CUSTOMER-CONTROLLED INTELLIGENT NETWORKS

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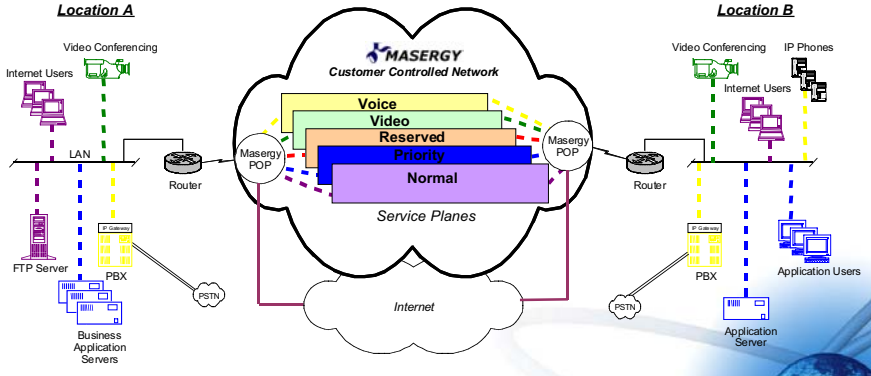
Service Illustration



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Key Characteristics

- Visibility and Control
  - View application performance across entire network
  - Fine-tune network to improve individual application performance
  - Point-and-Click Control of bandwidth and QoS
- Cost Savings
  - Shared infrastructure costs
  - Reduced CPE requirements
  - Reduced operating costs (personnel and management tools)
- Logical partitioning
  - MPLS tunnels used to partition backbone resources
  - VLANs, Frame Relay DLCIs partition access
- Convergence
  - Data, video and voice across a single network
  - Reduced costs and risks of managing multiple networks
  - Multiple application QoS

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Features

- Flexible Bandwidth
  - Variable Rate
  - Tiered Rate
  - Flat Rate
- Dynamic QoS
  - Interactive Application Service Planes
  - Real-time Application Service Planes
- Web-Based Service Portal
  - Account Information
  - Service Management
  - Support Center
  - Billing Reports
  - Service Order Status

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Service Plane SLAs

- **Voice** and **Video** Application Service Planes
  - 100% Packet Delivery
  - 100% Packet-in-Sequence
  - <10ms Variance in Latency (Jitter)
  - <1sec. Fast Fail-Over'
- **Reserved** Application Service Plane
  - 99.99% Packet Delivery
- **Priority** Application Service Plane
  - 99.9% Packet Delivery
- **Normal** Application Service Plane
  - 99.9% Packet Delivery

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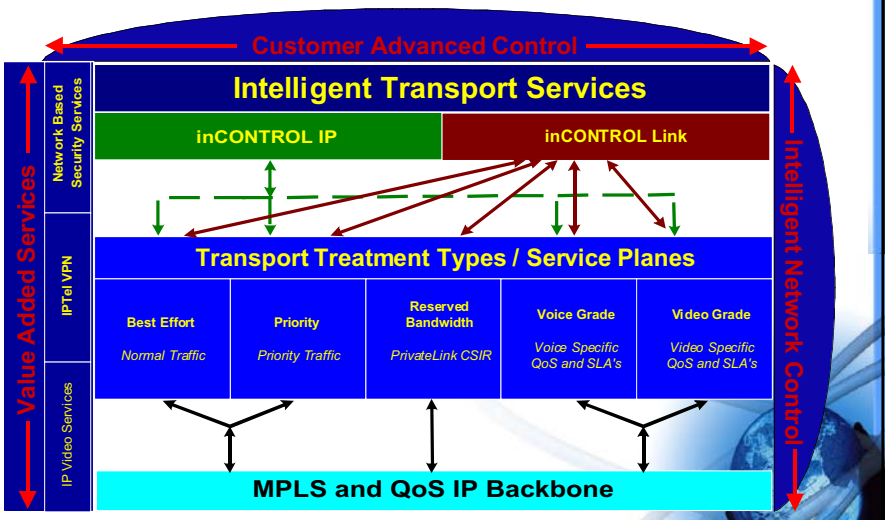
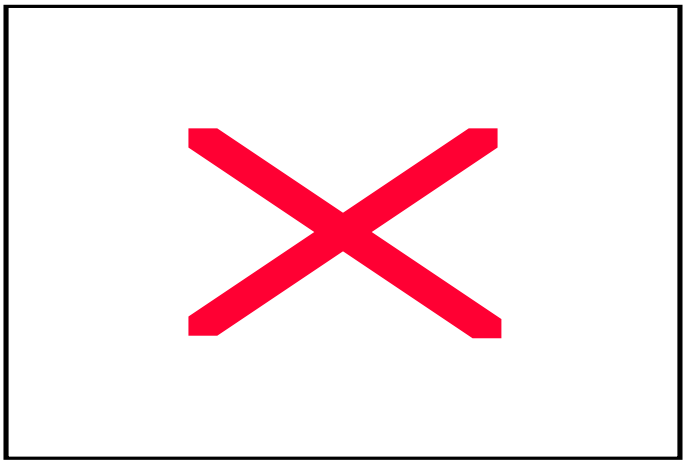


Network Architecture



inControl IP

- IP transit service on Masergy's IP/MPLS network
  - Two priorities to efficiently support business-critical and best-effort applications
  - Global connectivity
  - Fast restoration
  - Burstable or tiered service
  - Bursting beyond tier limit for business-critical applications

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inControlLink

- Point-to-point service delivered as layer 2 service through Masergy's MPLS infrastructure
  - Private addressing
  - Can be used to create VPN topology
- Reserved priority guarantees bandwidth resource customer site to customer site
  - Committed sustained information rate (CSIR)

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inControl Video

- Real-time service plane
  - Available as
    - layer 3 service with inControlIP
    - Layer 2 service with inControlLink
- SLA crafted for video applications
  - Jitter bound of 10ms
  - 100% packet delivery
- For dedicated video access or multi-service converged access

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inControl Voice VPN

- Site-to-site connectivity with performance engineered for voice applications
  - 10ms jitter bound
  - 100% packet delivery
  - Can replace tie-lines between PBXs
- Off-net long-distance
  - Media gateways connect Masergy's backbone to the PSTN
- On-net and off-net CDRs

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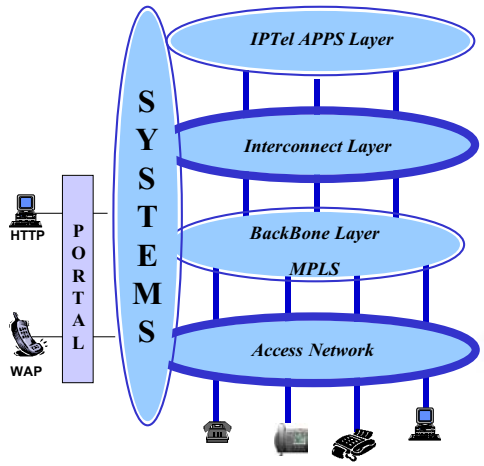
IP Tel Architecture View



IPTel Applications:

- DID Logic
- Calling Scripts
- Device Content
- Messaging
- Presence
- Logging
- Centrex User
- Group Agent

SoftSwitch Services:

- Co-Carrier Connection
- Connection Control
- Least Cost Routing
- E911
- Signaling
- Subscription
- Equal Access
- LNP

Media Vehicles:

- Network Gateway Switches
- Access Routers
- Core Routers Firewall
- Ethernet
- Voice LSP's
- Network

Access Vehicles:

- PBX
- POTS Phone
- IP Phone
- IAD
- VLAN
- Media GW
- SW-Ethernet

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IP Tel Architecture Overview

- Provide the network infrastructure to provide basic and enhanced IP-based voice services
  - Voice-grade IP transport
    - Integrated with other IP services
  - Gateways to connect existing TDM based equipment to the packet network
    - Supports PSTN and TDM interfaces
  - Application servers to deliver services to the desktop
    - Line Capabilities - Centrex, Virtual PBX, IP and/or POTs Phones
  - Routing servers to handle call routing in the network
  - Media servers to provide IVR and voicemail services
    - Integrated with POP/IMAP provides Unified Messaging.
  - Proxy servers to manage network interconnection

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Video Services on a Converged IP/MPLS Network

- IP-based video solutions
  - Video-grade transport
  - Network-based MCUs
  - Network-based IP/ISDN gateways
- Integrated access with
  - IP Telephony
  - Internet with traffic prioritization
  - VPNs

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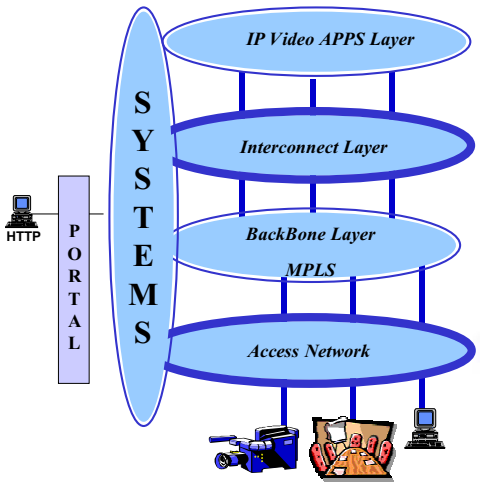
Video Architecture View



Video Applications:

- Conference scheduling control
- Resource policy
- Conference
- Logging

Conferencing Services:

- Co-Carrier Connection
- Multi-point bridging
- IP/ISDN bridging
- Signaling
- Subscription

Media Vehicles:

- IP/ISDN Gateway Switches
- Access Routers
- Core Routers Firewall
- Ethernet
- Video LSP's
- Network

Access Vehicles:

- IP-based Desktop video
- IP-based Dedicated conf. Room equip
- ISDN-based conferencing equipment

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inControl View

- Highly detailed visability into network usage and performance
- Agent runs on selected end-systems
  - Active measurement
  - Application-specific performance measurement
- CPE monitored
- Network performance reporting
- Adds value to Customer Control Center
  - "if you can't measure it, you can't improve it"

Current State of Multi-service Networks

- Multiple services on shared access requires extensive systems integration today
- Traffic engineering and SLA management are challenging and non-standard
- To be valuable, requirements include:
  - Very good network/performance visibility
  - Interactive service activation/control
- Favorable technology trends promise
  - Reduced cost/complexity for service providers
  - Better access options

Network-based IP VPNs: an Important Driver for new Services

- Network-based VPNs

RFC 2547	Virtual Routers
L2 VPNs	Virtual Private LAN services

- These imply significant of outsourcing of many types of enterprise IT support

Storage	Content servers	Video MCUs/GWs
SIP servers	Telephony GWs	Network-based firewalls

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Technology trends will drive changes in user/provider relationships

- Intermingling of roles between enterprise IT and Carrier/service provider
- More flexible, collaborative style