SIP Based VoIP

in MCI Advantage®

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Too Many Networks Mean Inefficiency and Expense

Yesterday

- Three networks
- Duration/geography-based pricing
- Expensive moves, adds, and changes
- Standalone application
- Closed PBX architecture
IP Communications Using CPE Only Addresses Part of the Problem

- Requires equipment purchase
- Proprietary – stuck with a single vendor
- Requires multiple access circuits
- No network gateways to PSTN (limited to LAN)
MCI Advantage ®
Provides Complete Telephony Convergence

- Voice becomes a data application
- Media control and features in the network
- Web-based command and control
- Business grade service supporting all office sizes
Why Architecture Matters
The Benefits of MCI Advantage®

• Network-based architecture decreases CPE acquisition costs
• Use of standards-based technology removes need for proprietary hardware, software and management support
• Feature upgrades are handled in the MCI network, pushing the benefits to all locations at the same time
• One low monthly bill; no surprise hardware/software upgrade costs
Network-based QoS Ensures High Performance

• Recognize the value in ensuring good voice and data performance

• Upgraded MCI’s IP network to provide Quality of Service (QoS) using Differentiated Services Code Points (DSCP) at the edge

• Support bi-directional QoS
  – Inbound QoS is provided by the network
  – Outbound QoS is provided by the router (UDP/TCP policy)

• Ensures good voice quality and simultaneous data throughput

• Simplifies service delivery and trouble handling with less CPE
Medium Office Example

- **PBX phones**
- **Enterprise GWY**
- **Ethernet Switch**
- **SIP phones**
- **PSTN Network GWY’s**
- **Access Router**
- **QoS Policy & DSCP**
- **SIP Firewall/NAT**
- **Local GWY**
- **nTx1 to MCI**
- **Hosted IP Comm’s**

Optional headsets for softphones

PSTN lines to LEC

Can be the MCI Advantage for all services

Can be replaced by Virtual Local GWY

MCI
One Network for All Your Features

• Traditional Centrex features
  – Attended/Unattended Call Transfer
  – Call Forward / Call Hunt
  – Outbound Call Blocking
  – Private Dial plans

• Network features
  – Voicemail
  – Find-Me

• Upcoming enhancements
  – Auto Attendant
  – Operator Console
  – Call Pick / Call Park
  – Music On Hold
  – Call Blast
MCI Advantage: IP Centrex

1. Set up the preferences
2. Make a call
3. Monitor the call
4. Hold the call
Leverage All Capabilities in Windows Messenger

1. POTS Connectivity
   - PC to phone

2. IP Communications
   - Presence
   - Text messaging (IM)
   - Voice, telephony
   - Video

3. Data Collaboration
   - Whiteboard
   - Application sharing
   - FTP

There are many other SIP compliant PC and PDA clients

Laptop and desktop become full communication enabled
SIP Gateway Services

Network Gateways: SIP-PSTN using SS7

Enterprise Gateways: SIP-PBX using ISDN/Q.931 or CAS

Local Gateways: SIP to LEC for backup service, 911, 411, 1-800

Shared Local Gateways (SLG) are placed in the MCI network and act as a LG
Over 90 Local Metropolitan Markets Makes MCI® One of the Largest CLECs
Riding on one of North America’s Largest IP Networks
Global IP Network Map

- 64 Kbps
- T1/E1 (1.5 Mbps/2 Mbps)
- E3/T3/DS3 (35 Mbps/45 Mbps)
- T2 (6 Mbps)
- OC3c/STM1 (155 Mbps)

- OC12c/STM4 (622 Mbps)
- OC48c/STM16 (2.5 Gbps)
- OC192c/STM64 (10 Gbps)

- Single Hub City
- Multiple Hubs City
- Data Center Hub
IP Network Support for Voice

MCI Service Level Agreements (SLAs) guarantee
Monthly latency figures of:

• **55ms or less** for regional round trips within Europe and within North America (for U.S. and Canada customers).

• **55ms or less** for regional round trips within Europe and within North America (for non-U.S. / Canada customers).

• **95ms or less** for transatlantic round trips between London and New York.

Packet delivery of:

• **99.5 percent or greater** for regional round trips within Europe and North America.

• **99.5 percent or greater** for transatlantic round trips between London and New York.
2004 Roadmap Items

• Support for Private IP network service, a la carte
• Additional features
  – Auto attendant
  – Caller ID
  – Call park
  – Call blast
  – Attendant console
  – Remote Office
• Dedicated 800
• Voice SLA
• International Expansion
**Generic 2004 Roadmap Objectives**

- Scaling up the IP-PSTN gateway network
- Wholesale channels
- Cable VoIP using SIP
- Global footprint expansion
- Consumer SIP VoIP products
- Automation for service delivery
Internet Communications are Disruptive

“We are not re-engineering the telephone service but we are redefining communications” Teresa Hastings in 2000

We are presenting here some of the new services, but believe many or most innovations are yet to come.

Voice over IP (VoIP) in MCI Advantage is only a beginning.

Note: This deck shows the potential of SIP. MCI Advantage does not yet fully utilize all the capabilities of SIP, due to the normal development time to take technology to market.
“SIP Service Examples” is on the IETF standard track, LC for RFC, MCI contribution

<table>
<thead>
<tr>
<th>Call hold</th>
<th>Music on hold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attended call transfer</td>
<td>Consultation hold</td>
</tr>
<tr>
<td>Unattended call transfer</td>
<td>Attended transfer</td>
</tr>
<tr>
<td>Call forwarding/unconditional</td>
<td>3-way conference</td>
</tr>
<tr>
<td>Call Forwarding/busy</td>
<td>Adding a 3&lt;sup&gt;rd&lt;/sup&gt; party</td>
</tr>
<tr>
<td>Call forwarding/no answer</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; party joins</td>
</tr>
<tr>
<td>Single line extension</td>
<td>Find-me</td>
</tr>
<tr>
<td>Call pickup</td>
<td>Call park</td>
</tr>
<tr>
<td>Outgoing call screening</td>
<td>Automatic redial</td>
</tr>
<tr>
<td></td>
<td>Click to dial</td>
</tr>
</tbody>
</table>

Ref: <draft-ietf-sipping-service-examples-04.txt>
SIP: Beyond Class 5, IP PBX and IP Centrex

Services in endpoints

Parallel voice and IM/e-mail communications: Attended transfer and consultation hold may use IM as a parallel communication channel,

Presence is a new core capability:
  Use presence attributes for polite calls,
  Use presence for call-back,
  Use presence to set up ad-hoc conferences,
Use PC with GUIs and 3pcc to invoke all features,
Attendant work station becomes SIP telephony device,
Voice mail becomes a component of unified messaging,
Integrated IM, voice, video and data conferencing/collaboration
From call centers to CRM
ENUM SIP services
Global Internet mobility extends all services beyond the enterprise
What Internet communications may not do well at present

Re-engineering the telephone system:
  – Better and cheaper circuits

Wireline telephony nirvana:
  – Power from the C.O. as alternative for electricity supply
    • Can use power from FXS port on residential adapter or gateway
  – Location for 911 when users can be anywhere
    • Static IP phone can be configured with location information
    • Ethernet hub or WAP location
    • Portable devices can be anywhere
  – Circuit-like QoS in oversubscribed networks
    (there is no line busy tone either!)
The Value Proposition of IP Communication Services

Higher service resilience than PSTN – proven on 7/11/03 and 8/15/03,
More than one service provider – see above
Better voice quality than PSTN, new
Multimedia: Text, voice, video, data, new
Mobility for all communication services - new
Presence based services - new
Event based communications - new
Integration of voice mail, e-mail, IM, SMS
Multiple conferencing models and media - new
Call routing heaven + ENUM - new
Secure communications
User preferences and control for all of the above- new
Integration with the Web (new!):
Communication, information, productivity apps, entertainment, transactions
Gateways to PSTN, mobile telephony, paging networks, ISDN, H.323, etc.
100% open standards based, multi-vendor interoperable- new
Service development is easy and fast - new
Bottom line: Lowest overall cost and highest functionality combined
Conclusions

As MCI is migrating all its traffic and services on to one single public IP backbone, MCI Advantage allows customers to consolidate all types of communications, Internet and data services and benefit from the integration of communication, applications and transactions over IP and the Web.