

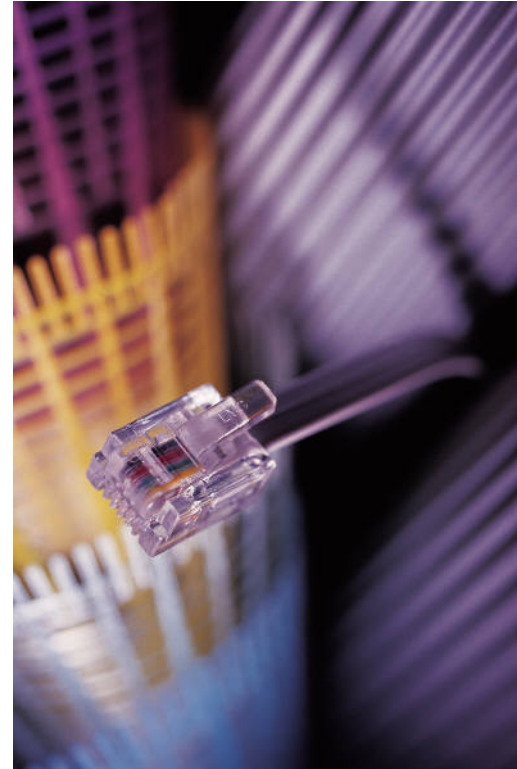


# Managing Convergence Interop Presentation September 19, 2006

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# Industry Trends

- IPT costs are lower including support costs
- Products have improved and features are on par with TDM switches
- Switch vendors are no longer manufacturing TDM equipment
- Applications that run over VoIP and use SIP protocol are becoming more prevalent



# What is Voice Management?

## Network Management

- Cos/QoS Mgm't
- Traffic monitoring
- Voice Assessment tools
- Voice Quality MIB reporting

## Tools for Voice Services and Applications

- CSCP, SIP, H.323 protocol monitors
- RTP Session statistics (E-Model MOS scores)
- Voice Security Gateways

## Voice System Management

- IPT systems and Unified Messaging
- Traditional and PBXs and Voice Messaging
- Call Center Products

# Stages of the VoIP Life Cycle

Stage **0**

Baseline the Traditional PBX

Stage **1**

Conduct a Pre-Deployment Assessment

Stage **2**

Begin the Trial

Stage **3**

Manage the Roll-out

Stage **4**

Continue Network, Systems, Services, & Apps  
Monitoring

Stage **5**

Manage the Addition of New Services & Apps

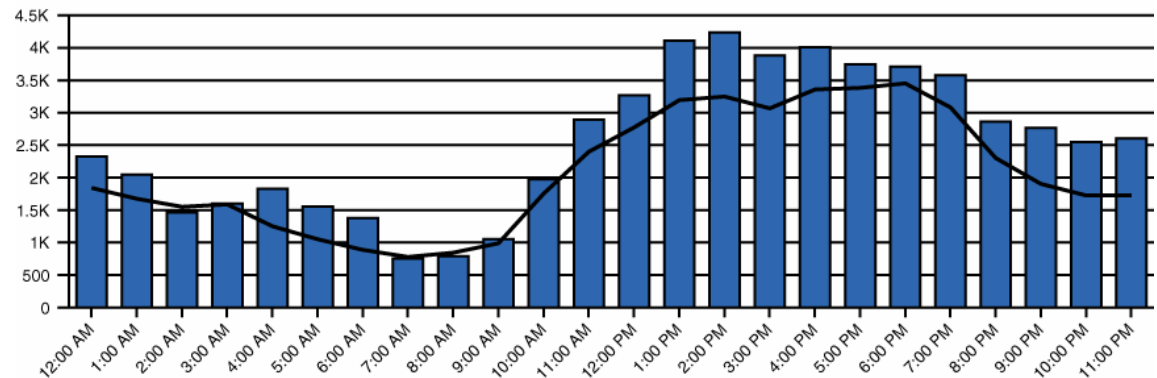
# Assessment is Critical!

"People were told that VoIP is going to be the greatest thing," says William Stofega, VoIP research director at IDC. "But in some cases, people didn't do the necessary network planning. Ninety-nine percent of all VoIP network implementations that fail do so because IT departments didn't do their homework."

InfoWorld, Jan 23, 2006 v28 i4 p9.

# Baseline Analysis of the Legacy System

- What is the traffic usage?
  - Have you over provisioned trunks or ports?
- What are the system trends?
- What features are available to the users?
- What is the system performance?
- Set expectations in advance!



# Analyzing the Existing Voice Network

- Capacity analysis helps optimize resource expenses
- Busy Hour Studies for each trunk group
- Erlang traffic analysis
- Are all resources needed to handle busy hour traffic?
- Convert erlangs to bandwidth for VoIP deployment

# What Are The System Trends?

Trunk Group Hour  
 For: Definity NY  
 04/26/2005 - 04/26/2005  
 Hours: 00 - 23

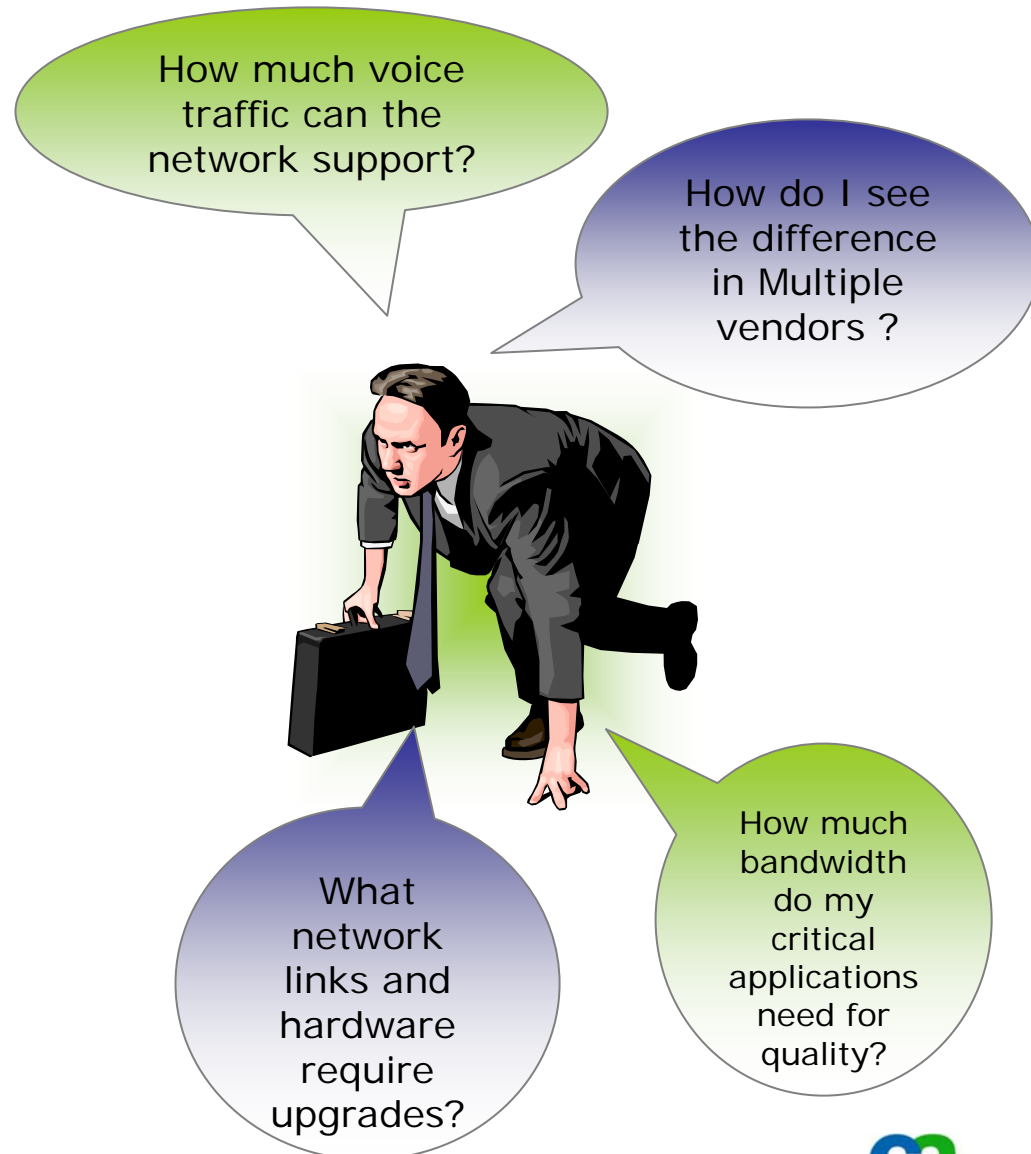
Is there a reason for overflow?

<u>Group No / Name</u>	<u>Date</u>	<u>Hour</u>	<u>Type</u>	<u>Size Dir</u>	<u>Total Usage(min)</u>	<u>Total Seize</u>	<u>Inc. Seize</u>	<u>Group Overflow</u>	<u>Que Size</u>	<u>Calls Que'd</u>	<u>Que Overflow</u>	<u>Que /band</u>	<u>Out Serv</u>	<u>% ATB</u>	<u>% Out Block</u>	<u>WB Flag</u>
22	04/26/05		isdn	23 out												
		12:00			403	143	143	0	0	0	23	0	0	0	0	N
		13:00			315	105	105	0	0	0	0	0	0	0	0	N
		14:00			160	47	47	0	0	0	0	0	0	0	0	N
		15:00			822	96	0	0	0	0	0	0	0	12	0	N
		16:00			510	53	0	0	0	0	0	0	0	0	0	N
		17:00			90	23	0	0	0	0	0	0	0	0	0	N
		18:00			43	7	0	0	0	0	0	0	0	0	0	N
		19:00			33	4	0	0	0	0	0	0	0	0	0	N
		21:00			0	2	0	0	0	0	0	0	0	0	0	N
		22:00			7	4	0	0	0	0	0	0	0	0	0	N

Is "all trunks busy" normal for this time of day?

# Pre-Deployment Network Assessment

- Inventory and schematic
- Simulation before testing
- New infrastructure
  - Add bandwidth
  - Deploy VLANs
  - CoS/QoS and Queue selection
- Verify with Assessment Testing



# Tools for Pre-Deployment Testing

- Testing tools should:
  - Send the appropriate level of simulated voice traffic; measure to detect packet latency, jitter or loss
  - Run the tests with other traffic present or simulate other traffic
- Look for tools from:
  - Network Mgmt Companies (ex: CA, HP, IBM)
  - VoIP Measurement Companies (ex: Brix, IR, Quovia)
  - Algorithm Development Companies (ex: Telchemy, Psytechnics)
  - Test Equipment Vendors (ex: Apparent, Empirix, Radcom)

# Beginning the Trial – The Case for Service Assurance

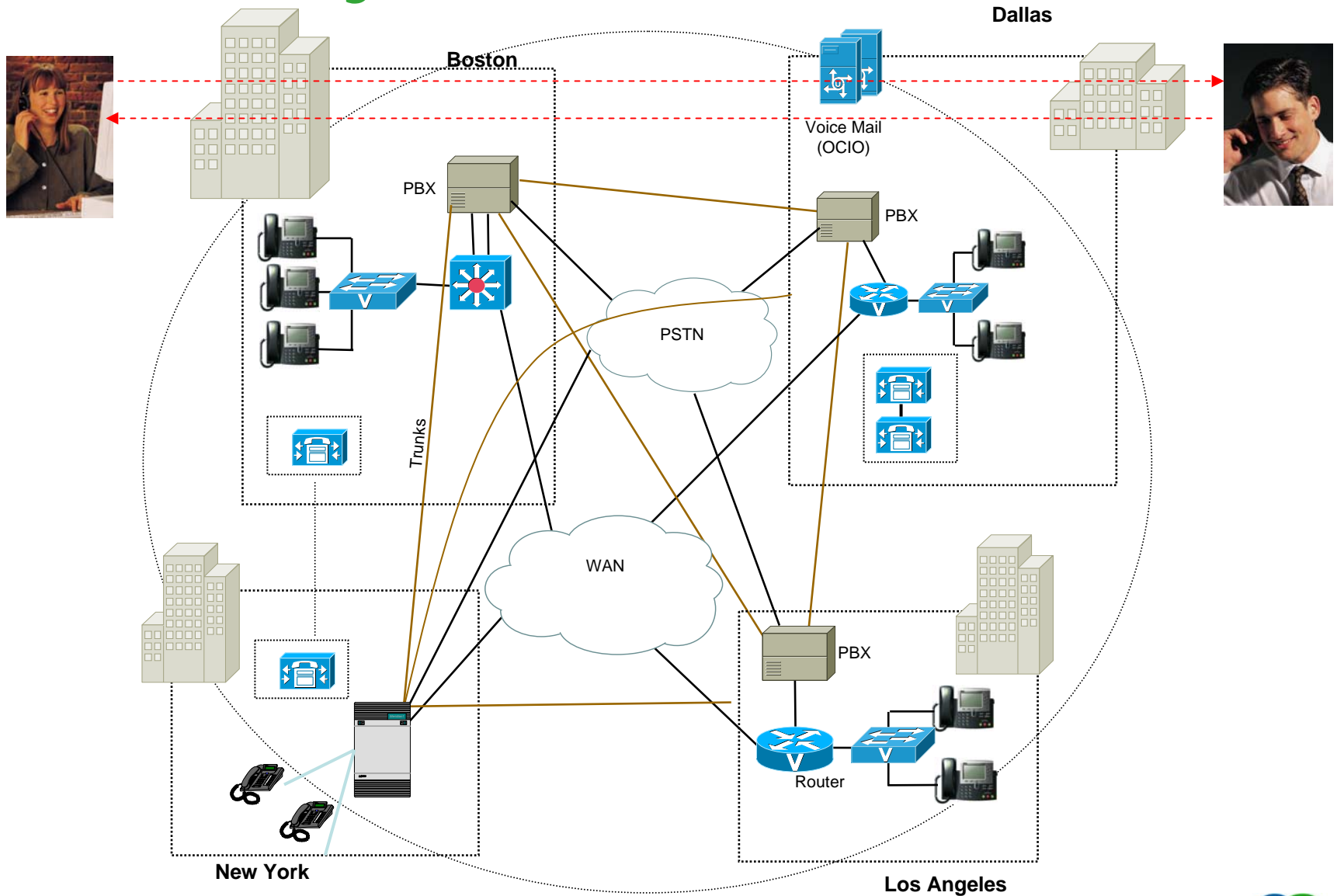
## Requires Comprehensive Management

- Network Management
- Service Management (DHCP, DNS, TFTP, etc.)
- Application Management
- VoIP Quality Monitoring – What does the user perceive?
- Troubleshooting – IP or Legacy Problem?
- Performance Validation
- Feature Validation

# Tools for Voice Quality Assessment

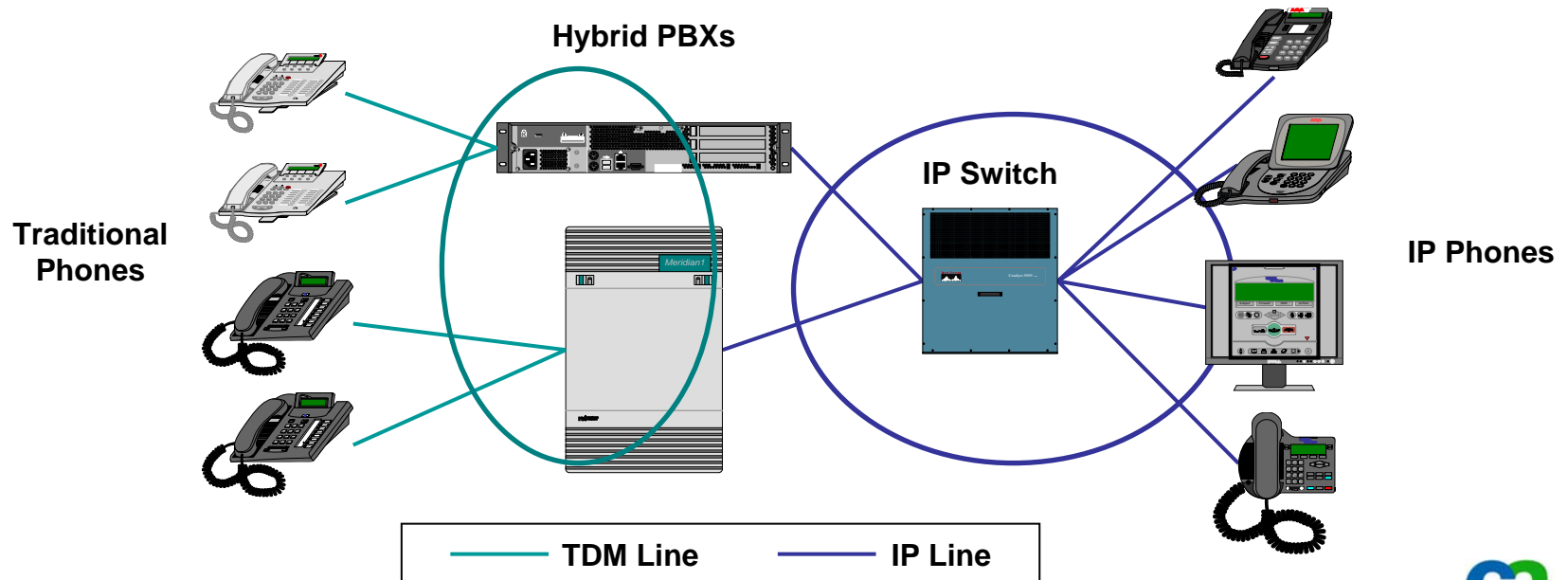
- Active testing – deploy tools that stress the network and/or simulate active voice traffic. Provides both voice quality and network performance metrics.
- Passive testing – monitor actual RTP traffic on the network and report call quality by MOS score.

# Call Quality Assessment



# Why monitor the hybrid environment?

- Watch for overflow from IP to PSTN trunks.
- Monitor alarms, errors, events for service degradation.
- Analyze traffic and call volumes.



# Managing the Roll -Out

## Requires Continued Monitoring & Management

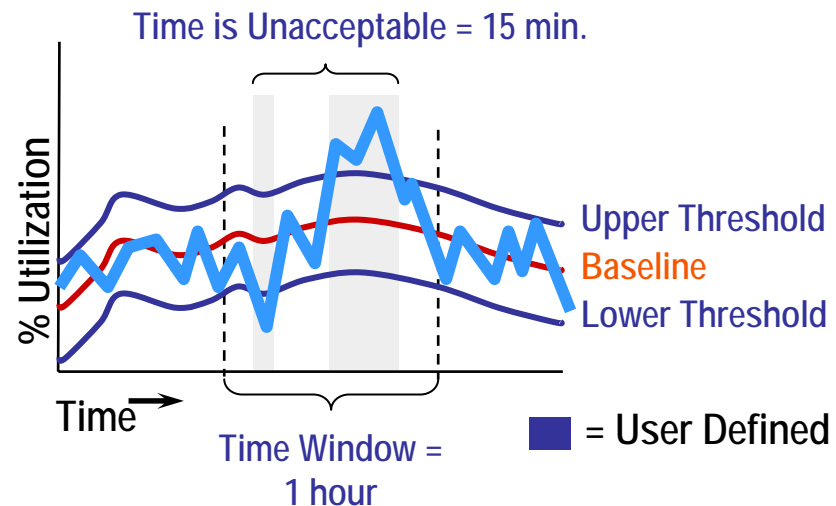
- Network Management
- Service Management DHCP, DNS, TFTP, etc.
- Application Management
- VoIP Quality Monitoring
- Trouble Shooting
- Resource/Capacity Management
- Policy Management

# Capacity Analysis

- Voice systems
  - What is my busy hour traffic?
  - What is the grade of service provided?
- Network
  - Predictive capacity planning “what if scenarios”
  - When to upgrade/downgrade facilities on the network
- Cost containment vs service levels

# Policy Management

- Going beyond SNMP alarms
- Watch out for PBX/IPT system degradation of service issues
- Is network performance unusual compared to normal behavior?



# Plan for New Application Roll-Outs

- What applications will the enterprise roll-out in the next few years?
  - Voice and collaboration tools
  - SAP or contact center applications
  - Presence applications like Cisco Unified Presence Server or Avaya Converged Communications Server
- How will new applications affect bandwidth utilization?
  - Are proper classes of service in place?
  - Capacity planning becomes a critical component.

