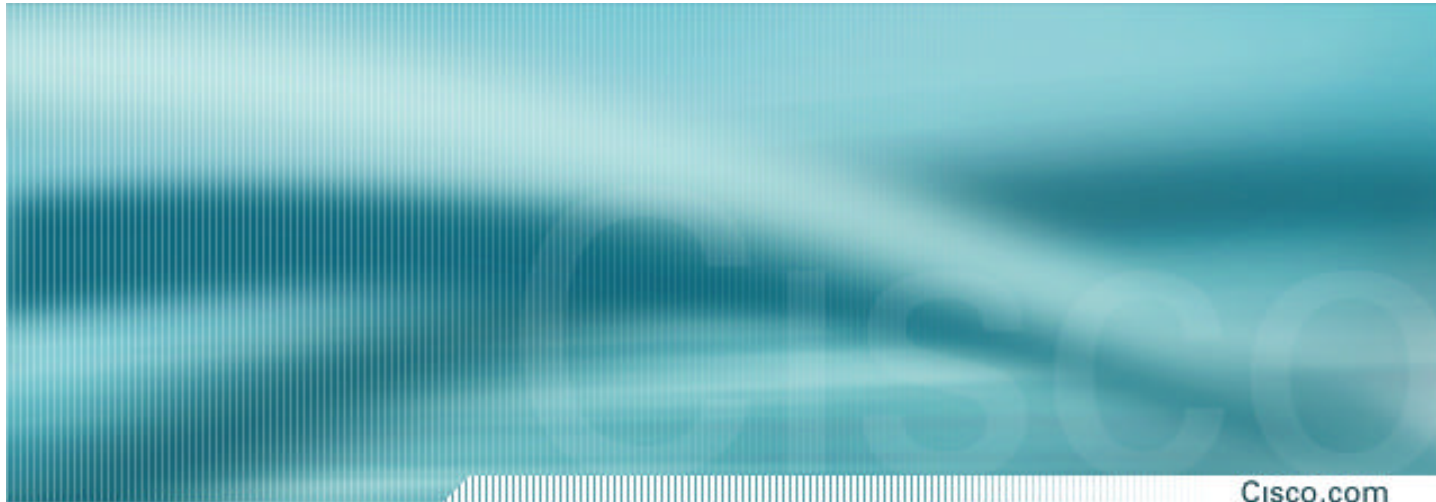Cisco.com

Managed Access
Cisco Cable-Ready Solution

March 2002

Agenda

- **Managed Access Definition**

- **Market Opportunities**

- **Deployment Challenges**

- **Cisco's Managed Access Strategy**

- **Benefits**

- **Managed Access Cisco Cable-Ready Solution Reference Architectures**

- **Criteria to Consider When Deploying Managed Access**

- **Summary**

Managed Access Definition

- **The ability for a cable operator to give subscribers their selection of Internet Service Provider**

ISP A

ISP B

ISP C
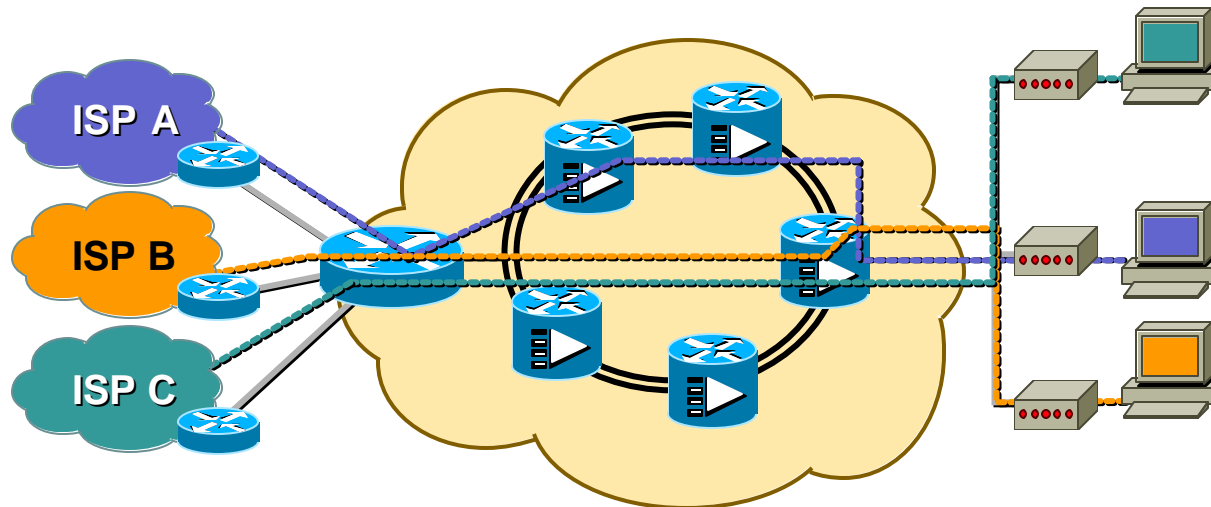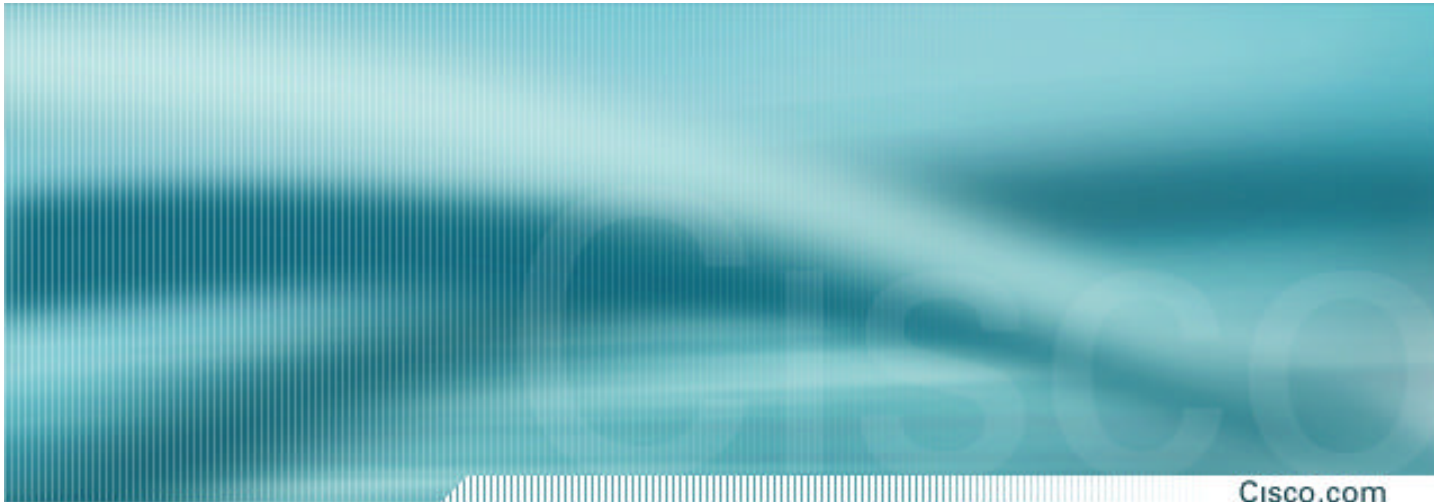
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Market Drivers
and Opportunities

Pressure on Cable Operators

Profits

- **Commoditization**
- **Deployment costs**
- **Operations cost**
- **Customer retention**

Business

- **Mergers/ acquisitions**
- **Regulation reform**
- **Partnerships**

Technology

- **Constant evolution**
- **New services/IP!**
- **Universal Web access**
- **Mobility**

Competition

- **New market entry**
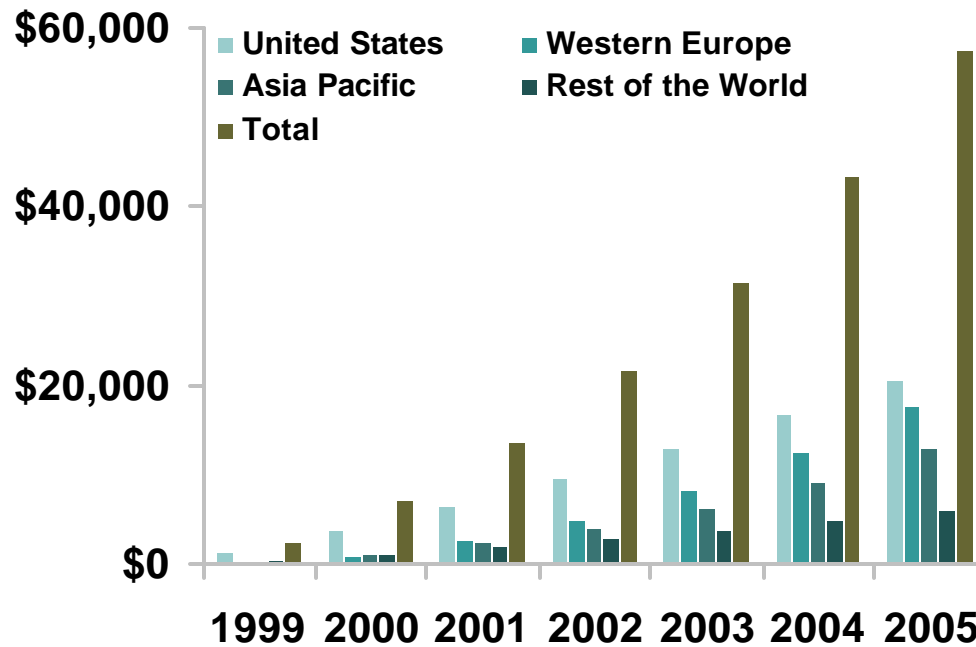- **Service convergence**
- **Differentiation**
- **Personalization**

Why Managed Access?

**Drivers of Managed Access
in the Service Provider Market Include:**

- **FCC/FTC support for open access initiatives**

- **Reduction in SP operational support resources and skill sets**

- **Increased (and contractually obligated) subscriber fees from ISPs**

- **New revenue opportunities derived from ISP support (caching, content hosting, etc.)**

Addressable Market—Subscribers

Source: IDC April 2001

US HSD (Cable Modem) Subscribers

Bar chart of US HSD (Cable Modem) Subscribers:

Year	Subscribers
1999	1.2
2000	2.9
2001	5.3
2002	8.6
2003	11.9
2004	15.5
2005	19.9
2006	24.1
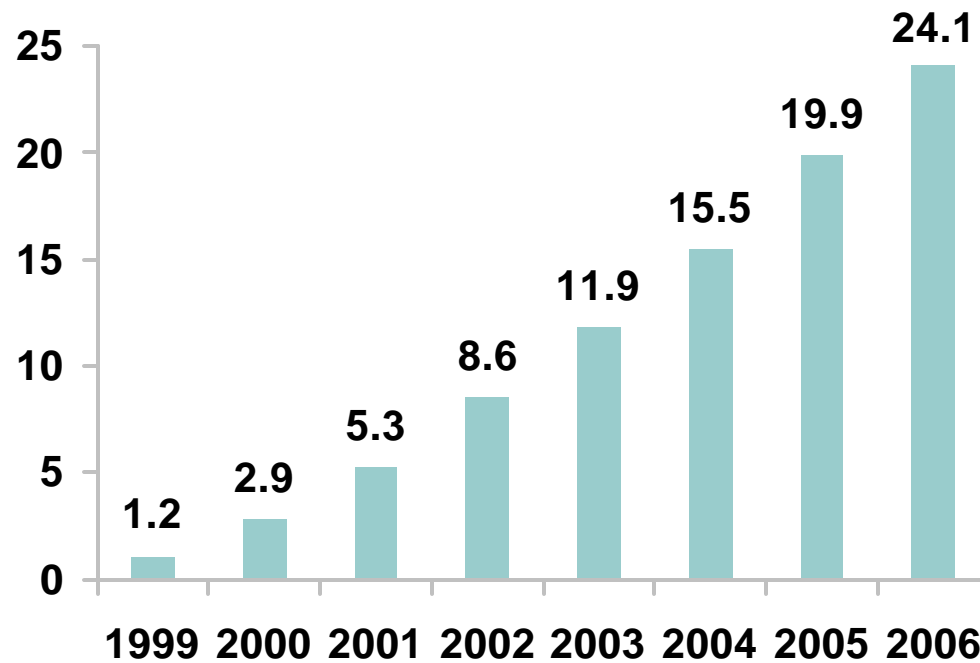
5 Years to 100,000—1 Year to 1,000,000—8 Months to 2,000,000

Addressable Market—
Service Revenue

Legend: United States, Western Europe, Asia Pacific, Rest of the World, Total

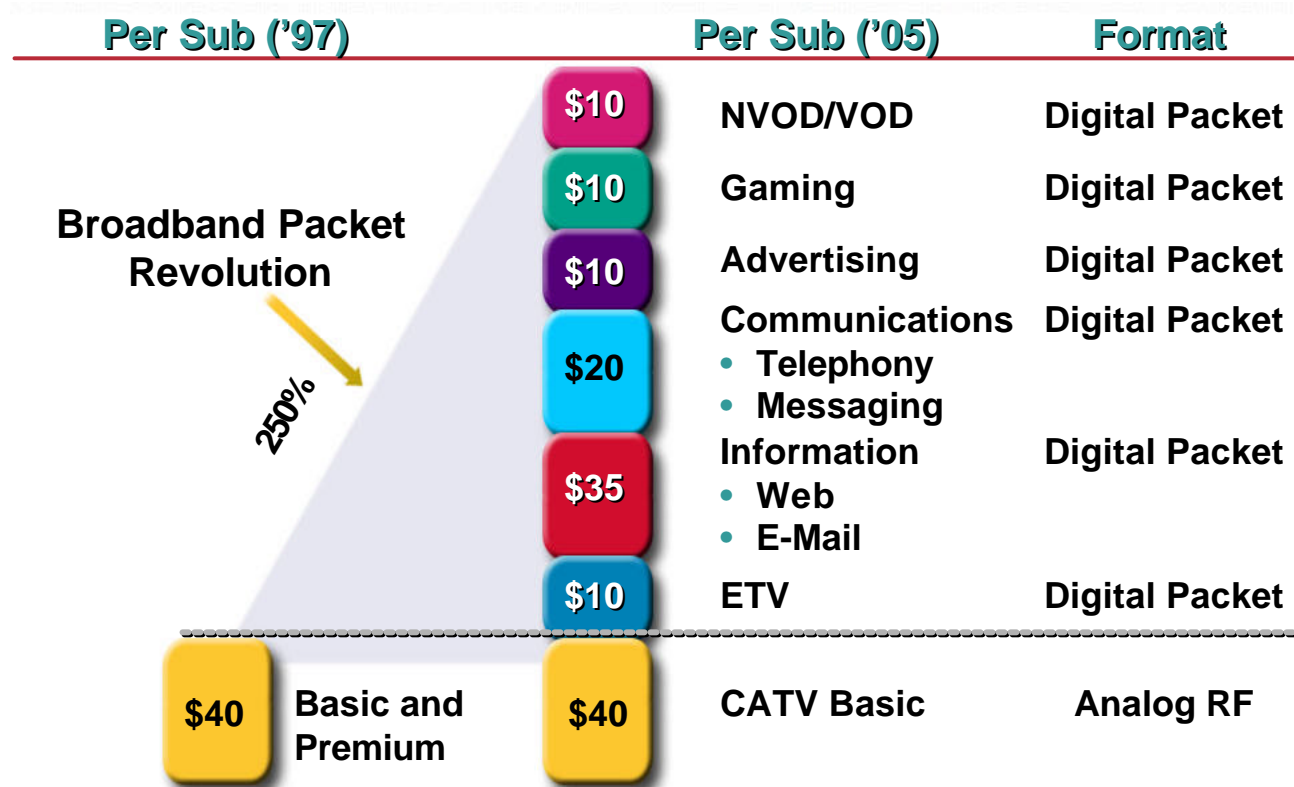Years: 1999, 2000, 2001, 2002, 2003, 2004, 2005
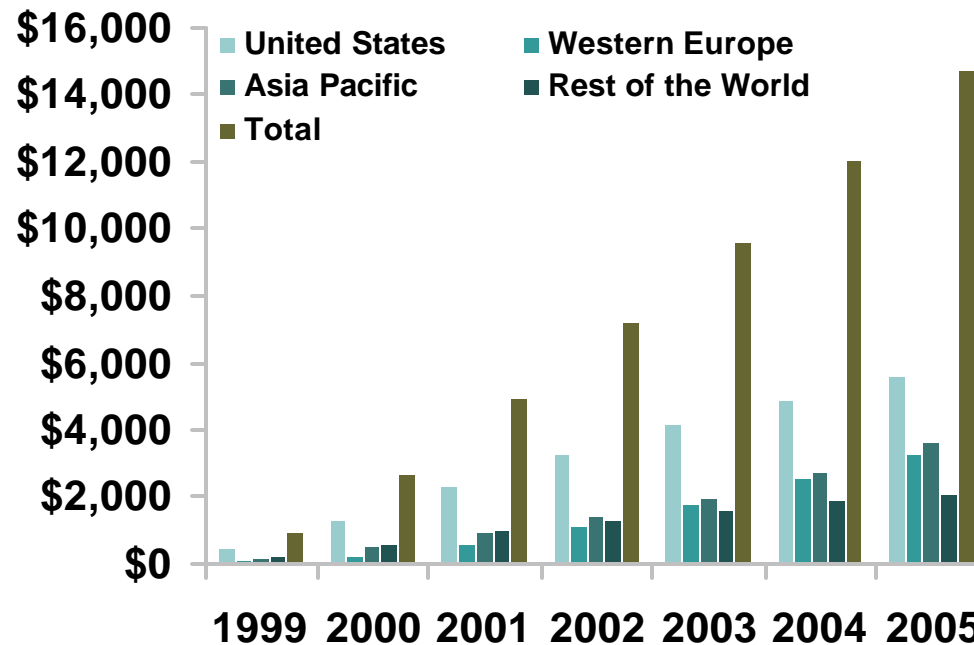
Source: IDC April 2001

Value Proposition

- **Service Providers can increase revenue by:**

    Accelerating their subscriber penetration rates

    Enabling additional services

- **Cisco can help service providers meet these objectives with a solution that can be deployed today**

    Products for the provisioning and management of HSD services provide the foundation

    The Cisco HSD solution can be extended as customers are ready to deploy additional services

Cable Industry Drivers:
The Digital Services Opportunity

Per Sub ('97)	Per Sub ('05)	Format
	$10 — NVOD/VOD	Digital Packet
	$10 — Gaming	Digital Packet
Broadband Packet Revolution	$10 — Advertising	Digital Packet
250%	$20 — Communications • Telephony • Messaging	Digital Packet
	$35 — Information • Web • E-Mail	Digital Packet
	$10 — ETV	Digital Packet
$40 — Basic and Premium	$40 — CATV Basic	Analog RF

Market Opportunity
Cable Operator

|	Wholesale	Retail
Peak ROI	111%	47%
Average ROI	80%	20%
Advertising and E-Commerce Revenue per Subscriber	N/A	$2 (2005) $8 (2010)
Monthly Service Revenue	$27	$44
EBITDA		

Source: Morgan Stanley 2001

Managed Access
and the Service Provider

- **Managed Access is the service offering that has leapfrogged other services for large-scale deployment**

- **Additional services will leverage the infrastructure of Managed Access thus accelerating and expanding the portfolio of service offerings introducing the concept of managed services**

- **Service Provider benefits from managed services:**

  Incremental revenue streams

  Accelerates subscriber penetration

  Expands SP's market presence

  SP's company branding

  Captures the customer

Broadband Cable Network
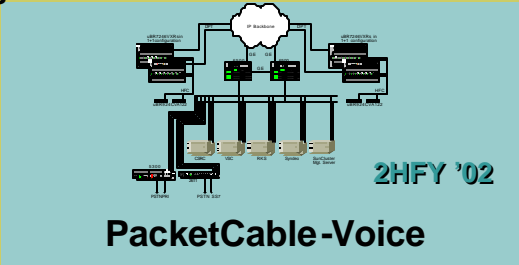
HFC DOCSIS

Multiple Access/Open Access
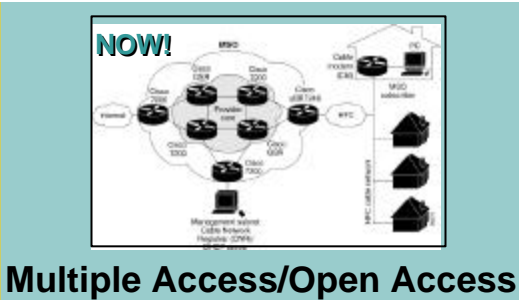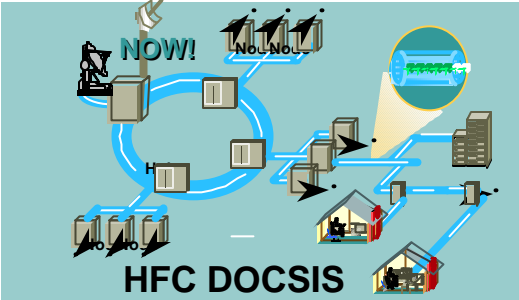
Partner Cable Modem and Set-Top Box

Cisco uBR7200 Series

Cisco uBR900 Series

OpenCable-Video

PacketCable-Voice
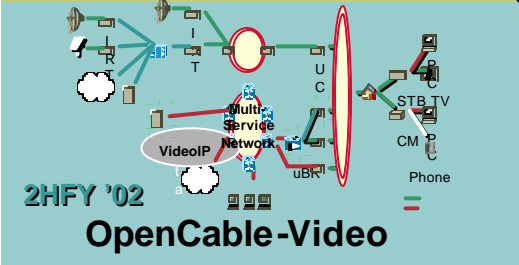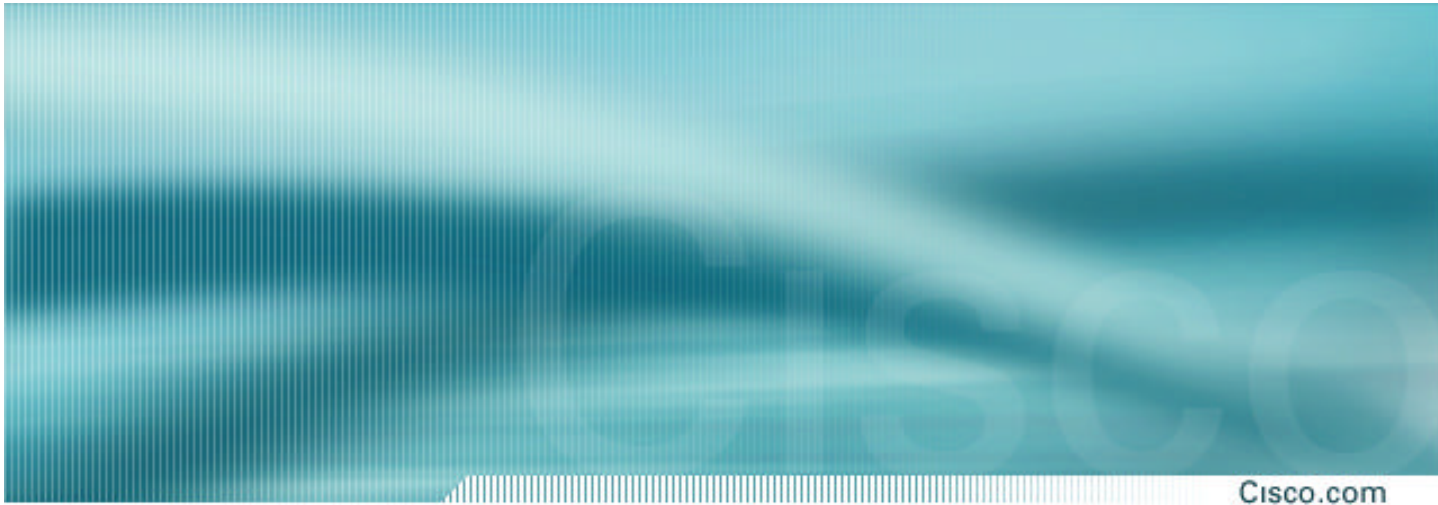
Cisco.com

Deployment Challenges

Challenges

- **Scalability**

- **Lack of service partitioning in legacy equipment**

- **Security**

- **Complexity associated with IP address management**

- **Support for tiered and usage billing**

- **Support for redundancy**

Things to Consider
Permanent vs. Temporary Sessions

- **Connection is permanent and subscriber is always connected to the same ISP**

- **Initiated at time service is offered and controlled by the Cable Operator**

- **The Cable Operator can track the traffic usage and, if desired, bill accordingly**

- **ISP connection is short term**

- **Subscriber can connect to multiple ISPs**

- **The session is controlled by the subscriber**

- **In some cases, the Cable Operator can track the traffic usage and, if desired, bill the subscriber accordingly**

Things to Consider
Service Agreements

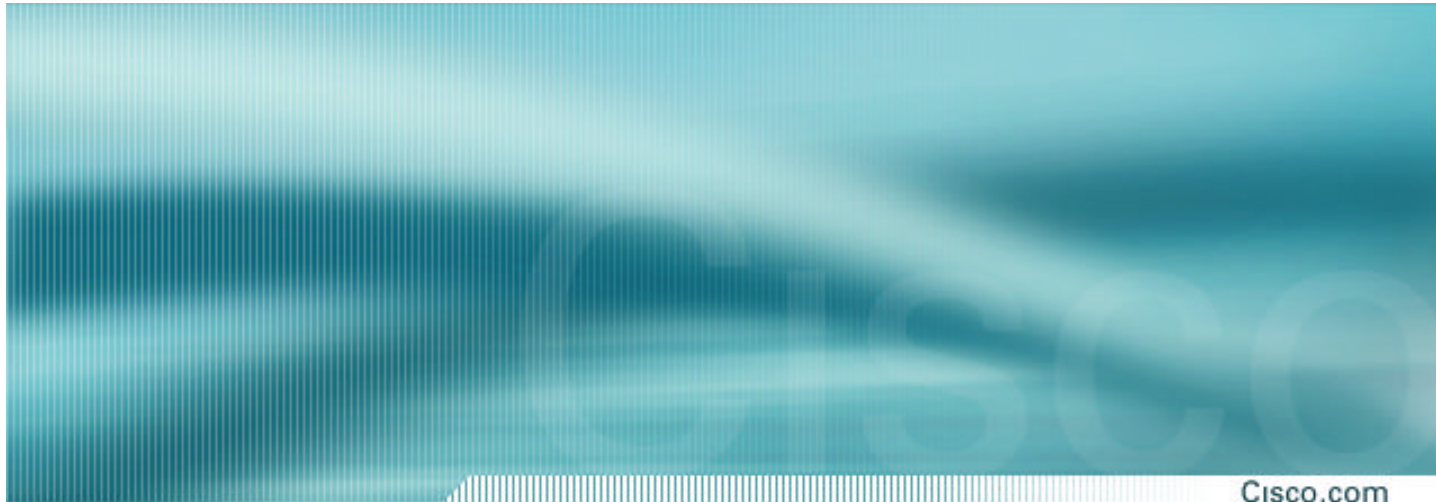- **Service Level Agreements (SLA) dictate level of services**

  Between Cable Operator and ISP

  Between Cable Operator and subscriber

  Between subscriber and ISP

- **Classes of services**

  Guaranteed vs. best-effort

Things to Consider

Billing

- **Flat rate**

- **Usage-based**

- **Tiered billing**

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Managed Access
Cisco Cable-Ready Solution
Strategy and Architecture

Cisco's Managed Access Objectives

Scale the HFC Network to New Dimensions

Help Cable Operator Increase Customer Satisfaction and Retention

Accelerate the Service-Enabled HFC Infrastructure

Improve Profitability via Automation and Operation Cost Reduction

Innovate IP+Cable Solution

Managed Access Cisco Cable-Ready Solution Reference Architecture

ISP-A

ISP-A Customer

Provider Edge Router

Internet

Cisco 7500

Cisco 7500

ISP-B Customer

Cable Operator as ISP

Cisco uBR7200 Series

Provider Core

HFC

Cable Operator Customer

Provider Edge Router

Cisco 7500

ISP-B

Cisco 7500

Cable Operator Customer

Cisco 7500

Customer Edge Router

Network Operation Center

Cisco's Managed Access Strategy

- **End-to-end IP+Cable solution:**

    Cisco uBR7200 Series, Cisco uBR900 Series, 72xx, GSR12xxx, Catalyst 6500

- **Automated provisioning process to**

    Reduce truck-roll

    Shorten time-to-service

    Ease IP address management

    Enable hands-off activation

    Improve customer satisfaction

    Increase customer retention

- **Leverage existing HFC infrastructure to deliver high profit services**

Benefits

Cable Operator

- **Support for multiple ISPs with various SLA**
- **Automatic user self-provisioning to reduce service activation cost**
- **Improve customer satisfaction and retention**

ISP

- **High-speed broadband connectivity to deliver bandwidth-intensive applications**
- **Opportunity to forge partnership with access provider**

Subscriber

- **Ability to select ISP of choice**
- **Broadband access advantages**

Solution Components

Deliver Carrier Class Networking Technologies

- **Cisco uBR7200 Series**

- **CPE Devices**

- **Catalyst 7500**

Solution Components

Simplify Network and Service Operations

- **Cisco Subscriber Registration Center**

- **Cisco Network Registrar**

- **Cisco Address Name Registrar**

- **Cisco VPN Solution Center**

- **Cisco Cable Manager**

- **Cisco Broadband Troubleshooter**

Cisco uBR7246VXR and Cisco uBR7223 CMTS Products

- **New product leadership**

    World-class head-end switch

    Full DOCSIS and EuroDOCSIS compliance

    RF Ruggedized chassis

    Modular rack mount package

- **Solid and proven foundation**

    Standard Cisco 7200 base

    Cisco IOS Software Foundation

    Broad LAN/WAN interface selection

- **Best-in-class support**

    Training, consulting, CCIE

    24x7x365 multilevel support
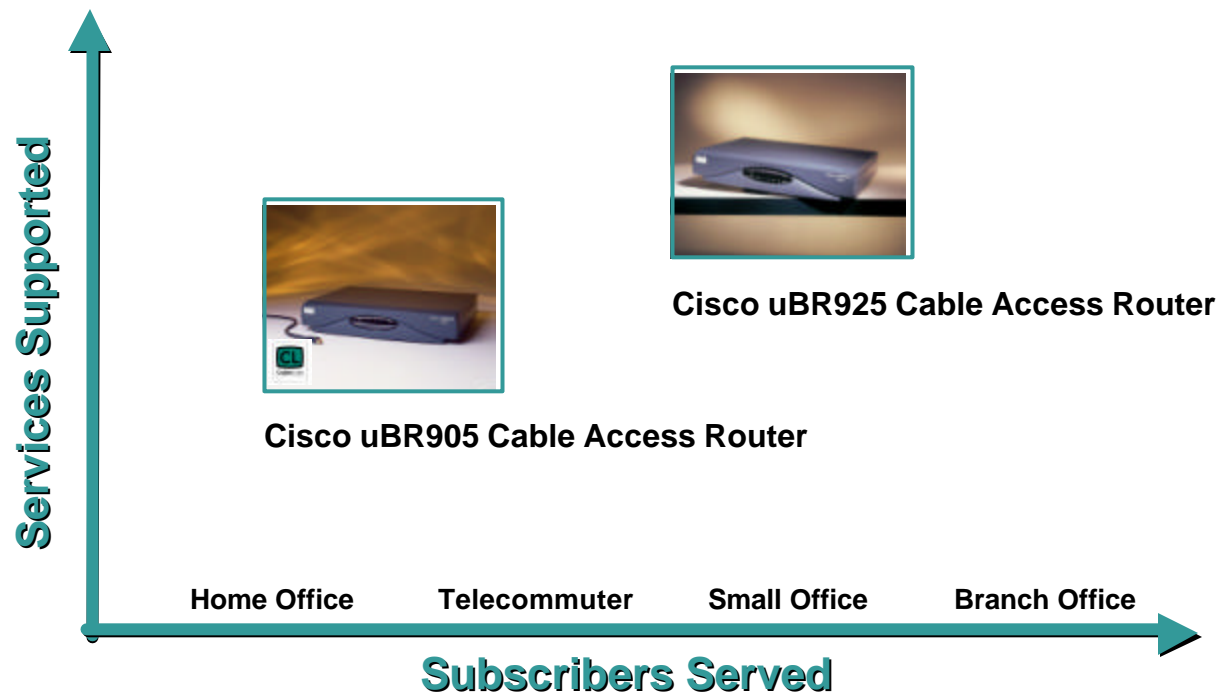

Cisco uBR7246VXR

Universal Broadband Router

Voice

Data

Video

CPE Products

Enabling Commercial Services

Services Supported ↑

Cisco uBR925 Cable Access Router

Cisco uBR905 Cable Access Router

Home Office   Telecommuter   Small Office   Branch Office

Subscribers Served →

CPE Devices
Cisco uBR925

- **Targeted at telecommuters, SMB, and small branch offices**

- **Integrated Cisco IOS router, cable modem, and 4-port hub, 2 voice ports, 1 RJ-11 port, and USB**

- **Supports delivery of value-added services (e.g. Voice, Firewall, VPN)**

- **Hardware-accelerated IPSec**

- **Battery backup for voice**

Cisco Catalyst 7500 Series

- Higher performance, higher throughput, higher availability

- Multimedia, multiprotocol, multiservice

- Best-in-class for

    Collapsed backbone

    WAN backbone

    WAN edge

    Data center connectivity

- Investment protection for large installed base

CSRC DPR 2.0

- **Builds intelligence on top of CNR to auto-provision devices with IP address and appropriate configuration file**

- **Enable subscriber self-registration and self-provisioning**

- **Support for tiered services**

- **Support for both pre-provisioning and self-provisioning**

- **Interact with third party applications through provisioning API**

Cisco Network Registrar

Intelligent Foundation for the Intelligent Network

- **Intelligent DHCP**

- **High-availability DHCP-DHCP Failover**

- **Intelligent DNS**

- **Interoperates with LDAP**

- **SNMP**

- **Import, export, reporting**

- **Windows 2000 "compliant"**

Address and Name Registrar

Advanced IP Address Management

- **Developed to meet requirements for MISP IP address management**

- **Gives network provider an ability to automate IP distribution and configuration management of network elements**

    Allow customers to tailor policies for the automatic distribution of IP addresses based on utilization triggers

    Cisco network elements can be updated to reflect these decisions

    The dynamic configuration of the CNR 5.0 server and CMTSs eliminates the manual and inefficient portion of IP Address management

- **Automates the monitoring and reporting of MISP address space**

VPN SC 2.0

Carrier-Class IP VPN Service Management Platform

- **Distributed Telnet Gateway Server (TGS) for provisioning network devices**

- **Improved auditing**

  Per customer or per VPN

- **High-availability solution for customer**

  Journaling of database and playback

- **CE staging within VPNSC**

- **Template manager**

  IPv4, QoS, and IOS firewall

- **Consolidated VPN appliance management**

  FW, encryption, and routing

Cisco Cable Manager

Advanced Management for Cisco Cable Devices

- Scalable to support high subscriber penetration

- Auto discovery and topology tree views that automatically display devices on the network and support physical and logical topology representations

- Component views

- Advanced alarm management that supports alarm filtering, clearing, and SNMP trap- forwarding capabilities

- User authentication and user-group partitioning

- Predefined and customizable reports in tabular and graphical formats that can be run on demand

Summary

- **Managed Access Cisco Cable-Ready Solution addresses end-to-end services from CPE to the IP core**

- **Automated service activation to shorten time-to-service and to reduce truck-roll**

- **IP address management to minimize the complexity of managing IP address blocks**

- **Full OSS strategy to respond to requirements for service fulfillment, assurance, and billing**

Resources

Cisco.com

- **www.cisco.com/cable**

- **Local Cisco sales representative**