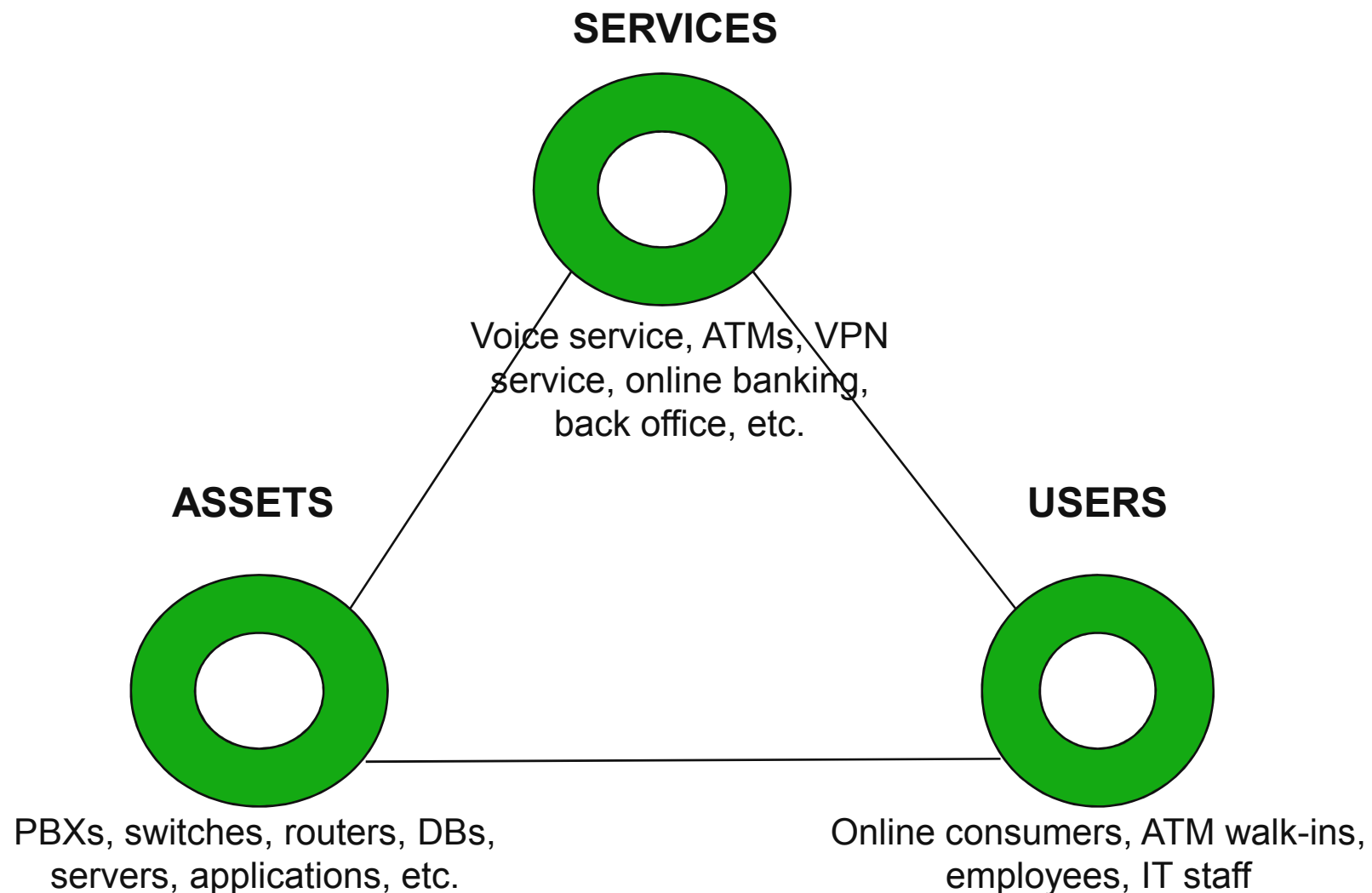
- > How can I do effective service level management?
 - Communicate how well IT is supporting the business
- > How can I do rapid problem resolution?
 - Identify true problem promptly
 - Provide historical trending and reporting
 - Minimize duration of downtime
- > How can I minimize cost of downtime?
 - Minimize number of occurrences (outages and degradations)
- > How can I perform adequate capacity planning?
 - Ensure sufficient capacity to prevent downtime/degradations
 - Ensure capacity exists to support the business
 - Identify where capacity is needed and where it isn't utilized

Traditional View of IT Management

Separate 'silos' of management staffs *and* tools



Service-Oriented View of IT (i.e. Bank)



Network Management

A la Carte, Suite, Integrated?

> Possible 'tools' as part of overall solution

- Voice management
- Network performance management
- Network service management
- Network fault management
- Network configuration management
- Systems management
- Application performance management
- Database performance management
- Capacity planning

What to Manage?

Key Management Metrics

> Some are more important than others

- Availability
- Bandwidth utilization
- Packet loss, delay, jitter
- Call activity: attempts, failures, delays
- Voicemail subscribers, usage and dormancy (last login)
- IVR usage, time spent, abandons
- Threshold violations (and time over threshold violations)
- Deviations from normal behavior
- Utilization of CPU, memory, disk (L2/L3 and voice devices)
- Installed software, board firmware, vintages, etc.
- Port/trunk traffic (max and min of capacity)
- Blocks and overflow to more expensive routes
- Capacity (top limits and under-utilization)

Pricing Examples

No one standard, lots of variables

> A la carte, suite or integrated?

> If it's just voice, many pricing models persist

- Right to Use (RTU) license for each voice platform
 - 1 per call processing or voicemail system type
- Per node license
 - 1 for each call processing or voicemail system
- Per endpoint
 - 1 for each IP phone (TDM phones?)
 - 1 for each voicemail box
- Response test or voice quality assessment tool
 - Typically sold separately

Cost Considerations

Plan for Upgrades & Repairs

- > Watch for trends in utilization
 - Disk space utilization
 - CPU and memory utilization
- > Watch for initial onset of errors
 - Disks tend to give early failure signs
 - First onset of media errors an alarm
- > Predict and plan for upgrades, repairs
 - Buy disk in bulk, and schedule downtime
- > Avoid cost\$ through planning
 - Application outages, downtime
 - Unplanned overtime, fire drills
 - Premium prices for new hardware

Cost Considerations

Keep Tools in Working Order

- > Any tool's value is in the work it does
- > If tool doesn't work, staff loses faith
 - You don't get value from tool investments
 - Worse, now you have 2 problems
- > No matter what tool you invest in, tools don't maintain themselves
 - Tool Admin is part of Change Management
 - More changes = More Tool Admin
 - Plan on some level of routine Tool Admin

THANK YOU!

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