



R20

Cisco Systems Intelligent Gigabit Ethernet Switch Module for the IBM eServer BladeCenter

Securing the Data Center with Cisco Switching

August 2004

Cisco / IBM

Do Not Forward, Do Not Copy

Agenda:

Cisco in the Data Center

Cisco Systems IGESM Overview

Intelligent Services Features

Summary

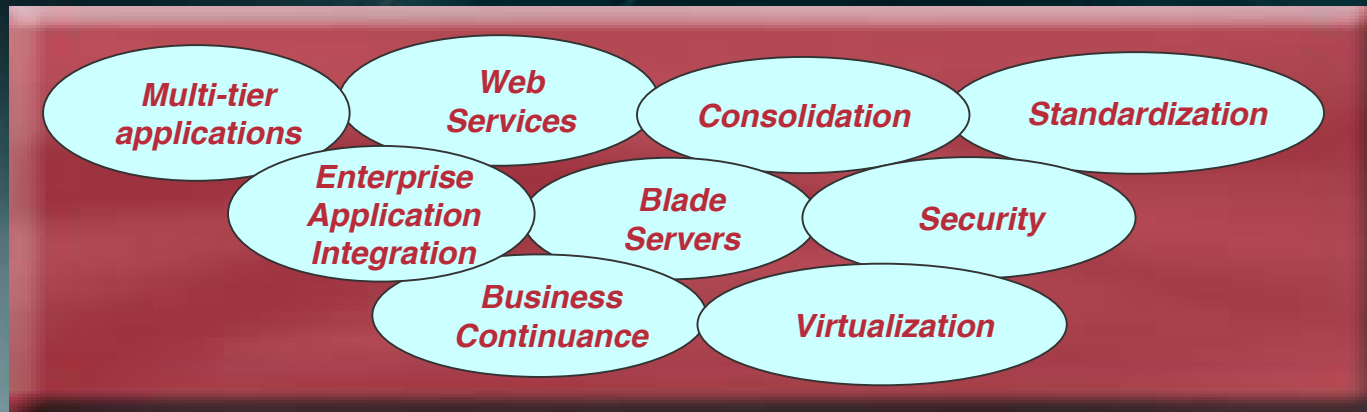
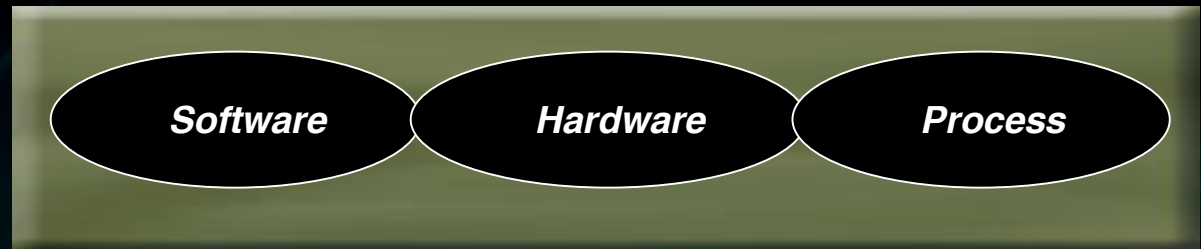


Data Center Trends...

Based on Technology Enhancements and Industry Requirements

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Efficiencies are gained through Technology Enhancements based on Industry Requirements

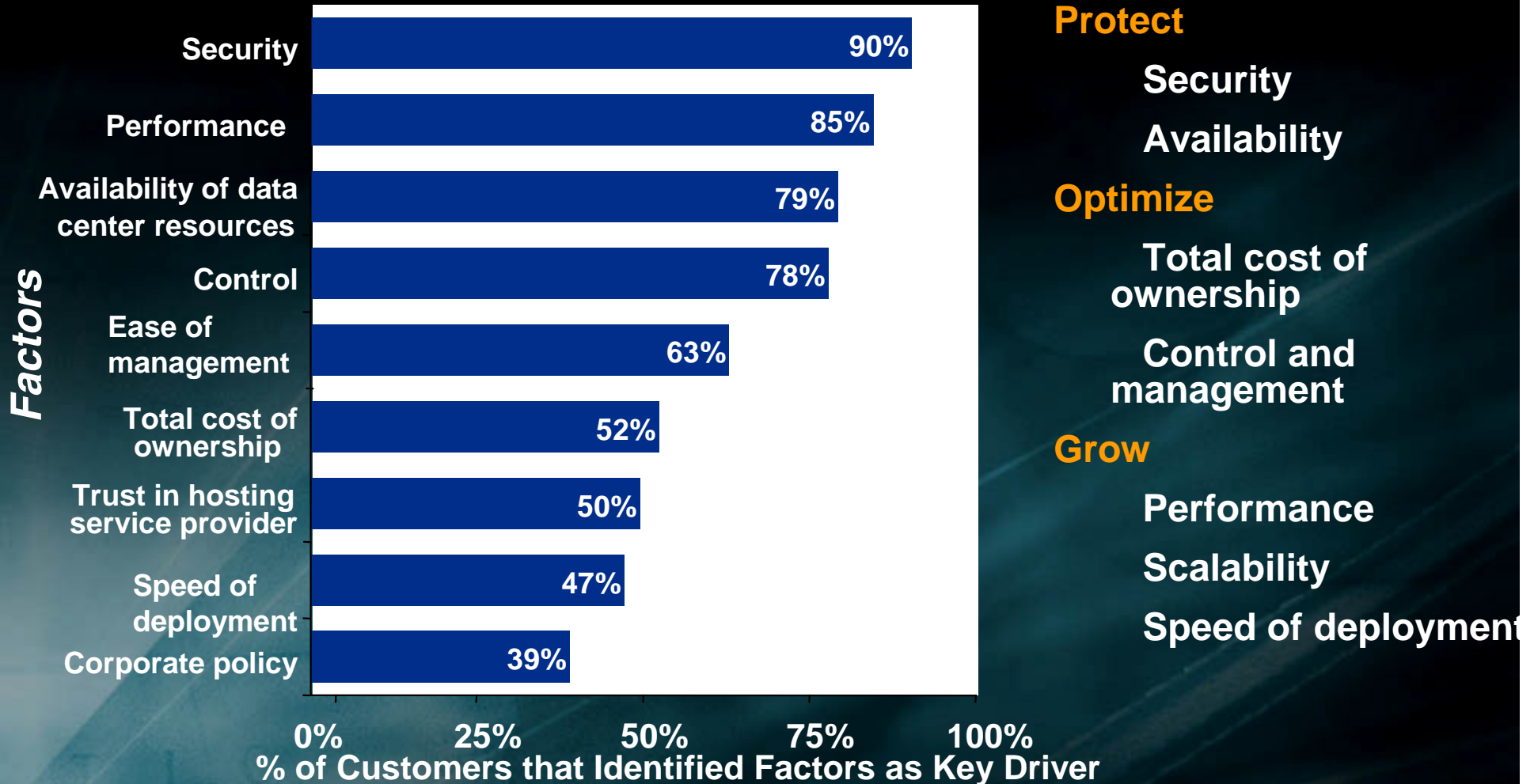


Adoption of technology trends based on business drivers

Key Data Center Concerns

Feedback from Enterprise Customers

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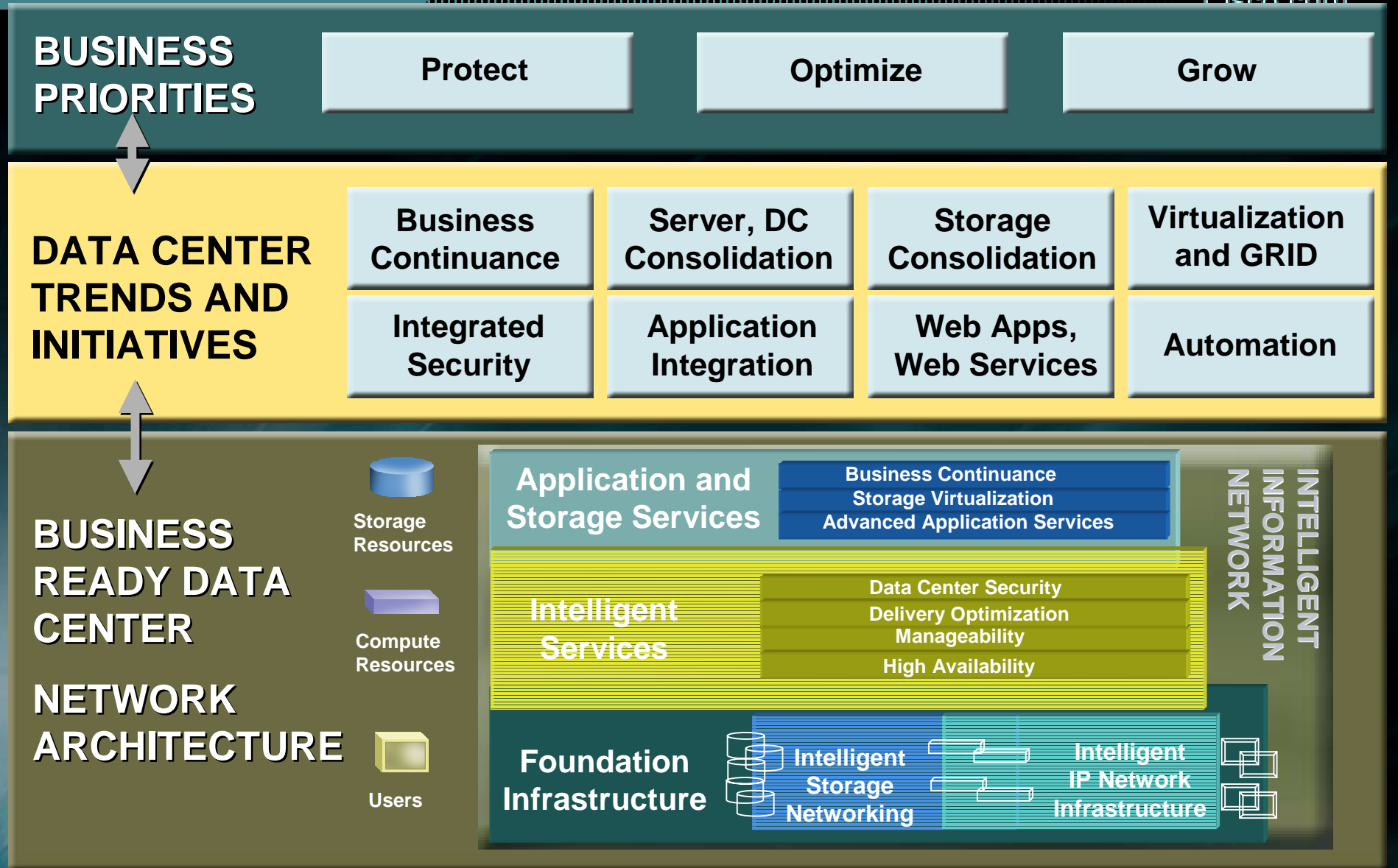


Source: Infonetics 2003 Data Center Survey

Business Ready Data Center

Supporting Business Priorities

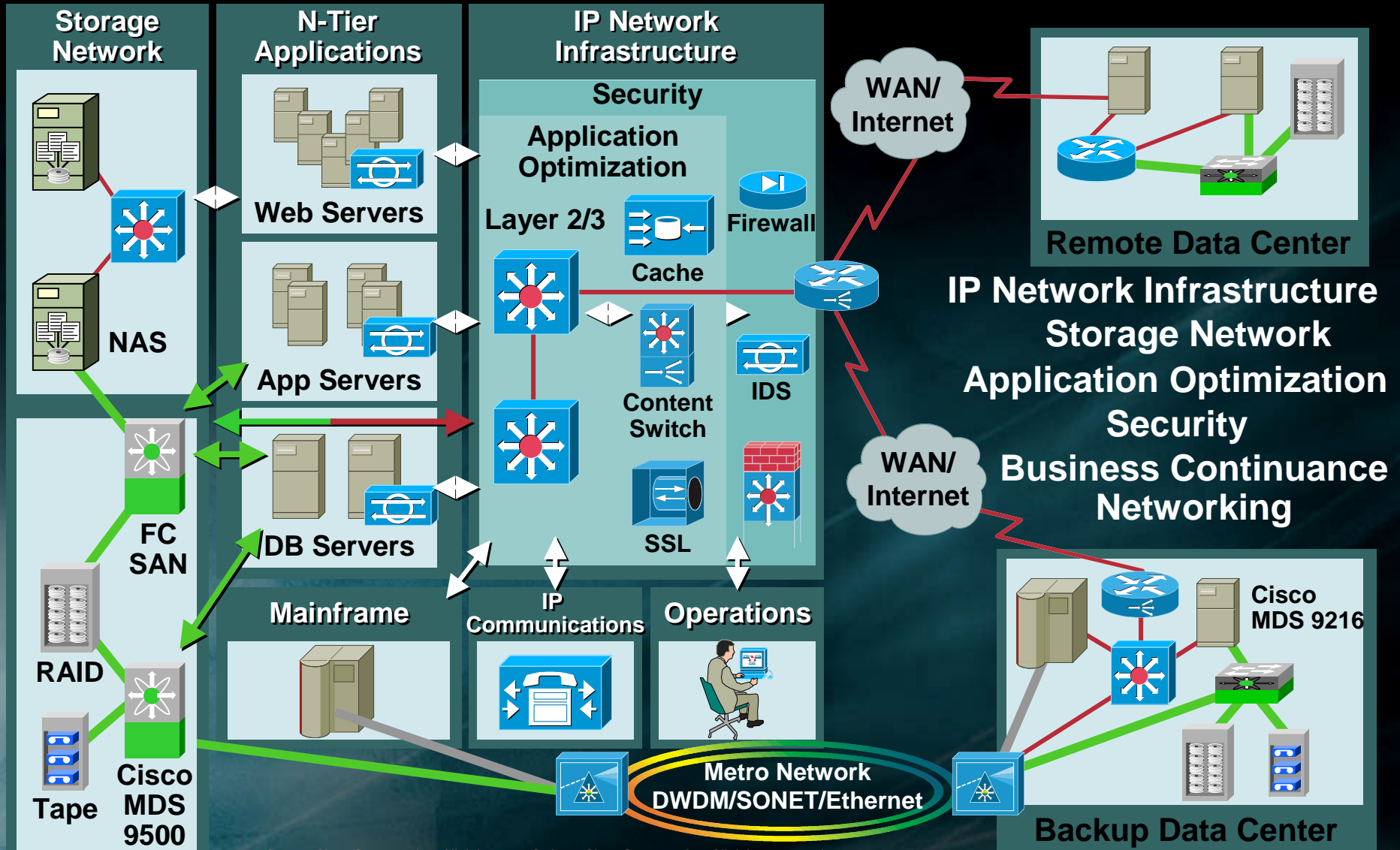
Cisco.com



Cisco Business Ready Data Center

Adaptive and Comprehensive Architecture

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IBM is Cisco's Largest Alliance Partner

Strong Partnership



Synergy

Network Solutions
and Technology

Global Services,
Hardware, Software,
and Technology

e-business Infrastructure

Storage
Networking

Optical
Networking

Security

IP Telephony

Wireless

Content Delivery

Intelligent Networking

- Relationship spans multiple areas

Cisco's largest channel partner Cisco Learning Solutions

IBM Microelectronics – ICs/ASICs IT Spending – Bi-directionally

- Cisco Certification (Gold/Silver/Premier) in 58 countries ...

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Cisco & IBM Data Center Announcement - Apr 29th

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- IBM and Cisco are announcing the next phase of our relationship, in support of the newly announced ...

Cisco Business Ready Data Center which has been ***optimized with IBM for the on demand operating environment***

- ***Co-Branded IBM and Cisco Product***



- **Specifically we have announced:**

IGESM for eServer BladeCenter from IBM

A new multi-faceted relationship

Multiphase testing Agreement

Multiphase marketing agreement

Industry solutions for the Data Center environment

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Cisco Systems Intelligent Gigabit Ethernet Switch Module for IBM eServer BladeCenter

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Cisco Systems IGESM



- Developed and manufactured by Cisco for IBM
- Built for IBM eServer BladeCenter
- Available from IBM only
- 4 External Gigabit Ethernet Copper ports for uplink, 14 internal GE ports for blade-based servers
- Cisco IOS Software
- Comprehensive Management
- IGESM GA by IBM on Jun 11th '04

Blade servers: BladeCenter



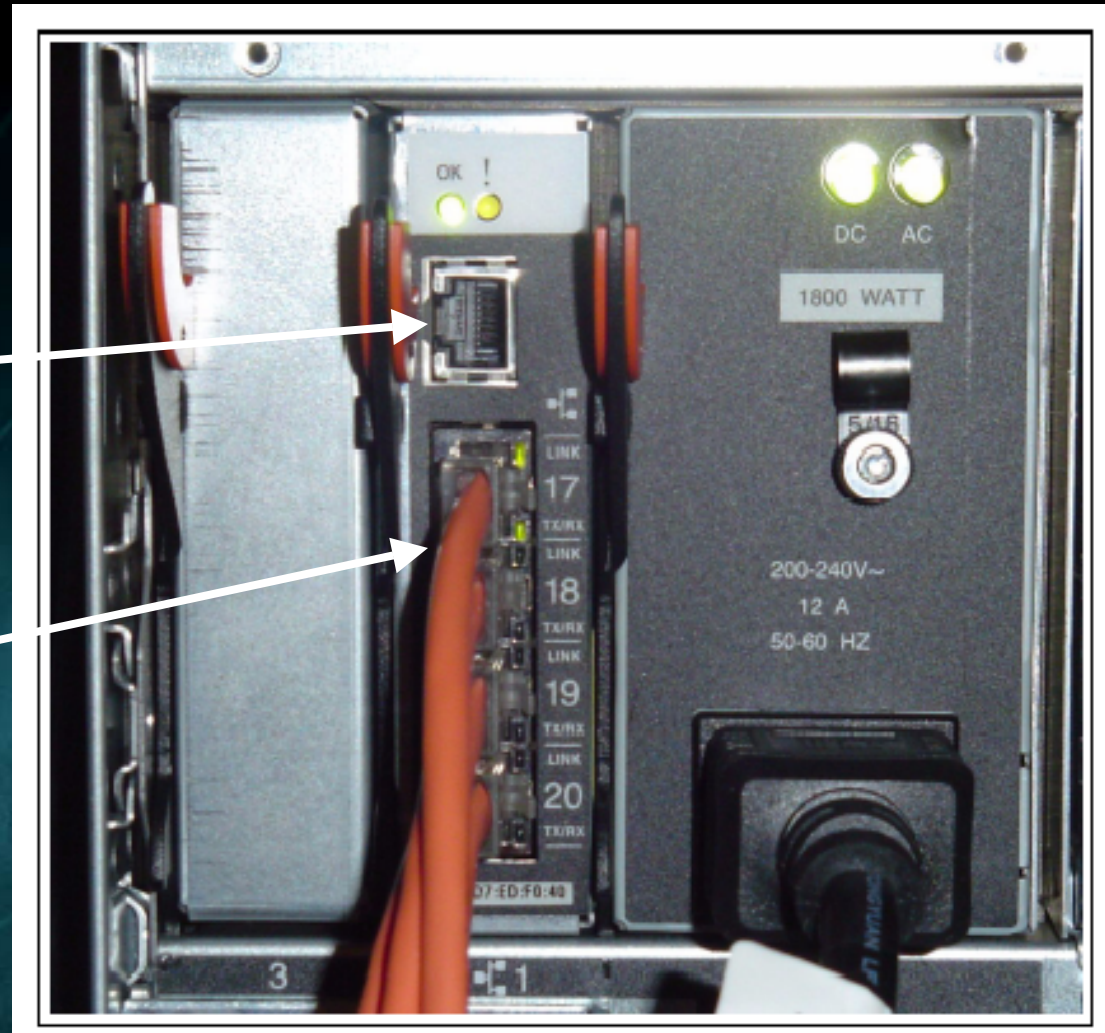
IBM server BladeCenter

Chassis View (Rear)

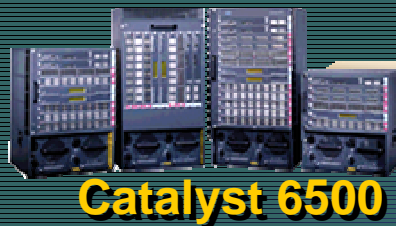
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Serial Port
(cap plate removed)

Copper Data Ports
10/100/1000 Mbps



Cisco Catalyst Switching – IGESM a component of Industry Leading Datacenter Portfolio

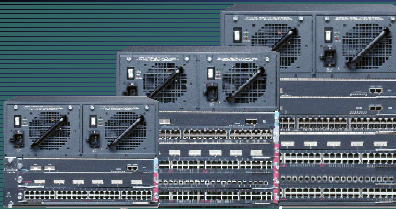


Catalyst 6500

Industry Leading Modular Chassis

**Datacenter Access/Core and
Services**

- Flexible deployment & performance options
- Highest availability & 10/100/1000 + GbE densities
- Integrated IP services modules e.g. GSM, FW, IDS, VPN, NAM,
- Wire-speed 10GbE aggregation



Catalyst 4500

Mid-Range Modular Chassis

Medium Datacenter Access/Core

- Resilient Layer 3 switching with intelligent layer 3/4 services
- High Density 10/100/1000
- Media configuration flexibility with WAN connectivity options
- Software-based firewall and intrusion detection



Catalyst 3750

Advanced L2/3 Stackable

Small Datacenter Access

- Layer 3 switching with intelligent layer 3/4 services
- Resilient Stacking Options
- Medium density 10/100/1000



Catalyst 2970

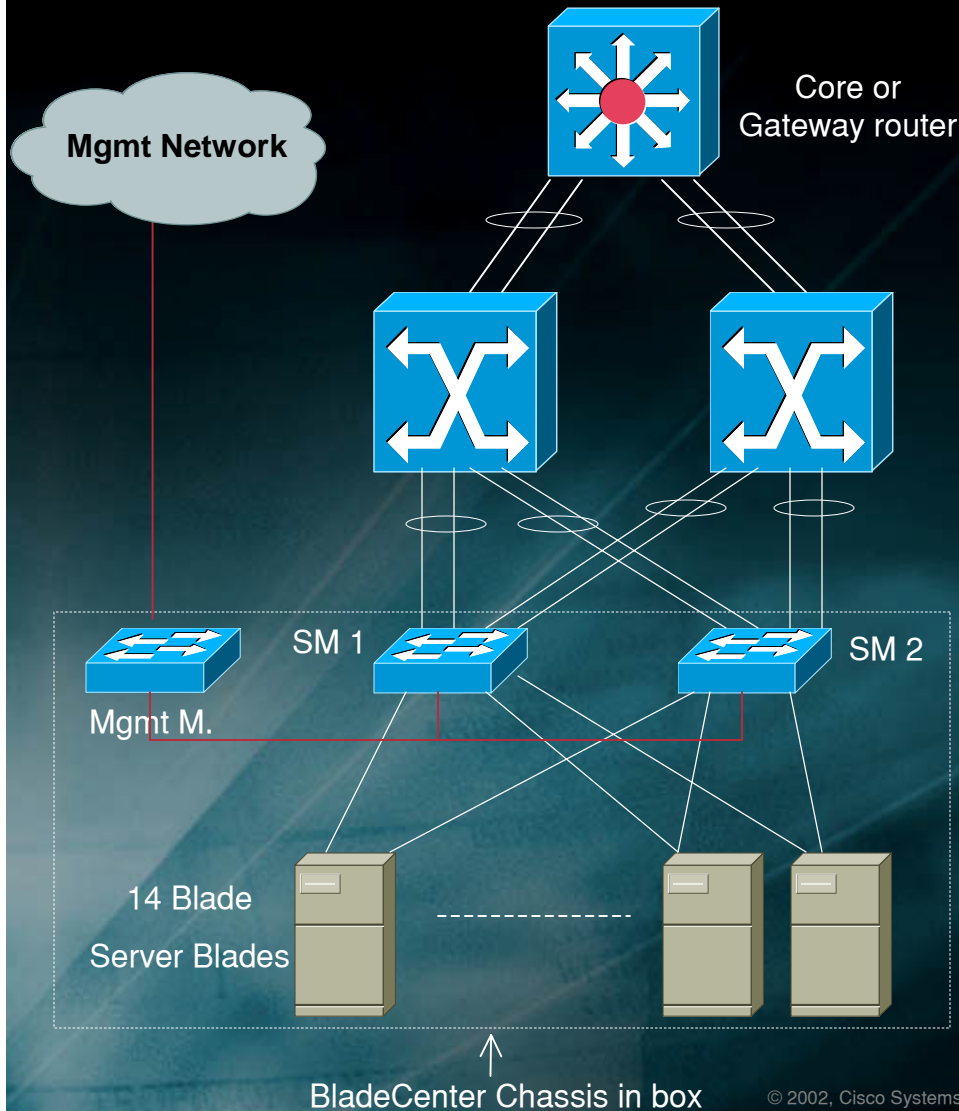
Entry Level Fixed

Small Datacenter Access

- Layer 2 switching with intelligent layer 3/4 services
- 10/100/1000 + GbE
- Advanced cluster management

Cisco End to End Value Proposition

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Data Center Core

- Cisco Catalyst 6500 Switch Core or
- Cisco Catalyst 7600 Router Gateway
- Layer 4-7 Service Modules (FWSM, SSL, VPN)
- Load Balancing (EWLM)
- Network Analysis (NAM-1 & NAM-2)
- Intrusion Detection (IDS Module)

Standard BladeCenter Redundancy Deployment

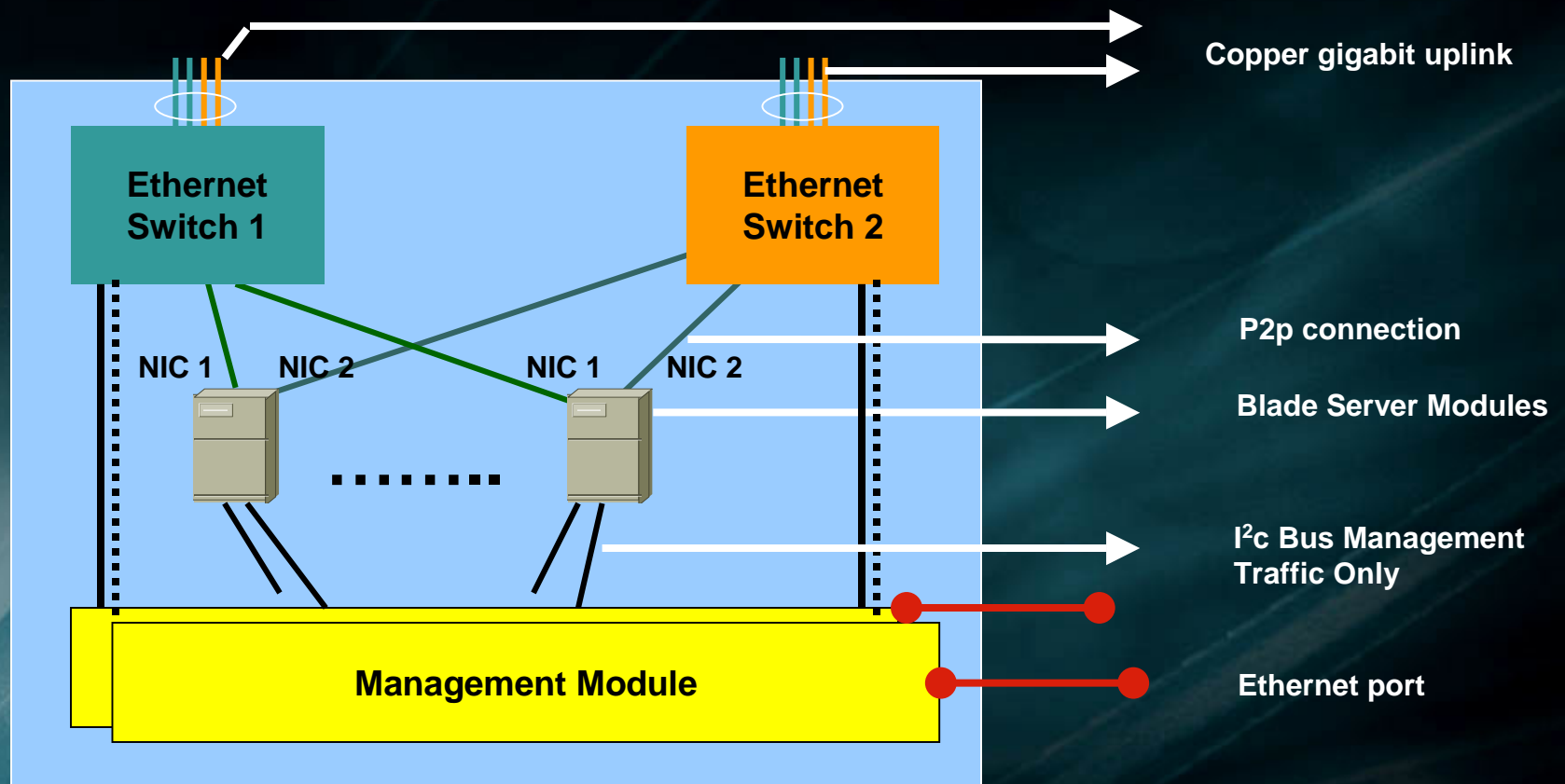
- 2 L2+ Switch Modules in the chassis
- 2 upstream Switches aggregating the BladeCenter systems
- 2-wire channels to alternate switches
- A core router at the top
- Separate mgmt network

BladeCenter Chassis in box

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Blade Chassis With Ethernet Modules

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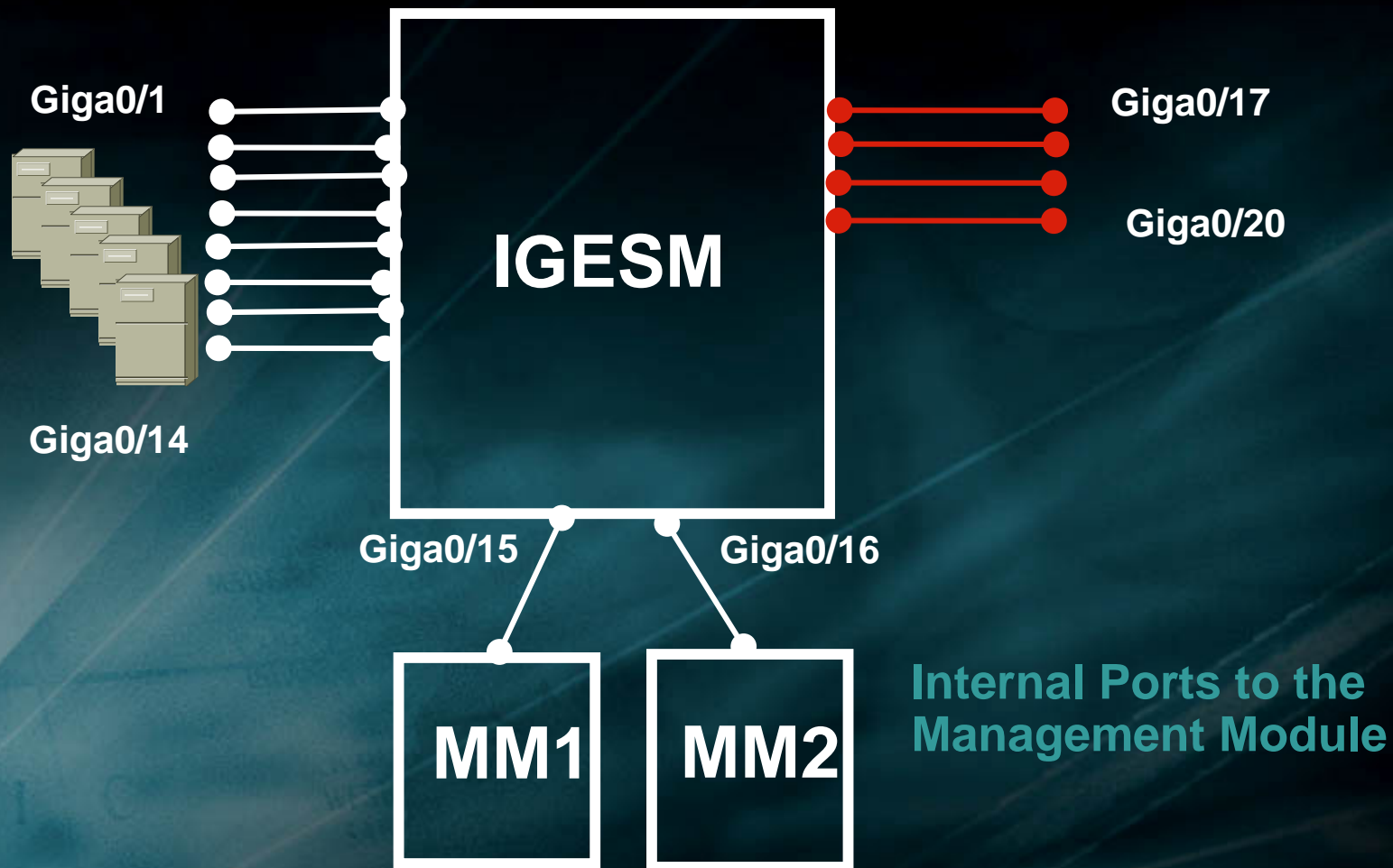


Port assignment

Cisco.com

Internal ports to the blades

External Ethernet Ports



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Benefits of Extending Cisco's Intelligent Switching Infrastructure for Blade Server Environments

**Availability/
Resiliency**

Maximize Network uptime and bandwidth availability: the network is always on, always available

**Integrated
Security**

Pervasive security integrated into infrastructure to provide access control, threat mitigation and prevention. Further enhanced through optional modules and services.

**Delivery
Optimization**

Optimization of application delivery and ability to map delivery to meet business requirements and policies: including traffic management/ prioritization

**Enhanced
Manageability**

The network is easy to manage and administer: has inherent capabilities that enable simplicity, policy management & troubleshooting

Software Differentiation with Cisco IOS®

Availability / Resiliency

- Advanced STP Protocols for faster Spanning tree Convergence (Rapid PVST, PVST+, Uplink Fast, Root Guard, Port Fast, STP Backbone Fast)
- 802.1d
- 802.1s/w
- 802.3ad and LACP
- VTP
- 802.1q VLAN Trunking
- Broadcast control / Storm control

Optimized Delivery

- IGMP Snooping (Multicast)
- IGMP Filtering (Multicast)
- L2-L4 QoS with CoS/DSCP
- Shaped Round Robin
- Strict Priority Queuein
- Rate Limiting
- Dynamic VLANs

Integrated Security

- SSH
- SNMPv3 (Crypto)
- ACPs based on Layer 2-4
- Port Security w/aging
- ACLs based on DSCP filtering
- Unicast MAC filtering
- Private VLAN Edge
- MAC Address Notification
- RADIUS / TACACS+
- Spanning Tree Root Guard
- Trusted Boundary
- Aggressive UDLD
- 802.1x authentication

Enhanced Manageability

- Cisco IOS CLI
- Console Port (IBM Service Port)
- Embedded CMS
- SNMP MIBs for Enterprise Management Systems
- Port Mirroring (SPAN, RSPAN)
- Cisco Discovery Protocol (CDP)
- Network Time Protocol (NTP)
- Show interface capabilities
- Extensive Debugging and Trouble Shooting Capabilities
- CiscoWorks support

Cisco Security Strategy Evolution

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Integrated Security: Building The Self-Defending Network

Self-Defending Networks

Basic Security

- Basic router security
- Command line interface

1990s

Point Products

- Security appliances
- Enhanced router security
- Separate management software

2000

Integrated Security

- Integrated security Routers Switches Appliances Endpoints
- FW + VPN + IDS
- Anomaly detection
- Integrated management software
- Evolving advanced services

Today

Industry Collaboration

- Network Admission Control Program
- Cisco Trust Agent
- Anti-virus and CSA policies checked by network
- Growing list of select partners

Through 2004

- End to End Protection
- Application oriented (per port basis)
- Security aware elements
- Self-protecting
- Advanced services

Future

IGESM Access Control Lists

Cisco.com

What It Does:

Allows or denies access based on the source or destination address.

Restricts users to designated areas of the network, blocking unauthorized access to all other applications and information.

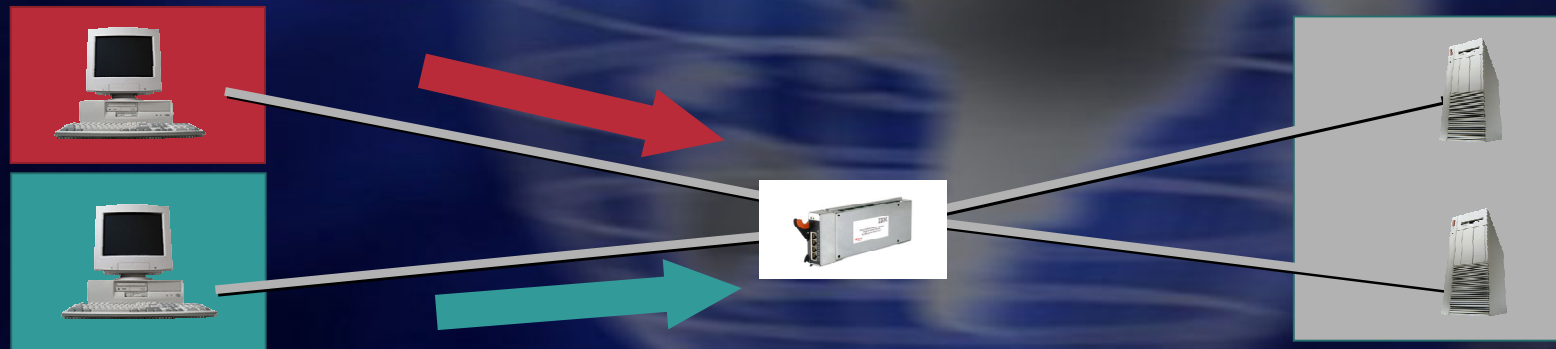
Benefits:

Prevents unauthorized access to servers and applications.

Allows designated users to access specified servers.

Port-based ACL:

Provides granular control at Layer 3 or 4 for limited access by the Layer 2 access port of the device.

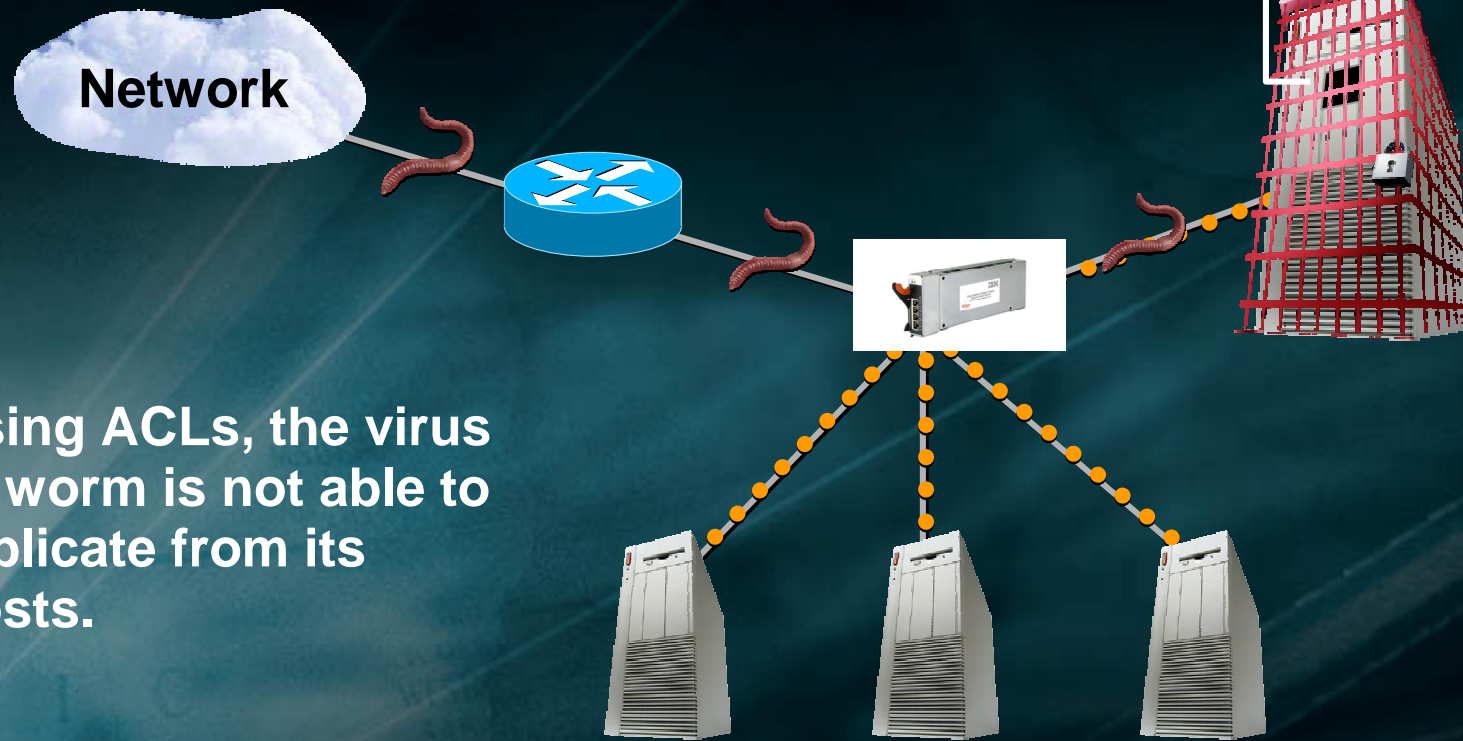


Protecting against Worms

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How It Works:

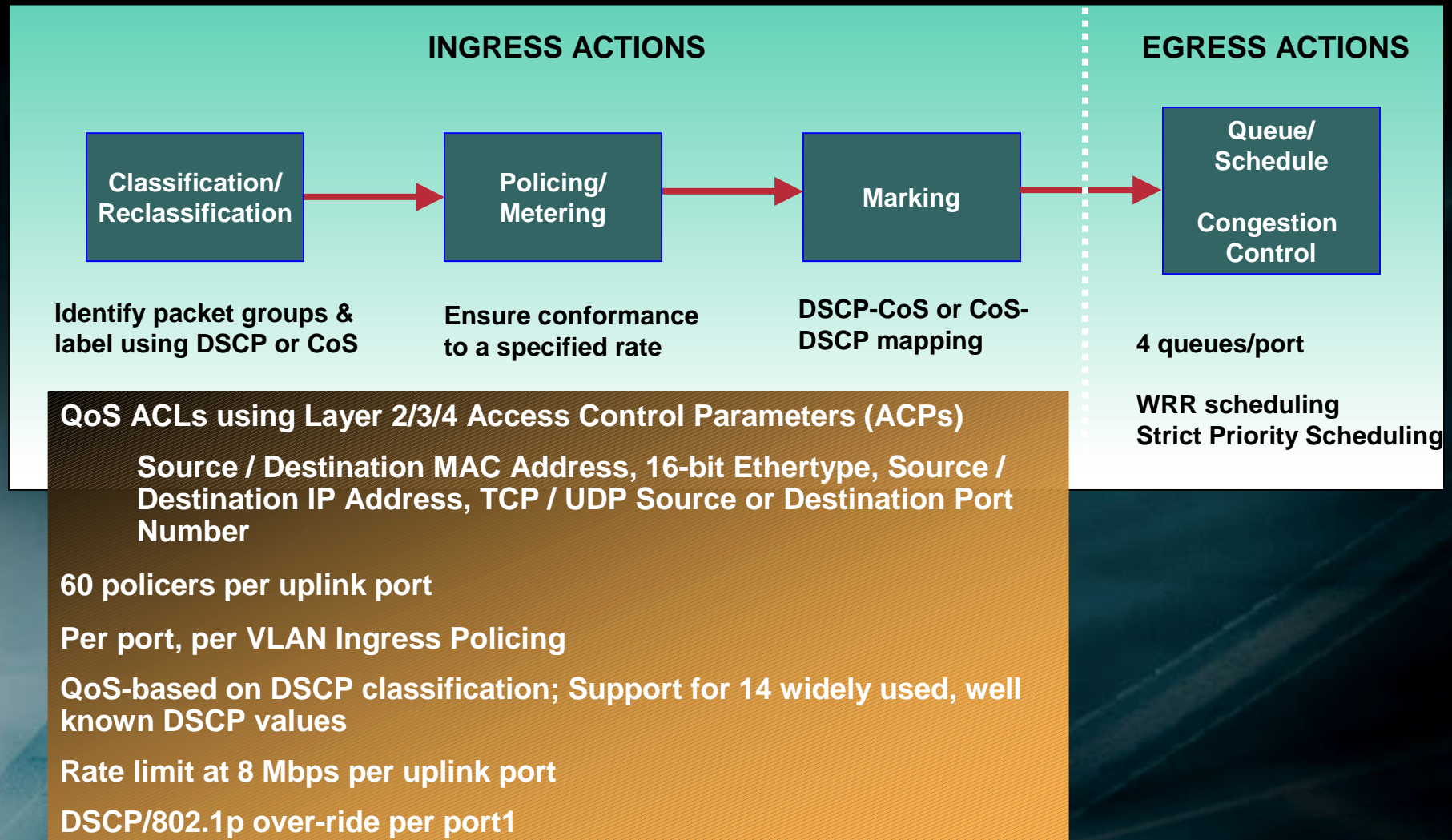
The ACL provide a mechanism to protect servers, users and applications against worms by determining what traffic streams or users can access what ports.



Using ACLs, the virus or worm is not able to replicate from its hosts.

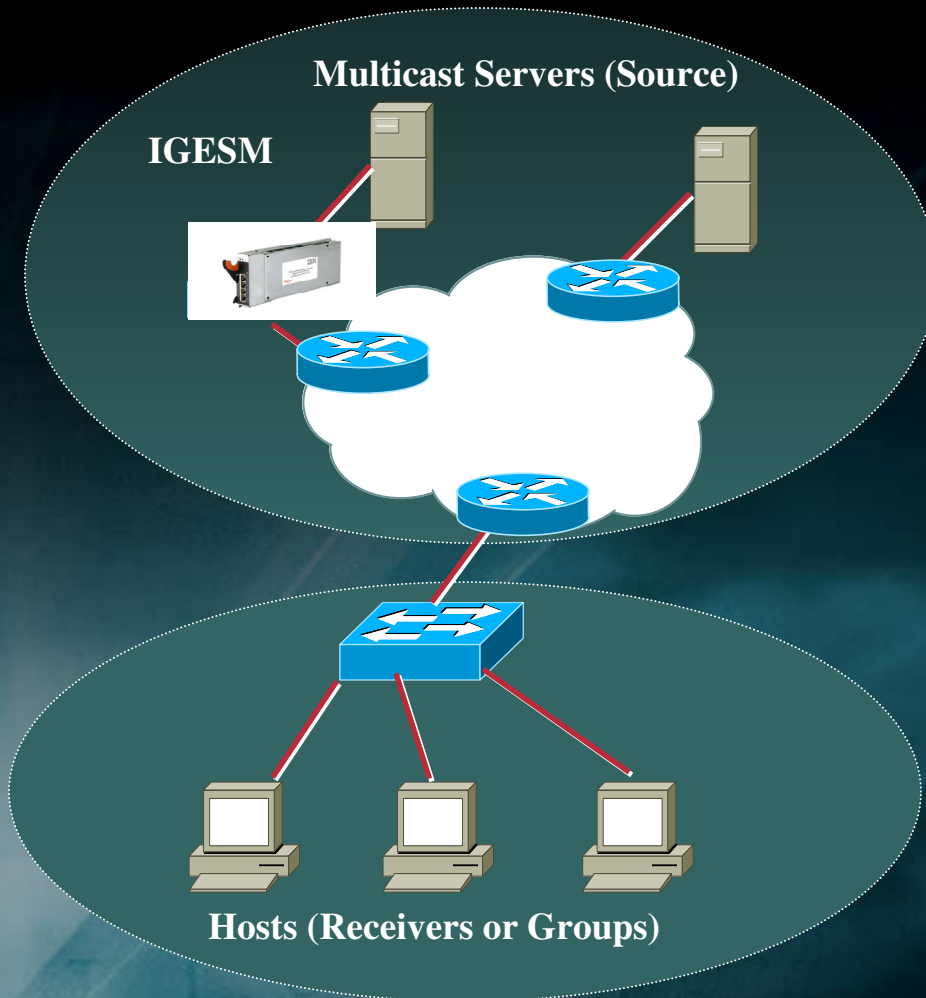
IGESM: Aggregate QoS Model

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IGESM Multicast Support

Cisco.com



- **IGMP snooping is used for the managing group membership information**
- **Per-port broadcast, multicast, and unicast storm control**
- **Multicast VLAN registration (MVR)**
- **Virtual Trunking Protocol (VTP) pruning**
- **Implemented in hardware**
 - “Snoop” or intercept IGMP Joins and Leaves received on interfaces from hosts
 - Enable or disable on a global or per VLAN basis
 - Ingress port parses packet and sends to CPU for processing, CPU suppresses redundant IGMP joins and sends one proxy report to router

Cisco Intelligent Switching

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Availability / Resiliency

Optimized Delivery

Enhanced Manageability

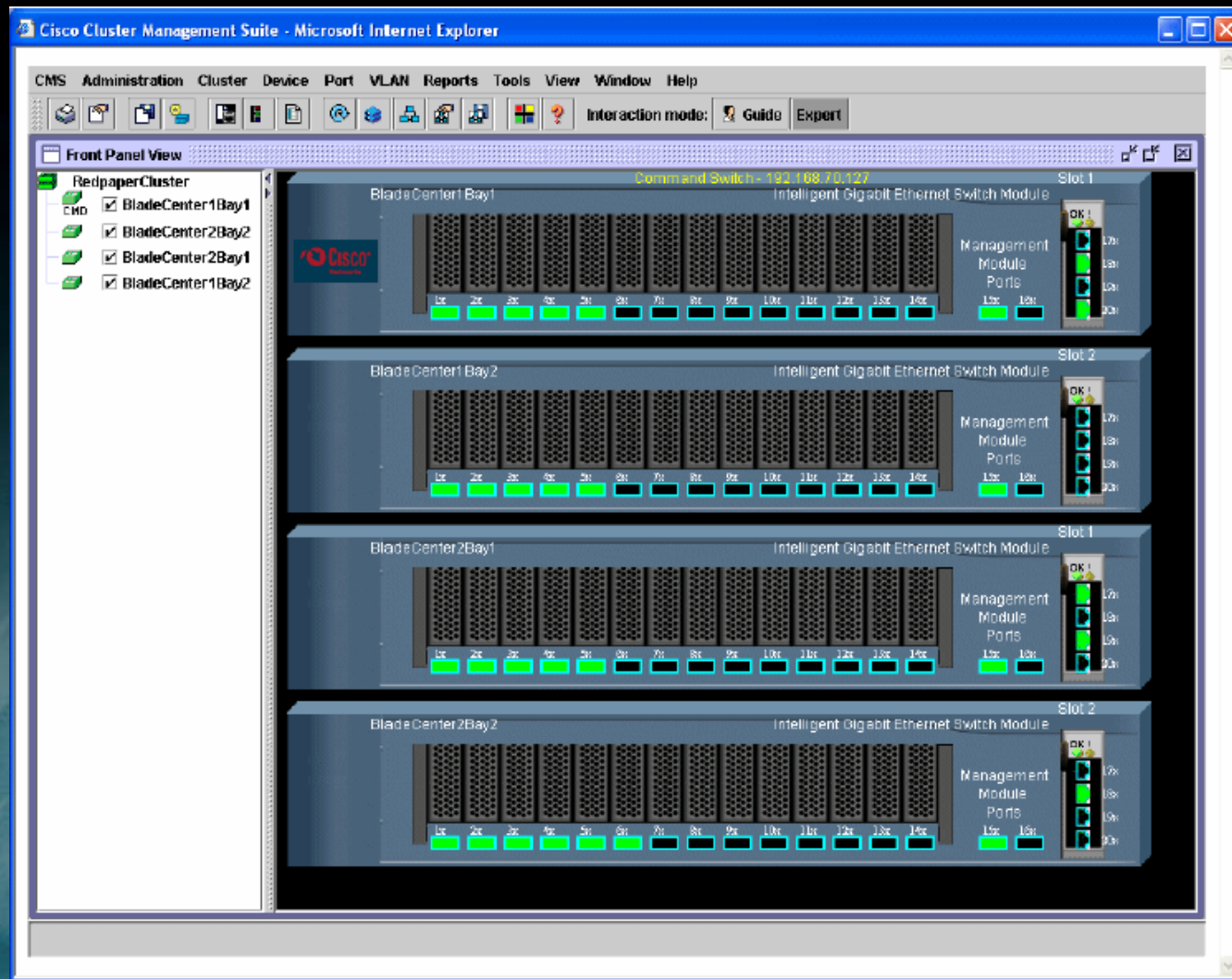
Features

- **CiscoWorks Integration**
 - CiscoView provides IGESM front panel view, switch status, port state, and device configuration
- **Cisco Cluster Management Suite (CMS) support**
 - Express Setup for device initialization
 - Single IP address to manage switch cluster
- **Chassis module management via Management Module**
 - Console Port available as IBM Service Port
 - SNMP MIB for Network Management
 - Telnet Connectivity
 - Serial over LAN (SoL) over Ethernet

ability

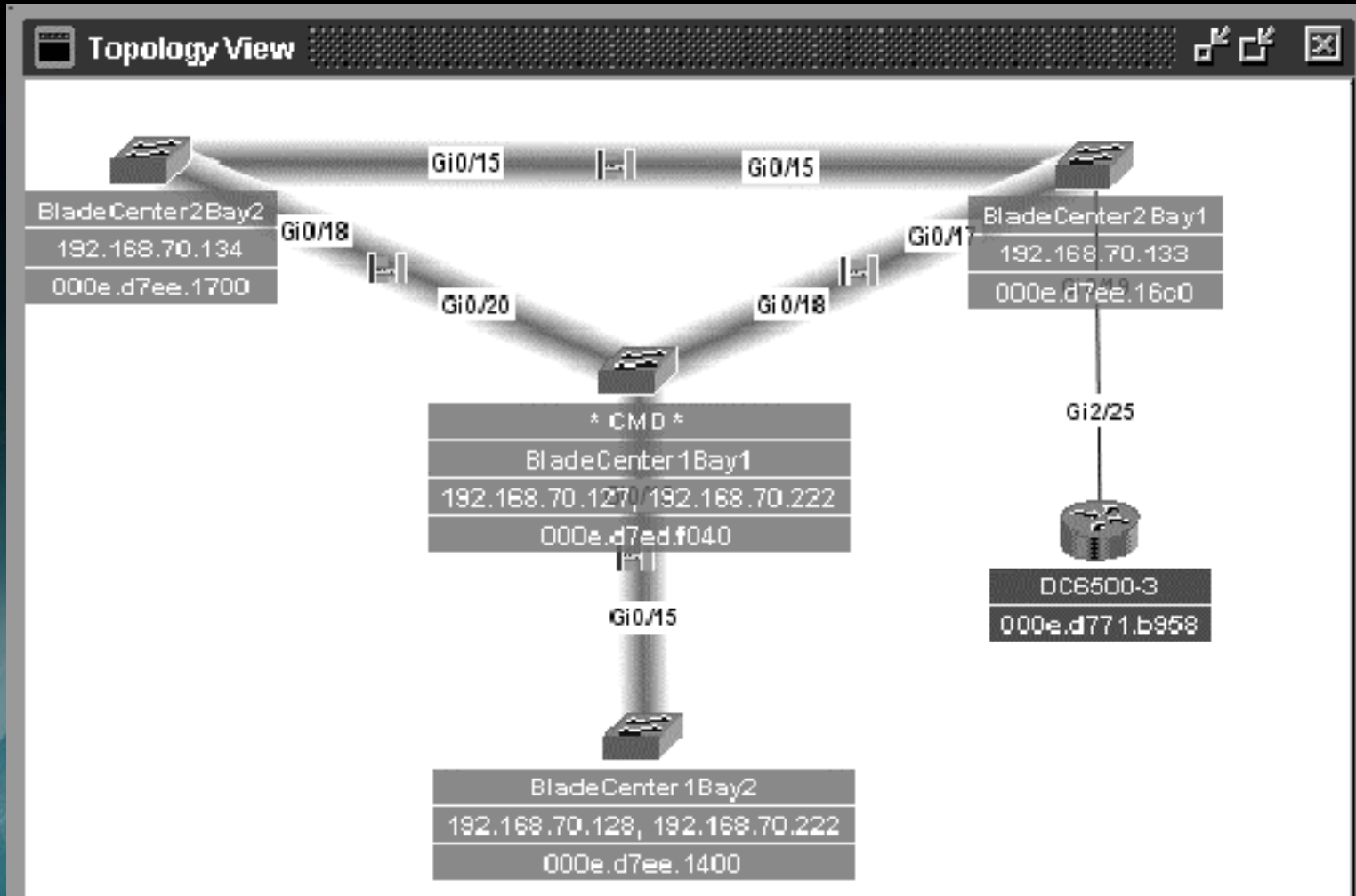
Easy Management of Multiple Switches – Cluster View

Cisco.com



Cluster Management – Topology View

Cisco.com



CiscoWorks Integration

Cisco.com

- **CiscoWorks Support – CiscoView component supported today!**

The screenshot displays the CiscoView 6.0 web interface. At the top, the Cisco Systems logo and 'CiscoView 6.0' are visible. Below the header, there are navigation links for 'Preferences', 'TAC Mailer', and 'Telnet'. The main content area shows a 'Chassis' view with a list of IP addresses on the left: 10.77.241.111, 172.20.135.199, 172.20.138.185, 172.28.40.121, and 172.29.128.85. The central part of the interface shows a 'Front Panel View' of a chassis with 16 ports. Port 10 is highlighted with a yellow box. A 'Color Legend' window is open, showing the following status indicators: Dormant (Cyan), Down (Orange), Fail (Red), Minor (Yellow), and Testing (Purple). The chassis is labeled 'CIGESM' and has a 'Logout | H' link in the top right corner.

Front Panel View

Port Status

IP Address Configuration from the Management Module

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IBM BladeCenter Management Module

Bay 1: WMNB15734255

- Monitors
 - System Status
 - Event Log
 - LEDs
 - Hardware VPD
 - Firmware VPD
- Blade Tasks
 - Power/Restart
 - Remote Control
 - Firmware Update
 - Configuration
- I/O Module Tasks
 - Power/Restart
 - Management
 - Firmware Update
- MM Control
 - General Settings
 - Login Profiles
 - Alerts
 - Network Interfaces
 - Network Protocols

Bay 1 (Ethernet SM)*

Current IP Configuration

Configuration method: Static
IP address: 192.168.70.127
Subnet mask: 255.255.255.0
Gateway address: 0.0.0.0

New Static IP Configuration

Status: Enabled

To change the IP configuration for this switch module, fill in the following fields and click "Save". This will save and enable the new IP configuration.

IP address:
Subnet mask:
Gateway address:

[Advanced Management](#)

This f...
from c...

MM Switch Configuration Options

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IBM BladeCenter Management Module @server

Bay 1: WMN315734255

- Monitors
 - System Status
 - Event Log
 - LEDs
 - Hardware VFD
 - Firmware VFD
- Blade Tasks
 - Power/Restart
 - Remote Control
 - Firmware Update
 - Configuration
- I/O Module Tasks
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 - Management
 - Firmware Update
- MM Control
 - General Settings
 - Login Profiles
 - Alerts
 - Network Interfaces
 - Network Protocols
 - Security
 - Configuration File
 - Firmware Update
 - Restore Defaults

Advanced Management for I/O Module 1

Use the following links to jump down to different sections on this page.

- [POST Results](#)
- [Advanced Setup](#)
- [Restore Factory Defaults](#)
- [Send Ping Requests](#)
- [Start Telnet/Web Session](#)

POST Results

POST results available: FF: Module completed POST successfully.

Advanced Setup

- Fast POST: Enabled
- External ports: Enabled
- External management over all ports: Enabled
- Preserve new IP configuration on all resets: Enabled

Cancel Save

External Ports MUST be enabled from MM

Starting a Web Session from the Management Module

Cisco.com

The screenshot displays the BladeCenter Management Module web interface. On the left, a navigation sidebar shows the 'Management' option under the 'I/O Module Tasks' category selected. The main content area contains three panels:

- Restore Factory Defaults**: A warning message states that this action will reset all module settings to factory defaults, resulting in the loss of any configuration changes. A 'Restore Defaults' button is available.
- Send Ping Requests**: A message explains that this action tests the internal path between the management and switch modules. A 'Ping Switch Module' button is available.
- Start Telnet/Web Session**: A message provides instructions on starting a telnet or web session to the management interface. A note specifies that a Java 1.4 plug-in is required for the telnet session. 'Start Telnet Session' and 'Start Web Session' buttons are available.

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Relevant URLs

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- **Cisco Systems Blade Switch Data Sheet**

<http://www132.ibm.com/webapp/wcs/stores/servlet/ProductDisplay?productId=8712463&storeId=1&langId=-1&catalogId=-840>

- **Cisco Business Ready Data Center**

www.cisco.com/go/datacenter

- **Customer Support**

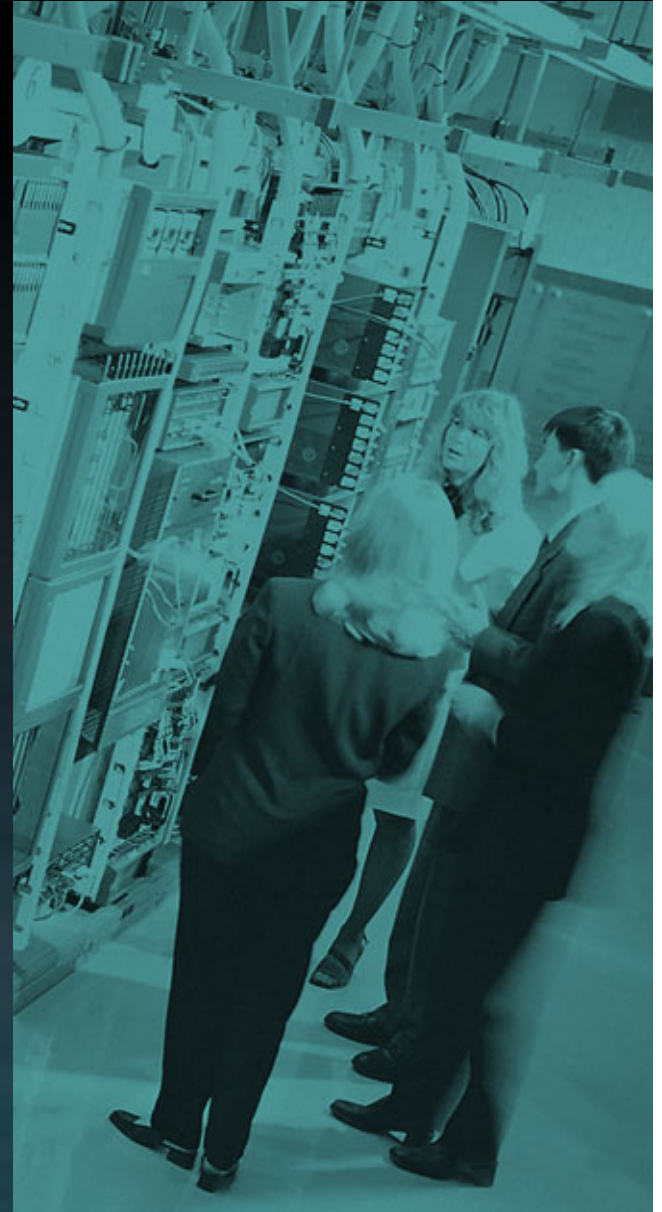
Call 1-800-IBM-SERV (1-800-426-7378) or <http://www.ibm.com/support/us/>

- **Cisco Intelligent Switching Portfolio**

<http://www.cisco.com/en/US/products/hw/switches/index.html>

Summary

- **Cisco's Intelligent Switching Portfolio meets today requirements and provides a path to secure the data center of the Future**
- **Cisco is delivering On Demand network infrastructure solutions to customer server deployments of choice**
- **Cisco continues to deliver intelligent platforms that enable dynamic, scalable and flexible network deployments for On-Demand data centers**
- **Cisco's network infrastructure innovation will continue to drive increased IT productivity as the data center evolves**



CISCO SYSTEMS

