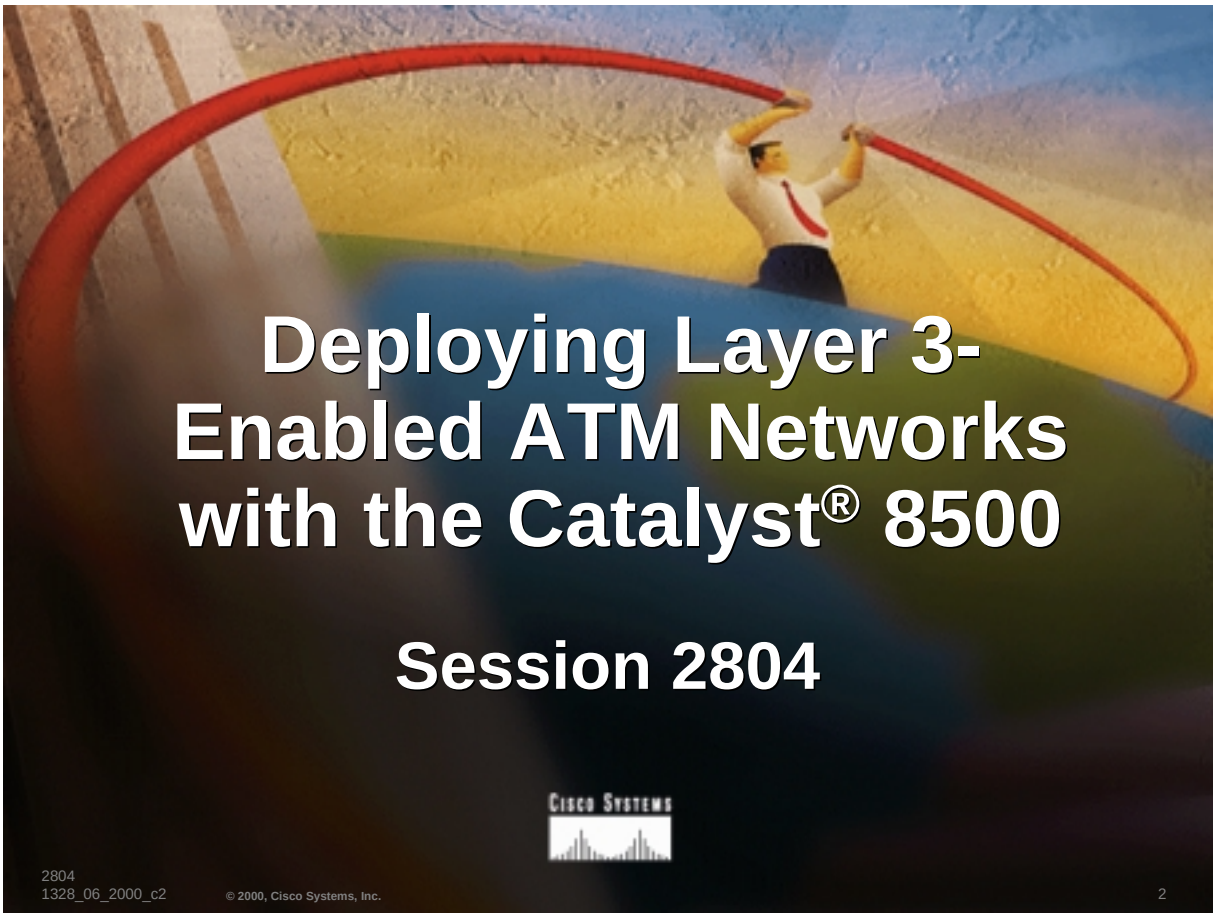


Agenda

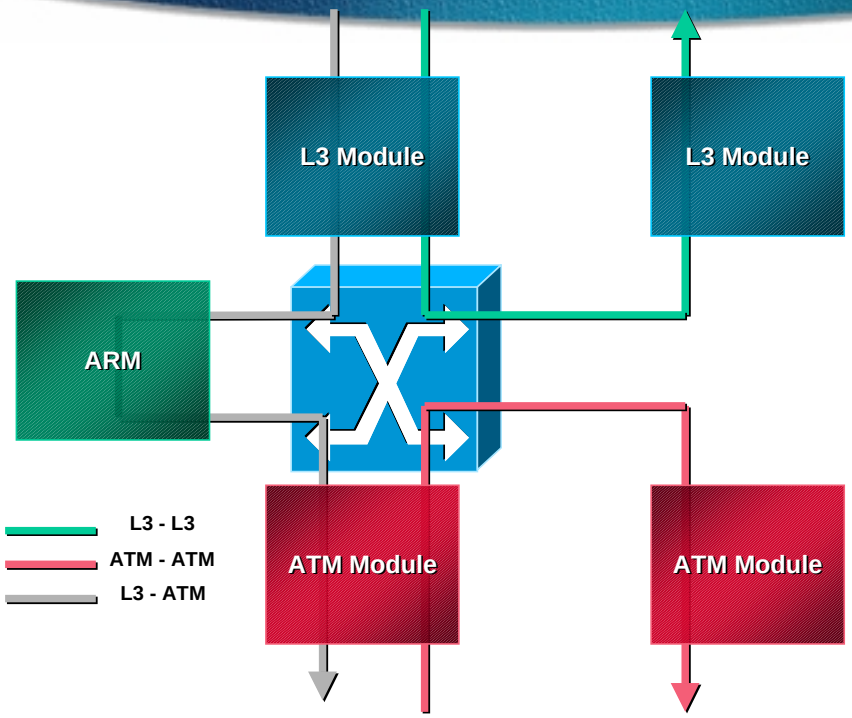
- L3e^{ATM} Overview
- ARM IP Switching
- ARM LANE
- L3e^{ATM} Deployment

Analyst Quote

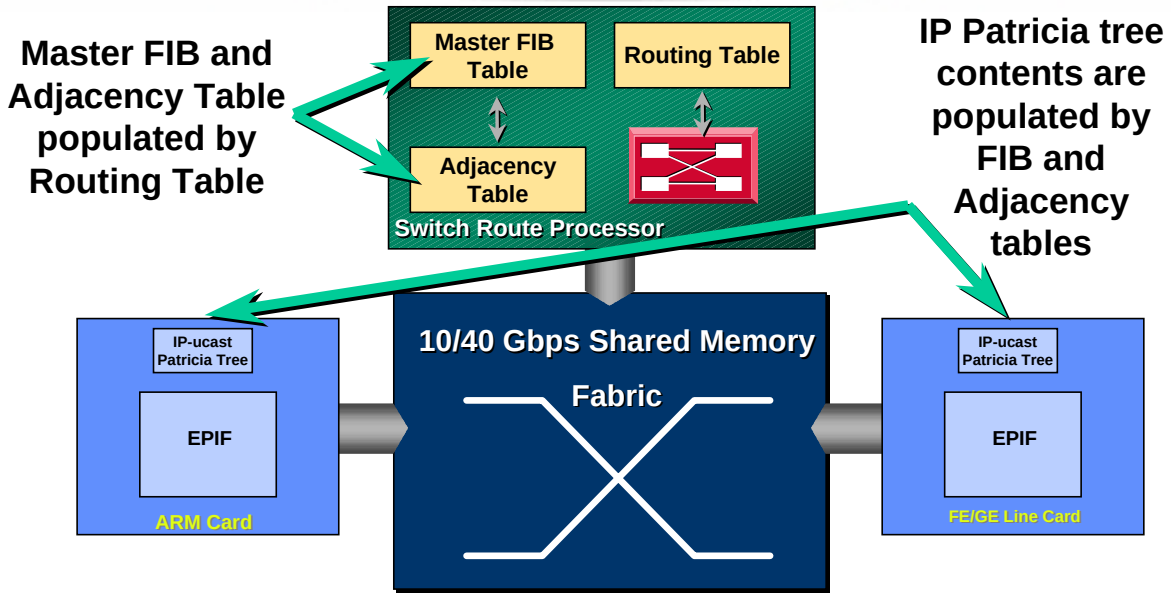
“ATM and TCP/IP will be the dominant backbone multiservice architectures over the next five years.”

Dataquest
September 1999

Catalyst 8500 Data Paths



Architecture



Software Overview

- Data forwarding path and control path are de-coupled
- FIB and CEF based forwarding
- Data forwarded directly by microcode
- Signaling handled by RP

ARM Features

- L3 IP forwarding
- L3 IPX forwarding
- L3 IP multicast forwarding
- Source/destination-based load sharing among equal-cost paths

ARM L2 Features

- Transparent bridging
- Spanning tree Protocol
- L2 learning/aging/ filtering by hardware
- IRB mode

Other Features

- ICMP support
- HSRP
- Interoperates with FEC/GEC
- Interoperates with ISL/Dot1q on Ethernet interfaces

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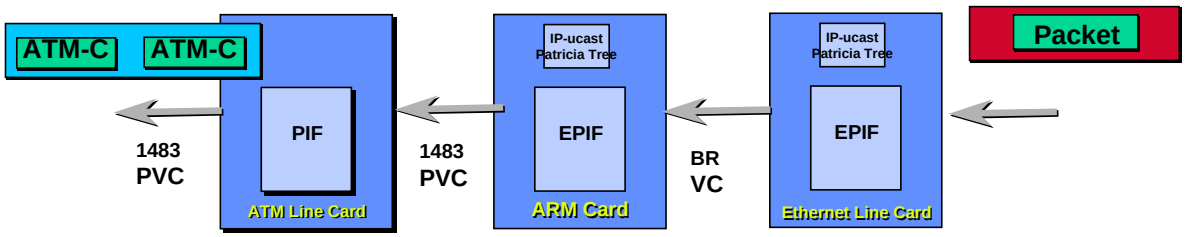
ARM IP Switching

- **Overview**
- **IP switching**

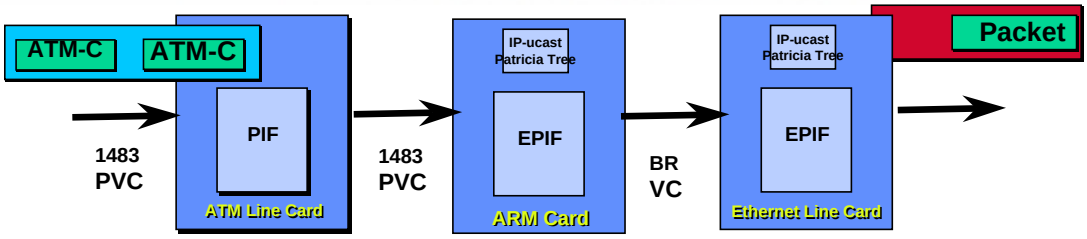
FE/GE -> ATM Switching



Ethernet to ATM Flow:

- Ethernet-controller sees ARM as another “Ethernet-like” interface, and forwards packets to it
- ARM-controller performs a lookup on the destination IP address, encapsulates the packet with RFC-1483 encapsulation and sends to the appropriate 1483-PVC
- Switch fabric switches the cells directly between ARM and ATM
- IP Precedence bit mapped to priority within switching fabric

ATM -> FE/GE Switching



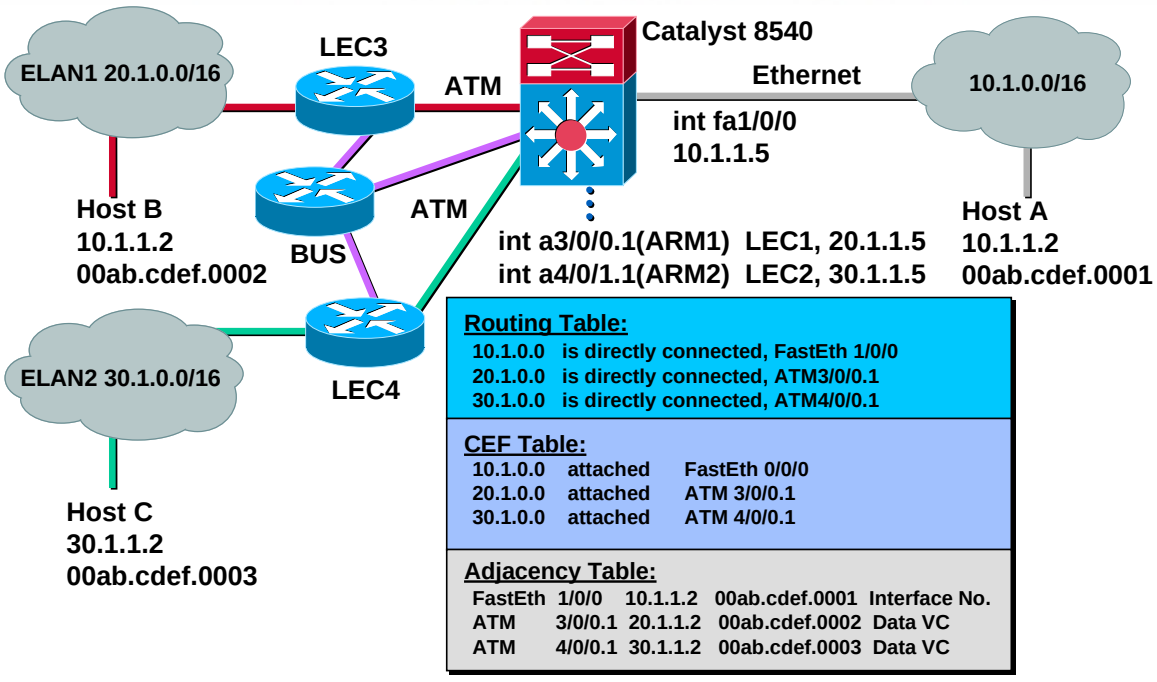
ATM to Ethernet Flow:

- ATM cells received from the ATM PVC are sent to ARM by switch fabric
- ARM-controller performs a lookup on the destination IP address, does MAC-Rewrite, updates TTL and sends the packet to destination interface using appropriate BRoute-VC
- Outgoing Ethernet-controller strips off the internal encap and sends the packet out

Overview

- Processor involved in populating routing table information
- Adjacency update is populated by ARP and by gleaning neighbors from route broadcast
- Prefix and adjacency information is populated on linecards by sending IPC messages so that RP and linecard information is always in sync

IP Switching



Agenda

- L3e^{ATM} Overview
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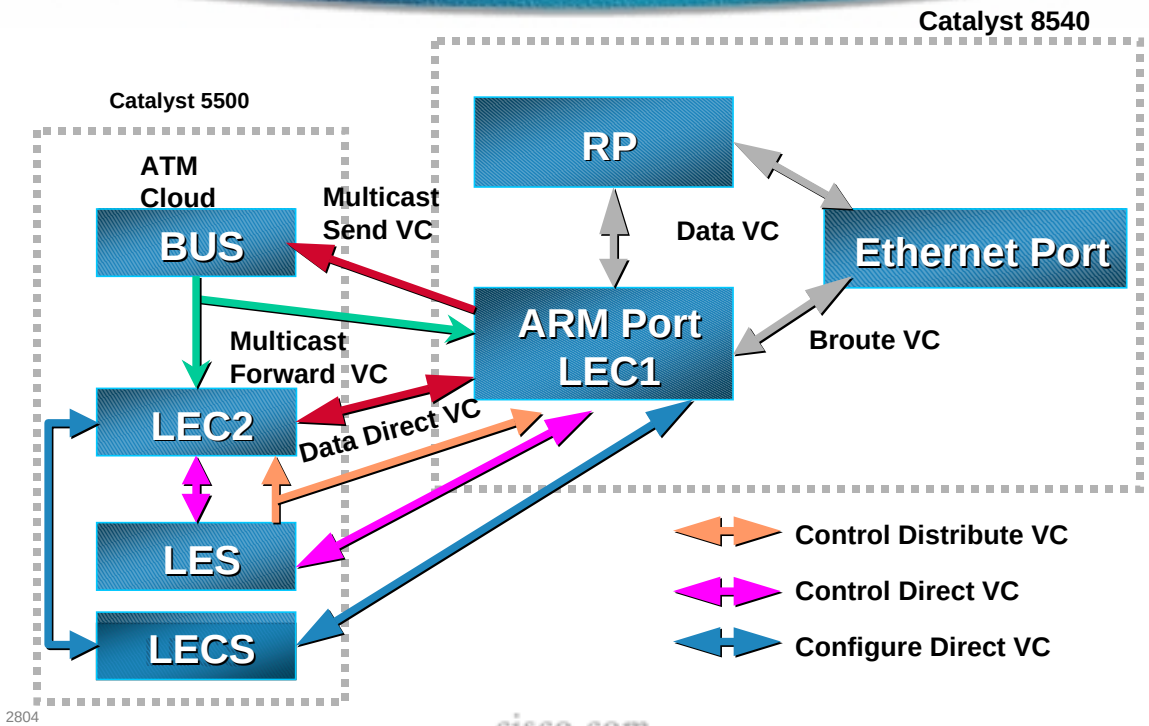
ARM LANE

- **Overview**
- **Commands**

Overview

- **ARM interface treated as internal ATM port**
- **Support LEC configuration on ARM (sub)interface (int atm x/y/z)**
- **No LECS/LES/BUS allowed on ARM. Allowed on CPU port (int atm 0), but NOT recommended (performance limited)**
- **Up to 64 LEC allowed per chassis**
- **Default ATM address prefix same as CPU port's**

Overview



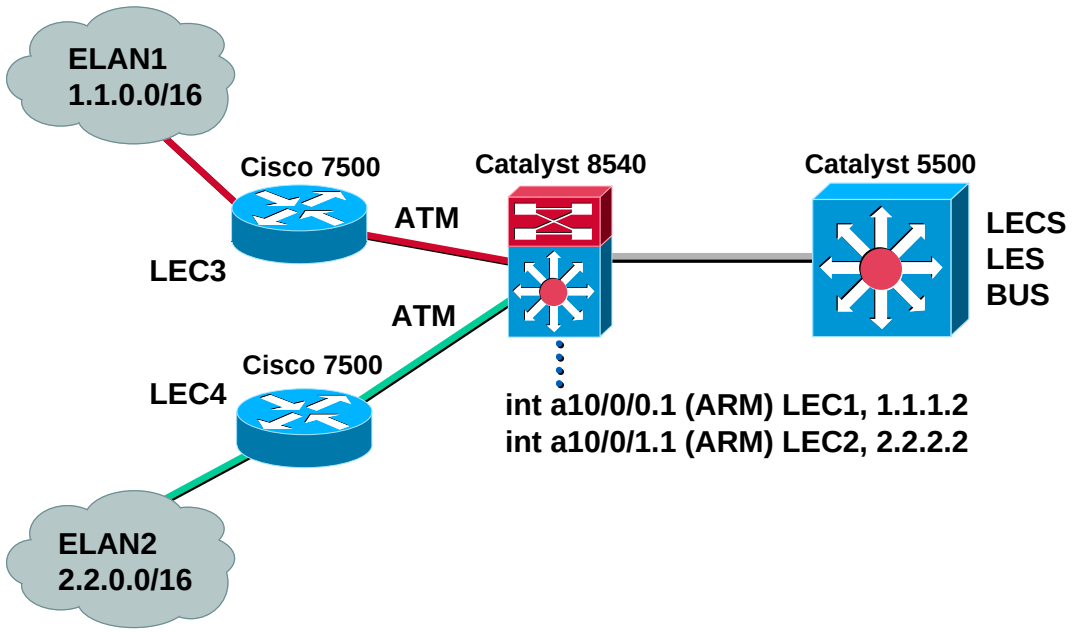
Overview

- All LANE VC terminated on ARM interface
- ATM signaling handled by RP. ARM redirects LANE control packets to RP.
- Shut/no shut allowed on ARM interface to bring up/down ELAN traffic
- All IP/IPX/bridge configuration commands allowed on ARM interface

LANE Commands Supported

- lane client ethernet <ELAN>
- lane client-atm-address <LEC ATM Addr>
- lane config-atm-address <LECS ATM Addr>
- lane auto-config-atm-address
- lane server-atm-address <LES ATM Addr>
- lane le-arp <MAC addr> <ATM addr>

Configure LANE



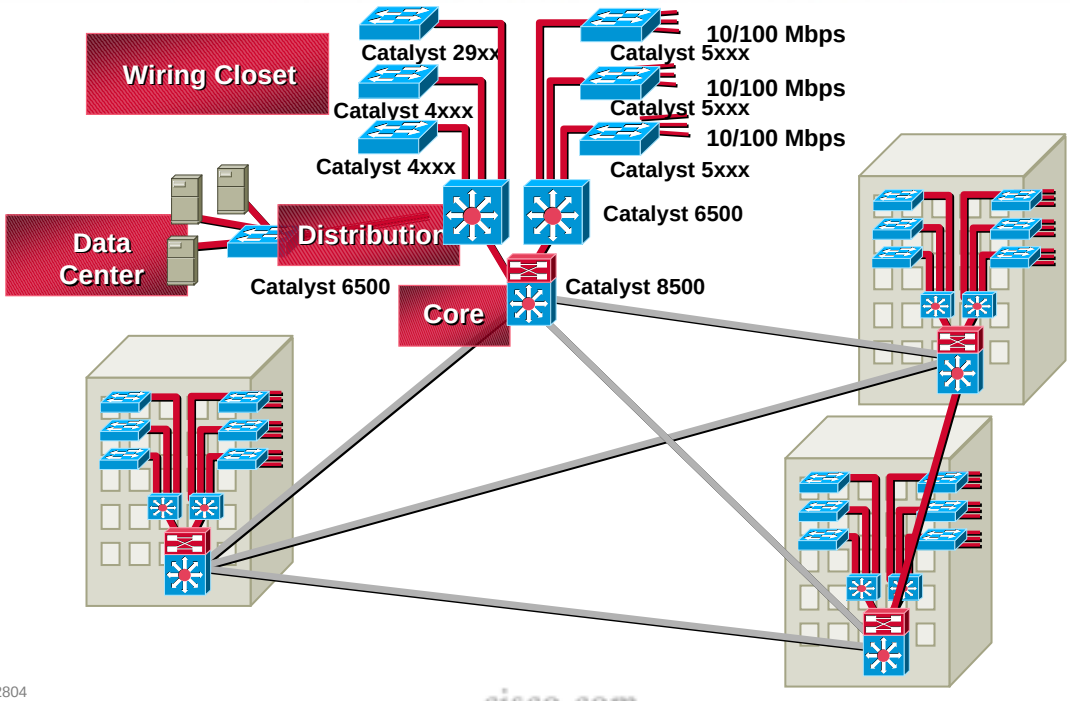
Configure LANE

```
Switch#config term
Switch(config)#int a10/0/0.1 multipoint
Switch(config-if)#lane config-atm-address 47.009181000000009021517801.00500F7FCC13.00
Switch(config-if)#lane client ethernet elan1
Switch(config-if)#ip address 1.1.1.2 255.255.0.0
Switch(config)#int a10/0/1.1 multipoint
Switch(config-if)#lane auto-config-address
Switch(config-if)#lane client ethernet elan2
Switch(config-if)#ip address 2.2.2.2 255.255.0.0
Switch(config-if)#end
```

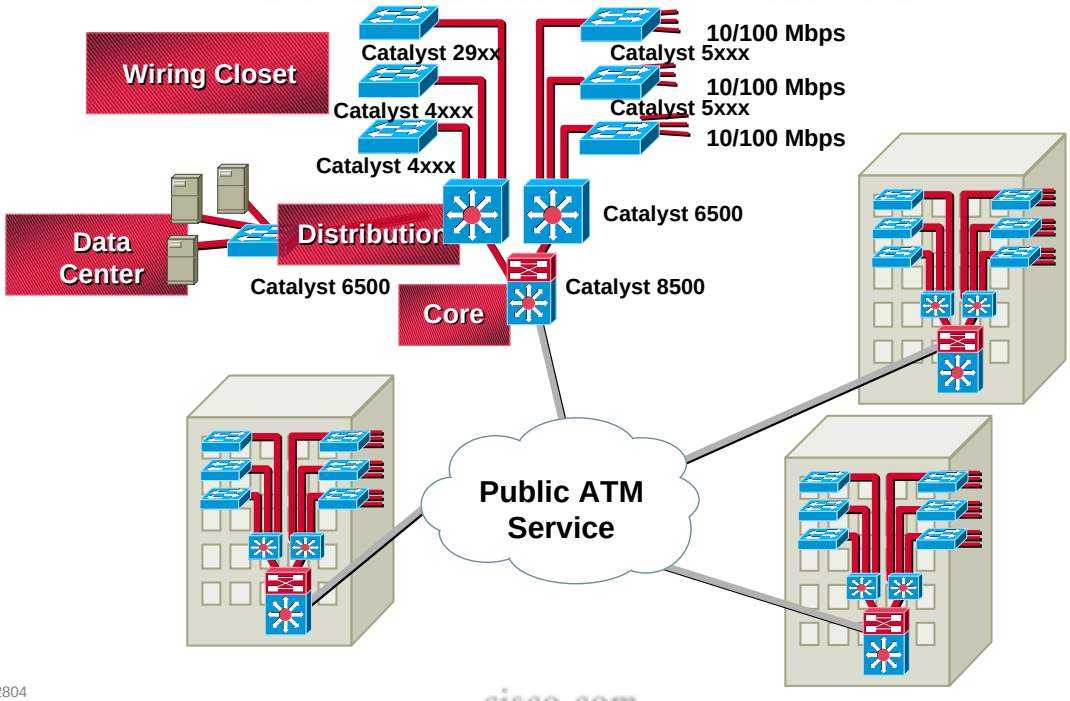

Agenda

- L3e^{ATM} Overview
- ARM IP Routing
- ARM LANE
- L3e^{ATM} Deployment

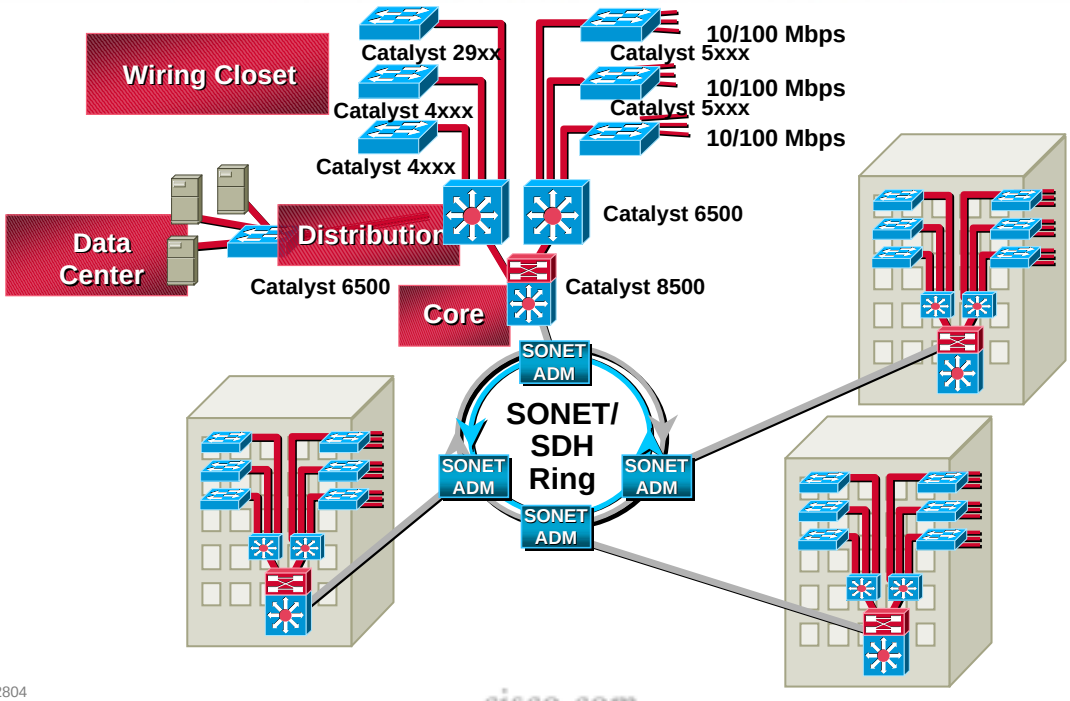
High-Speed Enterprise Campus



WAN Network over Public ATM

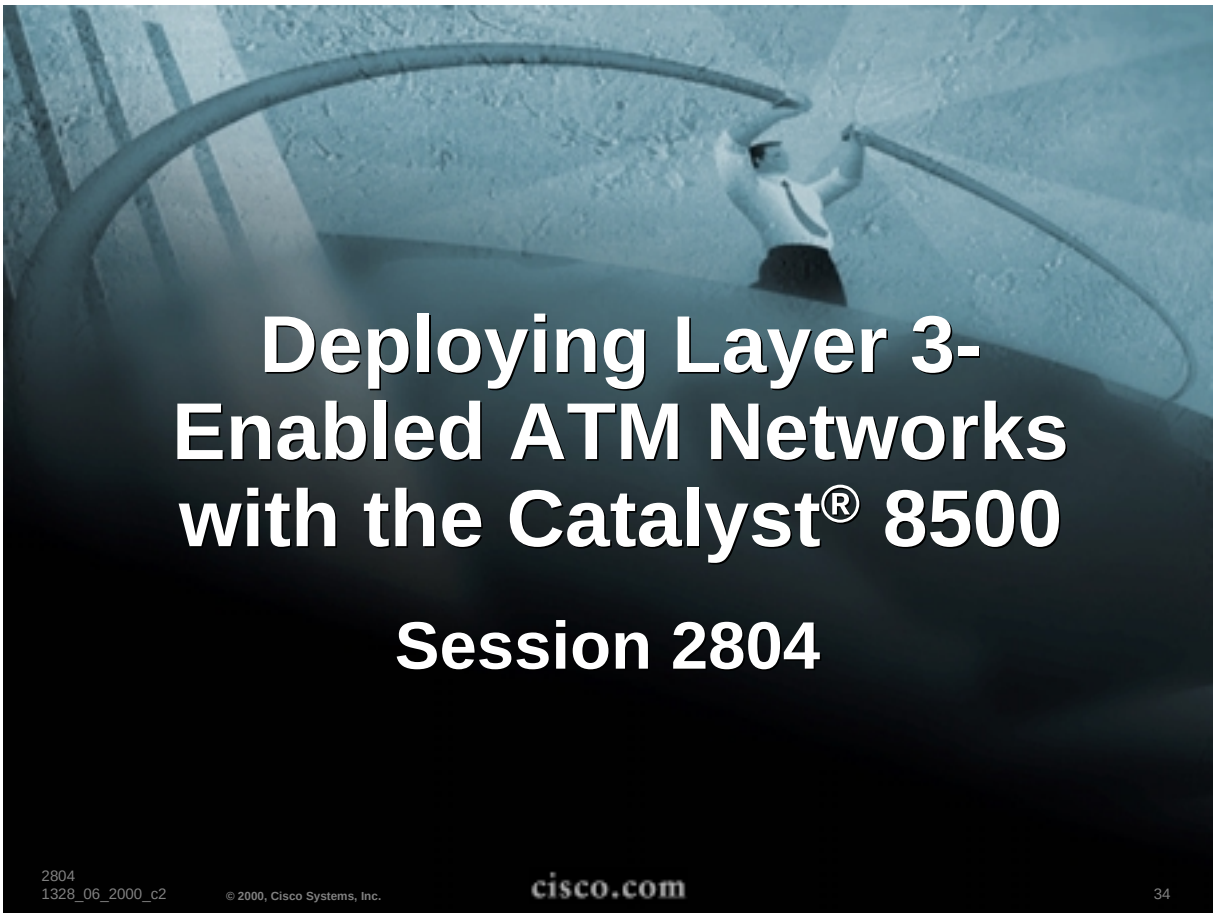


MAN Network over SONET



Conclusions

- L3e^{ATM} offers excellent value proposition to both Enterprise and SP
- The L3e^{ATM} market is growing rapidly
- Help your customers take advantage of the convergence of L3 and ATM



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