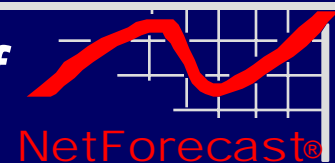


Performance Beyond Bandwidth

*Strategic Technologies – Staying Ahead of
the Technology Curve*



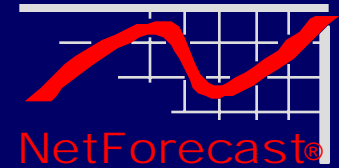
NetWorld+Interop, May 12, 2004

John Bartlett

NetForecast, Inc.
2 Seneca Court
Acton, MA 01720

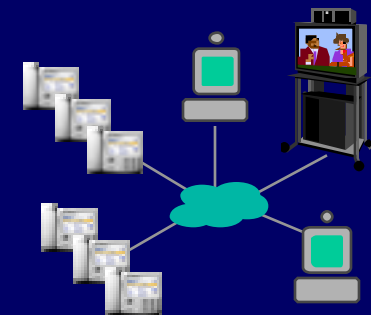
www.netforecast.com

The Enterprise

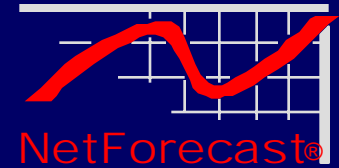


- **What is new in Enterprise networking?**
 - Voice over IP (VoIP)
 - Presence
 - Collaboration
 - Customer Relationship Management (CRM) on the net
 - Global relocation / outsourcing

- **What have we just done? Demanded that the net:**
 - Handle interactive traffic
 - Handle real-time traffic
 - Handle real-time and data simultaneously
 - Work over long distances



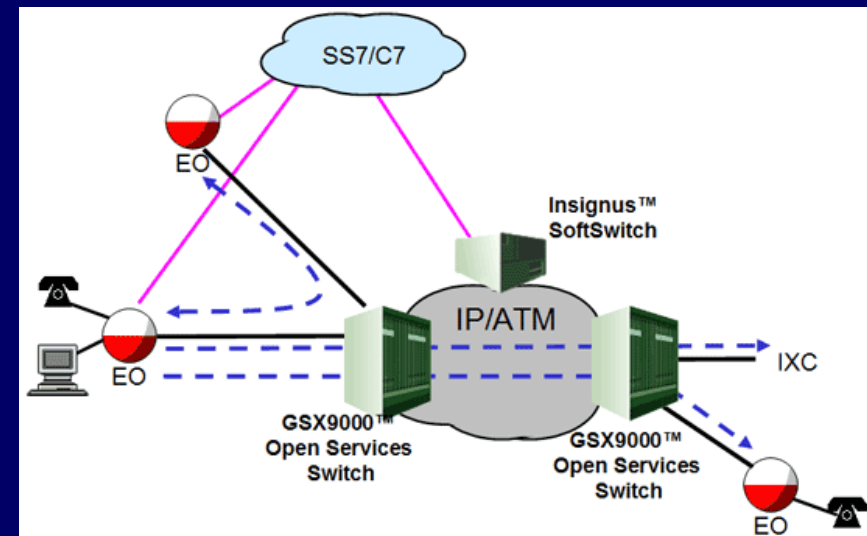
The Backbone



International VoIP and PSTN Traffic Summary, 1998 - 2003						
	1998	1999	2000	2001	2002	2003
VoIP Traffic (millions of minutes)	150	1,655	5,954	10,147	18,045	24,519
PSTN Traffic (millions of minutes)	93,000	108,000	132,027	146,095	155,165	166,615
VoIP Share of International Traffic	0.20%	1.50%	4.30%	6.50%	10.40%	12.80%
Source: PriMetrica, Inc. (2003 numbers are estimated)						

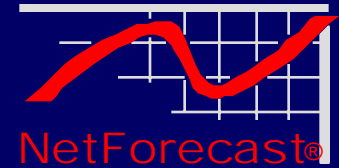
Source :
www.carrierhotels.com/news/December2003/voipgrowth.shtml

- VoIP carried between countries is rapidly moving to IP
- Real-time traffic is affecting both public *and* private networks



Source: Sonus Networks

Global Diversification



- Companies are working across much larger geographies, purchasing or outsourcing resources where the economics make the most sense



- Collaboration is vial

- Databases remain at headquarters

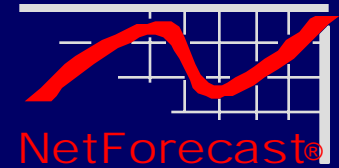
- Security
- Manageability

Distance – 8000 mi

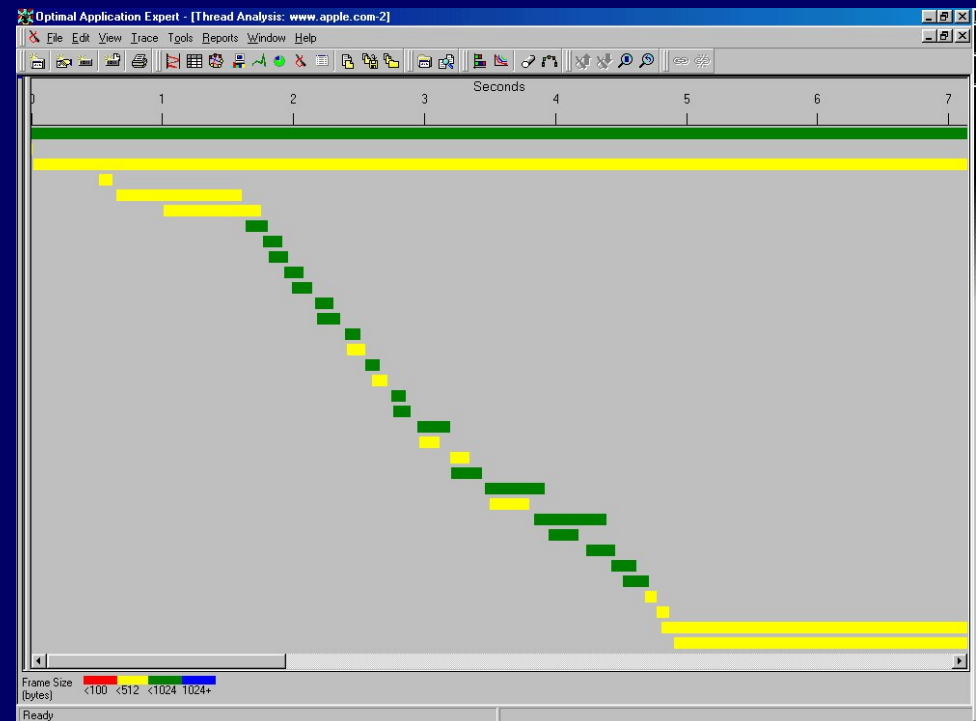
RTT -> 250ms

Loss -> 3%

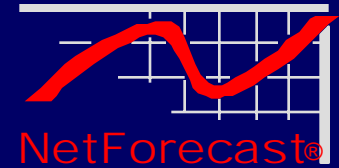
Not Your Father's Network



- **TCP was not designed for FTP, not for HTTP**
 - Web pages are a series of small transfers
 - Many client – server interactions (turns) required
 - TCP never gets out of slow start!
 - Distance makes it worse
 - XML & Soap make it worse
- **UDP does not obey the rules of TCP!**
 - No congestion management
 - No loss recovery
 - Doesn't share well with friends



Its About Performance



- The next frontier is managing performance across a global network, at a much finer level than we do in our enterprise today.
- **New technologies being introduced to overcome TCP and UDP limitations**
 - Content Delivery Networks (CDN)
 - Quality of Service (QoS)
 - Compression (single ended and double ended)
 - Route control
 - TCP offload (single ended and double ended)
 - Transparent Turns Reduction (TTR)
- We have to understand performance requirements before deploying real-time, or across the globe

Please visit our Web site for reports on the topic: www.netforecast.com

Thank You

