

MSG311

Exchange 2007 Transport and Routing Architecture

What Customers Have Asked For?

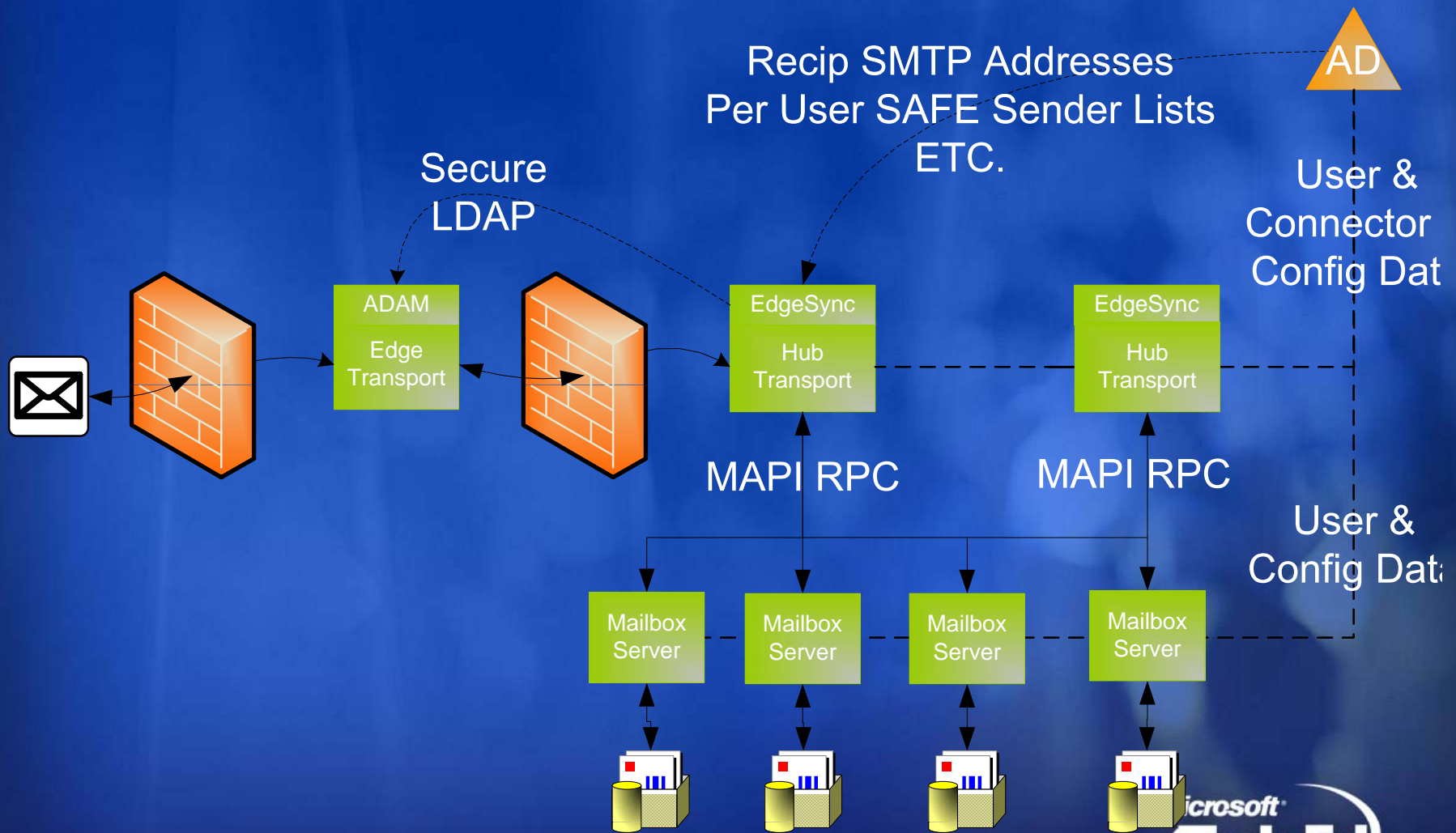
- Cheaper to Manage
 - Zero Admin – More Automatic Configuration
 - Eliminate Redundancy
 - Transparent Routing – No Link State!
 - Easy Mailflow Diagnosis
- Manage Bandwidth
 - Avoid Unnecessary Hops
 - Single Instance Over Slow Connections
- Interoperability
 - Exchange 200x RG and RGC Support
 - Exchange 200x EDK Routing
 - Simple Foreign System Interop

Exchange 200x Routing Strengths

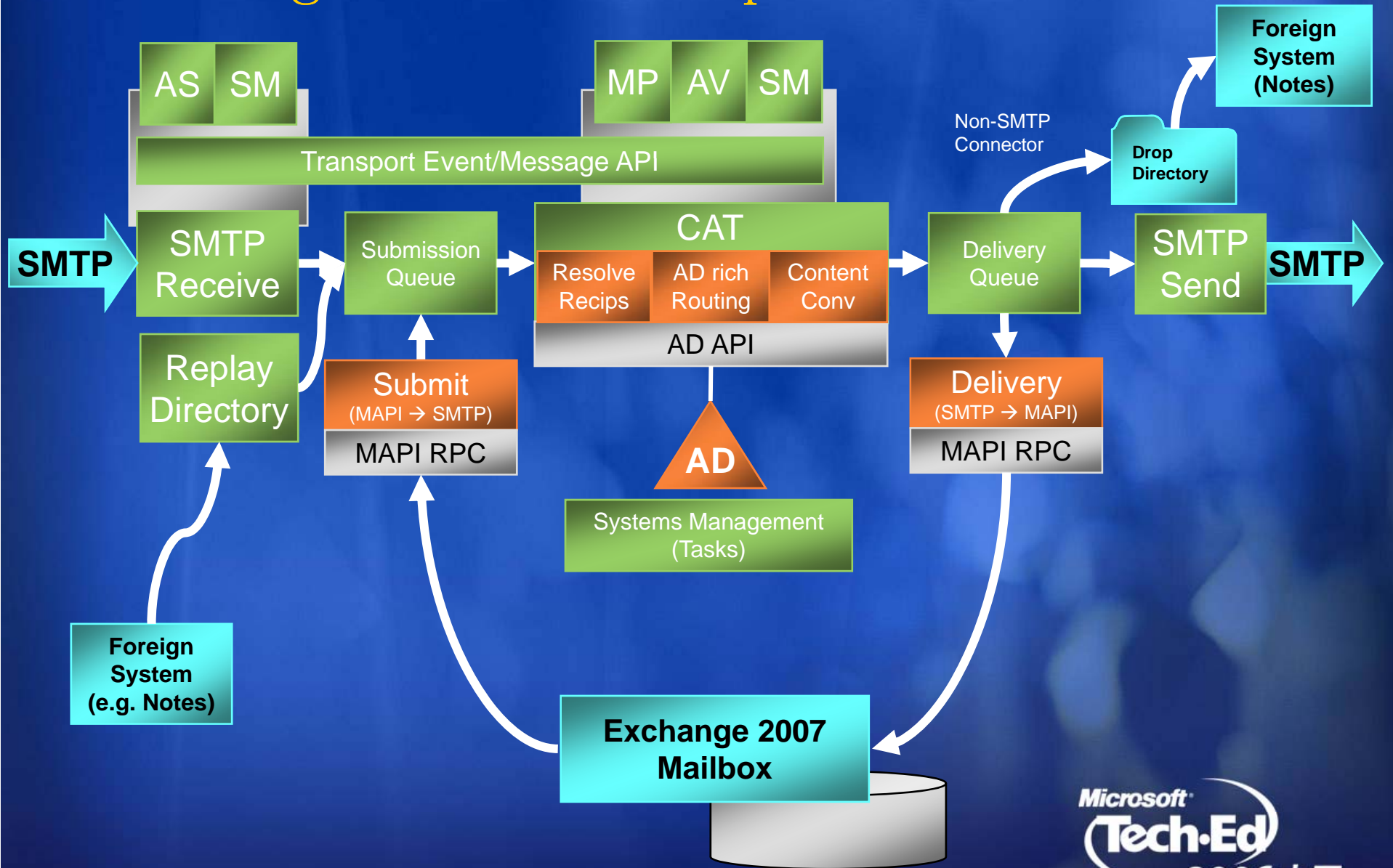
- Queue @ Point of Problem
 - So important we had to DCR it in Exchange 2000
- Bandwidth Control
 - Very hard because it's Mostly Manual
- Delayed Fan-Out
 - Necessary for Low-Bandwidth Connections (e.g. Branch Office)
 - Saves Bandwidth

Reducing Cost & Complexity

Exchange 2007 Server Roles



Exchange 2007 Transport



Sending and Receiving Mail

- Hub Transport and Mailbox Deployment Scenarios
 - One Hub & one MBX on the same physical machine
 - Multiple Hub & MBXs Roles (grouped by AD Sites)
- Features:
 - Hub will deliver to *any* MBX in local AD site
 - MBX will submit to *any* Hub in local AD Site (local Hub preferred)
 - All Mail is Routed through a Hub Role
 - Deterministic (without failure, system will always pick the same associations)
 - Hubs automatically Load Balance
 - Centralized remote admin via AD

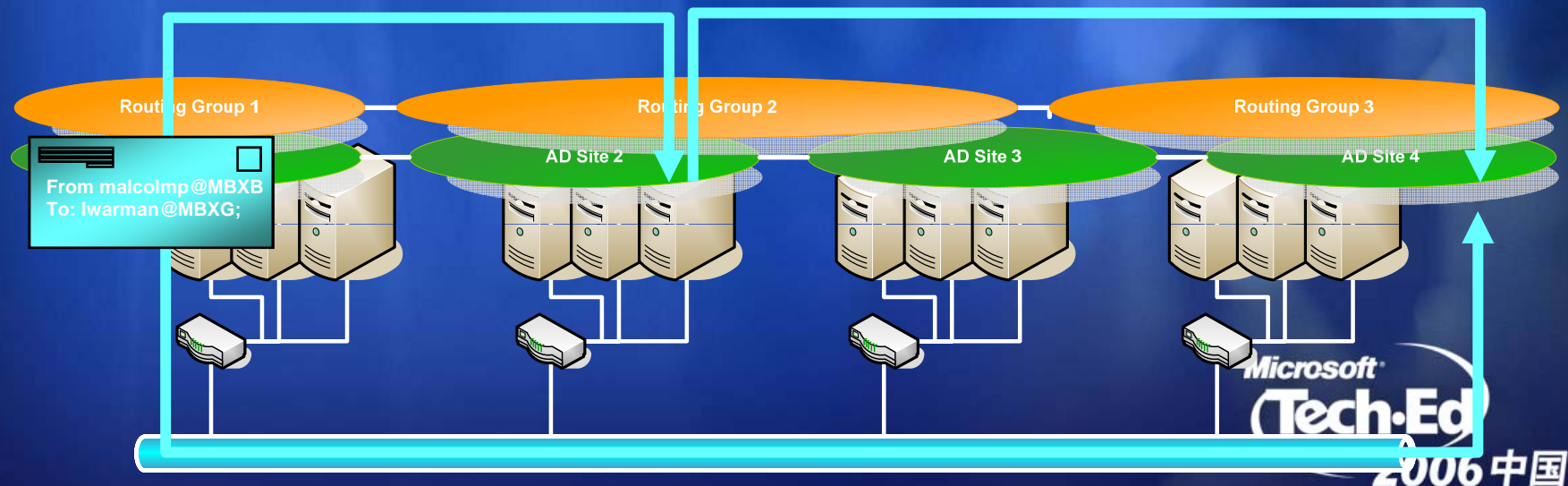
Transport & Routing

- Direct Relay
 - Prefers direct IP Connectivity between source and destination
 - Avoid redundant intermediate machine transfers
 - Rely on IP Networks for reroute in case of network failures
- Deterministic Routing
 - No longer relies on Exchange up/down state
 - Exchange 2007 doesn't consume or propagate Link State information
- Automatic Configuration
 - Default connectors

AD and IP Networks - Exchange 2003

You're Already Configured for Mailflow!

- Physical Network IP Layer
 - Always used for mail transfer between two points
- AD Site – Logical layer defining a physical grouping
 - Defines exchange 2003 paths used only if direct relay is not possible
- Routing Groups – Exchange specific logical layer
 - Defines next hop resolution that is always used to advance mail



Topology Descriptions

- Uses Logical Topology for Back-Off only
 - Queue at the Point of Failure
 - Bifurcation Required
 - Forced through Hub Sites
- Windows Active Directory Sites for Logical Topology Description
 - Uses Active Directory Sites, IP Site Links, IP Site Link Costing
 - The world is no longer an X.400 architecture
 - No Exchange specific Configuration required

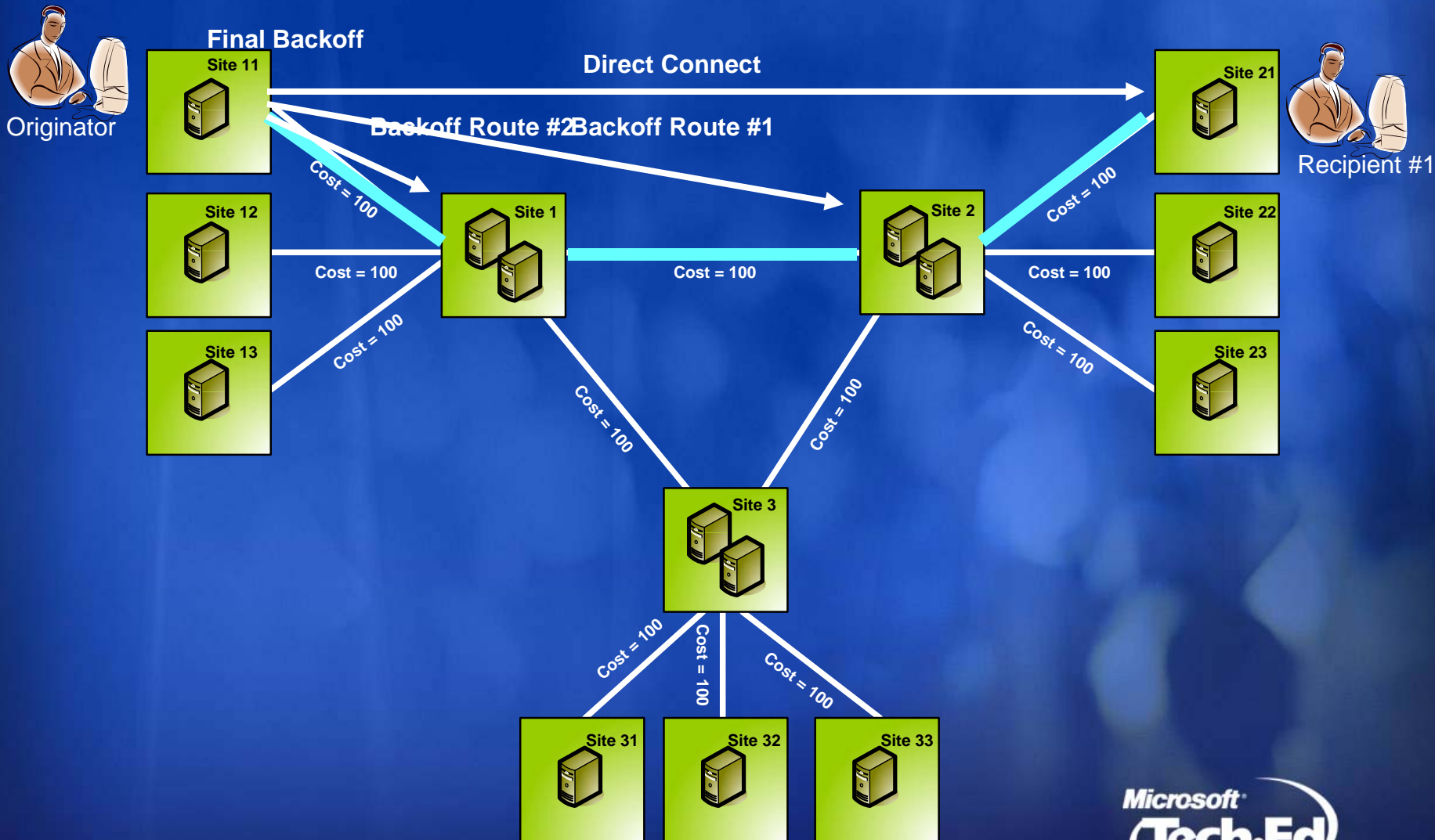
Exchange 200x vs Exchange 2007

Exchange 200x	Exchange 2007
Spending unnecessary resources when delivering messages	Direct relay
No leverage of network	Leverage IP Network for Reroute
Necessary to design routing topology	Leverage AD Site topology
Necessary to configure routing group connectors	Automatic creation of connectors
Not always transparent how routing decisions are made	Transparent routing table
Usage of bandwidth to exchange routing information	No exchange of Link State information
Queue at point of Failure	Queue at point of failure

Exchange 200x vs Exchange 2007

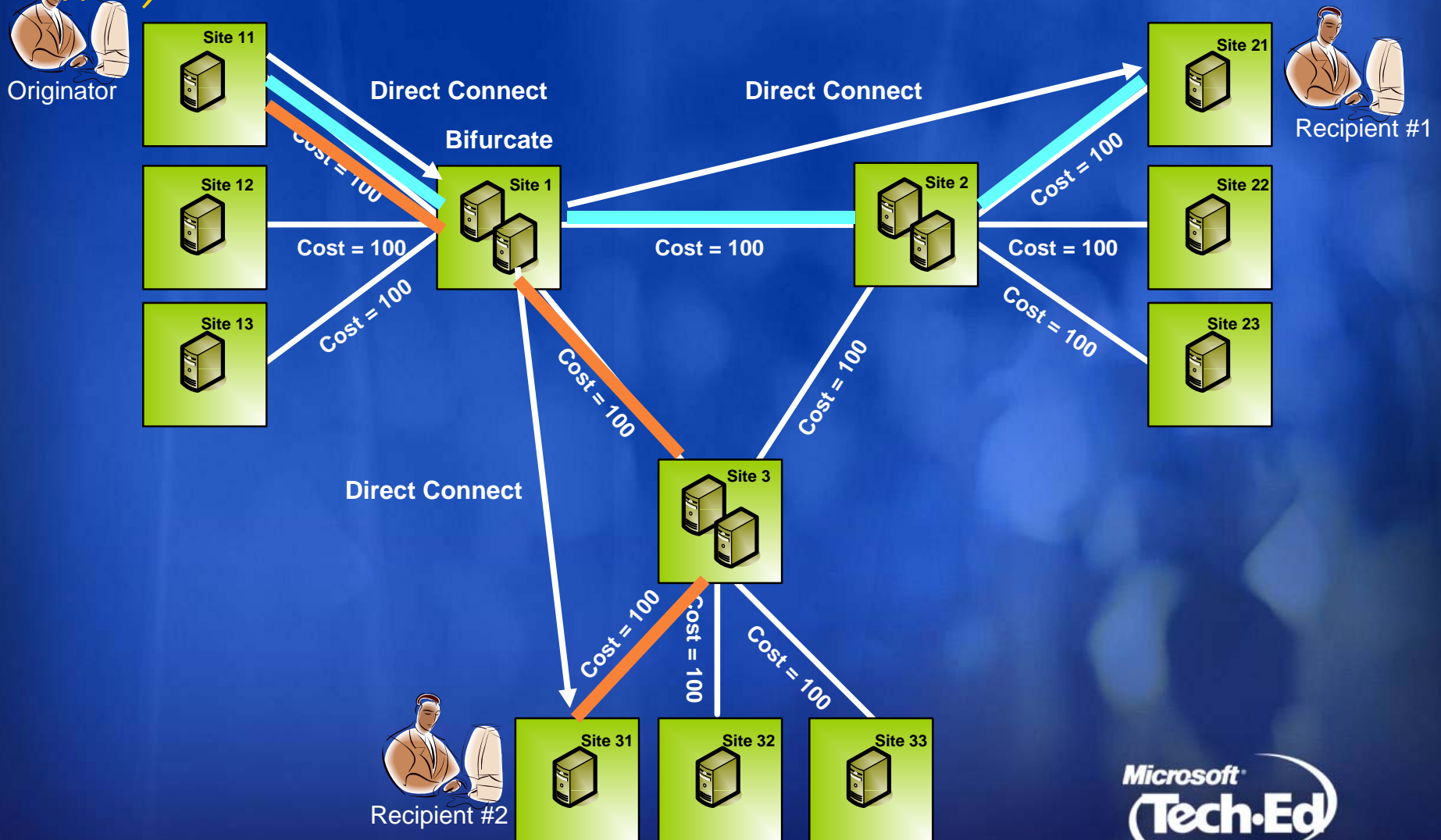
Exchange 200x	Exchange 2007
Need to configure restrictions for each connector	Global Transport Rules
No automatic way to configure routing connectors	Enterprise Deployment EdgeSync
No mechanism for troubleshooting mail flow problems	Mail Flow Troubleshooting Wizard ExMFA based on ExBPA technology
Difficult to implement compliance rules	Easy and very comprehensive compliance infrastructure
Difficult to implement and troubleshoot Event Sinks	New Agent concept and agents can be implemented in managed code

"Best" Route Between AD Sites



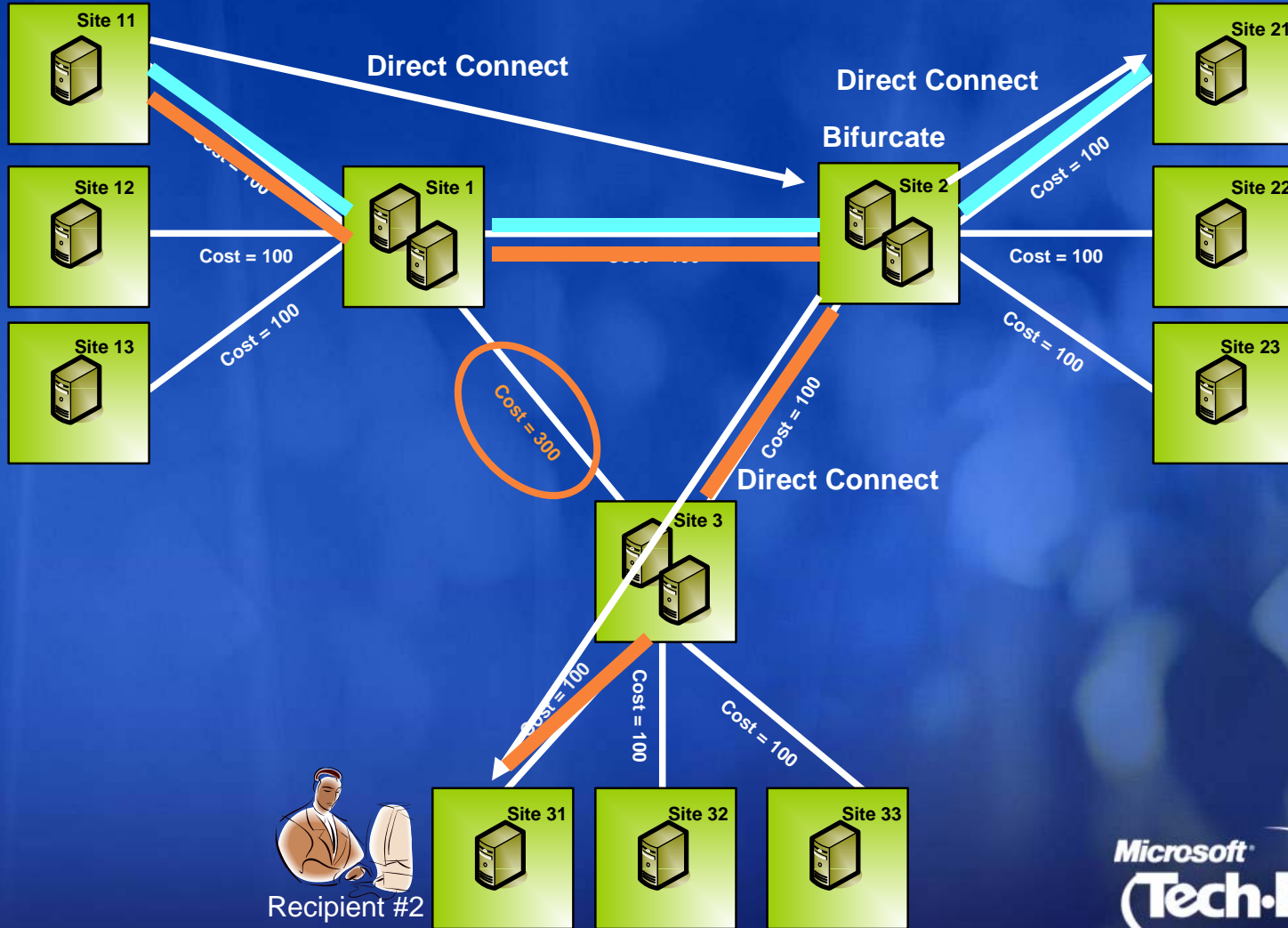
Bifurcation effect on routing

(#1)



Bifurcation effect on routing

(#2)



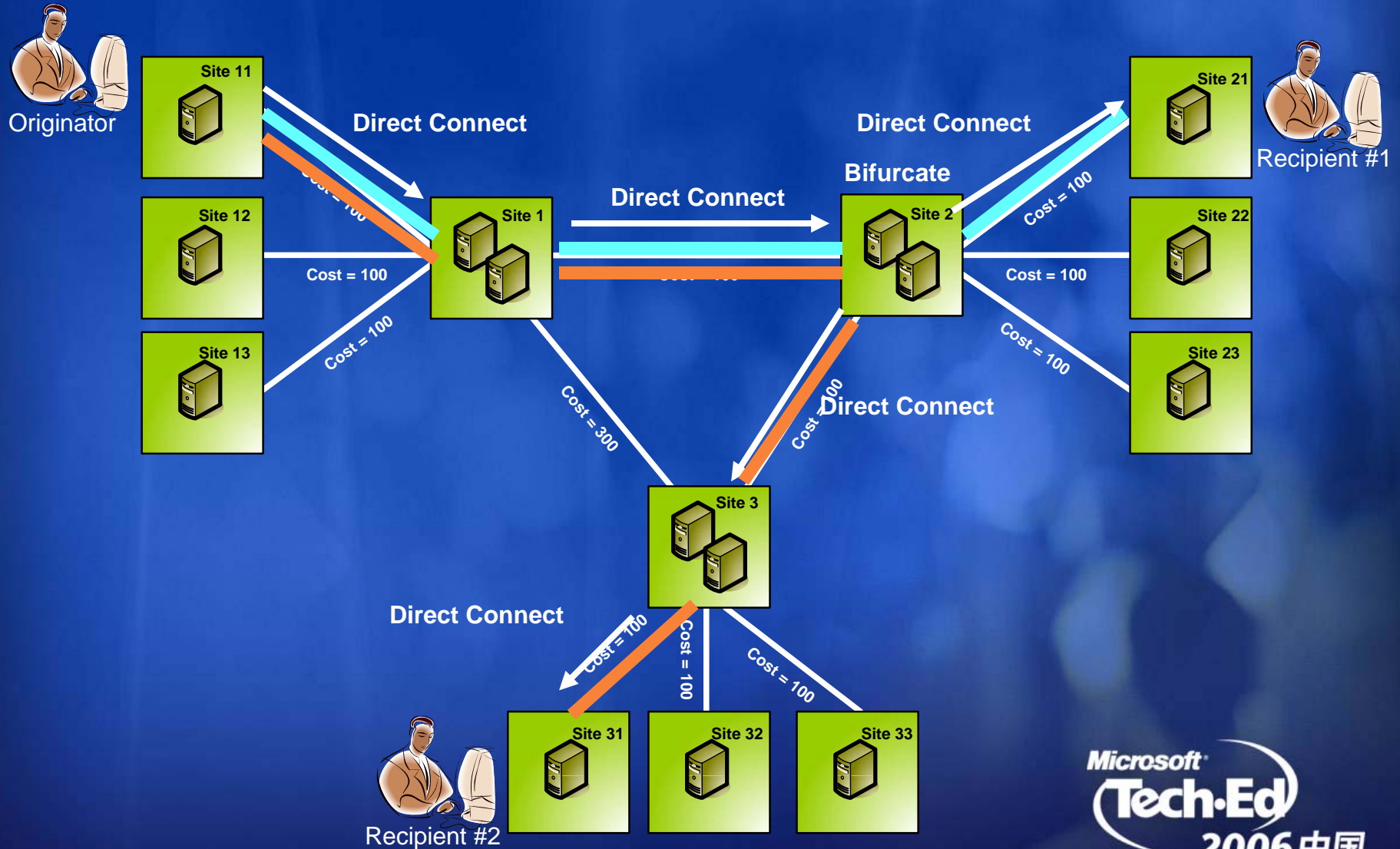
Recipient #1



Recipient #2

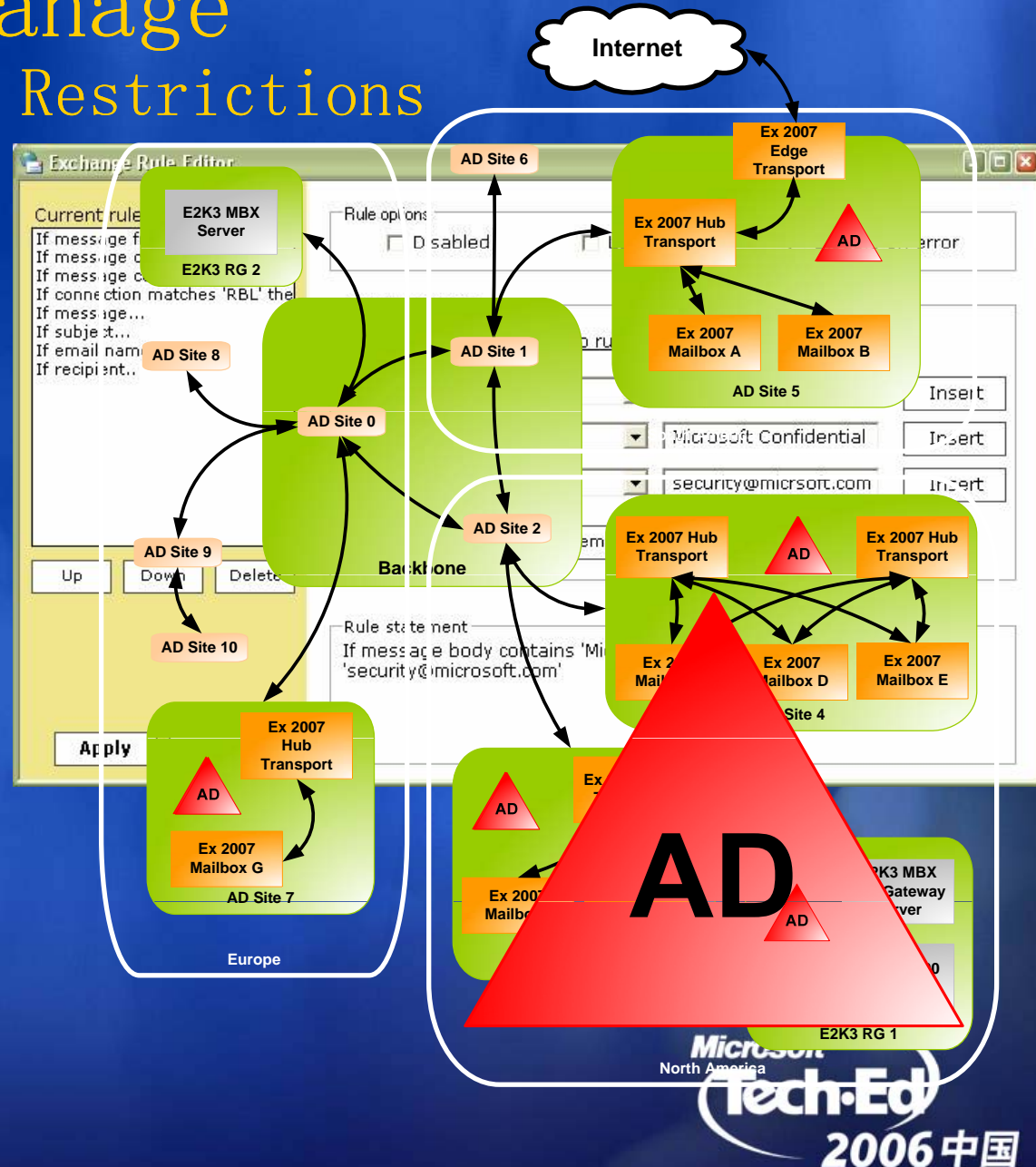
Explicit Hub Sites

Site1, Site2 and Site3 all designated as explicit hub sites



Cheaper to Manage Managing Mailflow Restrictions

- Allow/Deny
 - Block unwanted mail flow with Rules Engine
- Internal
 - All stakeholders are internal to the forest
 - Information wall
 - Content restrictions
- External
 - At least one of the senders and/or recipients is outside the forest
 - Content restrictions
- Global Configuration
 - Both internal and external
 - Routing / priority decisions

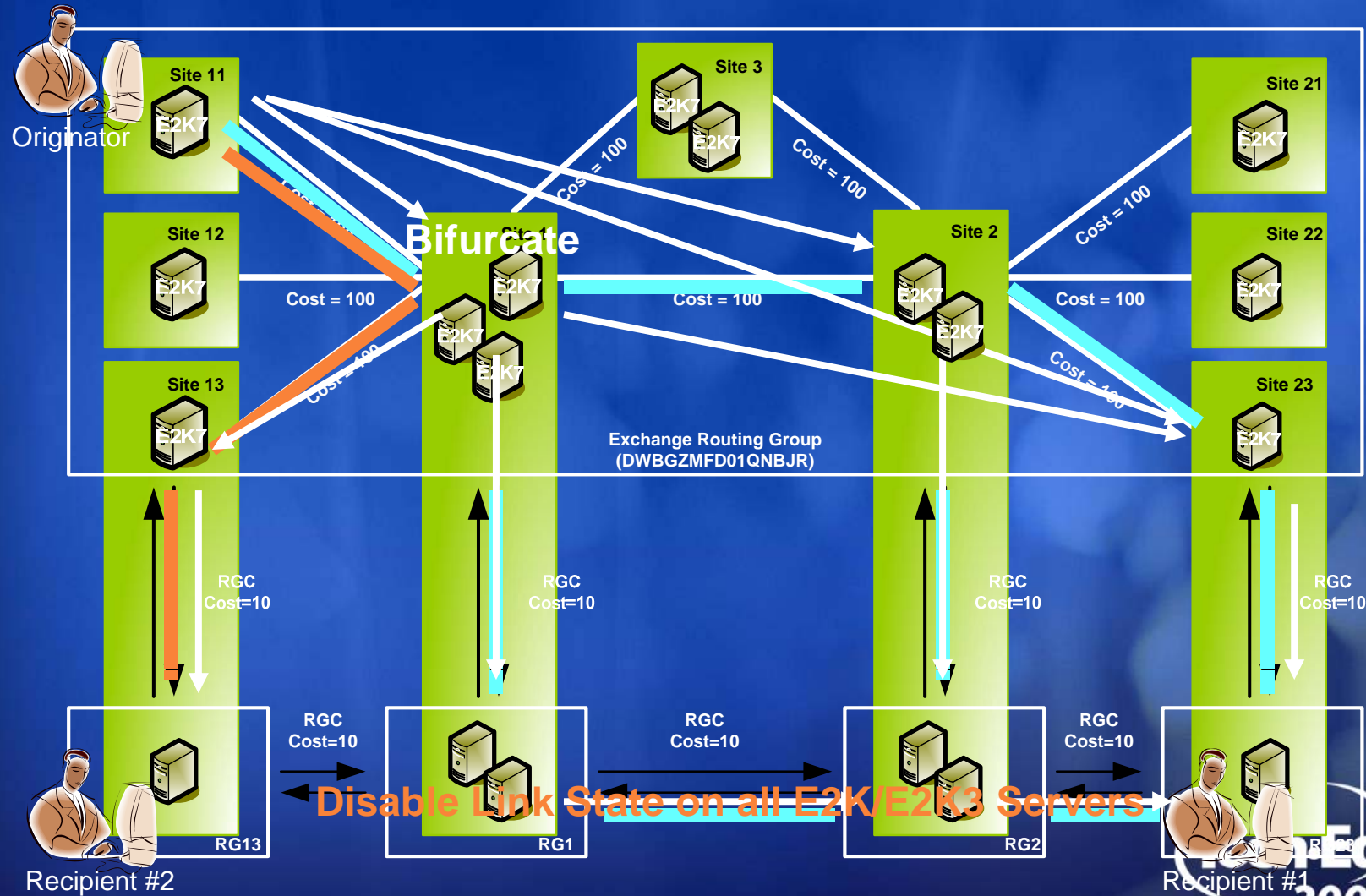


Interoperability

Exchange 2003 and Foreign Gateways

- Exchange 2003 Routing Groups and Connectors supported
 - SMTP
 - Routing Group Connectors
- Exchange 2007 as the Routing backbone
 - Exchange 2003 Routing Groups and Exchange 2007 Branch Offices route through Exchange 2007 backbone
 - Exchange 2003 never in the Exchange 2007 backbone
 - Exchange 2007 servers never use Exchange 2003 servers as a mail routing backbone
- Foreign Gateways
 - GDK/EDK via Exchange 2003
 - Foreign Connector Gateways in Exchange 2007

Exchange 2007 Coexistence with Exchange 2000 and Exchange 2003



Disable the Ability of Links to Marked as Up or Down

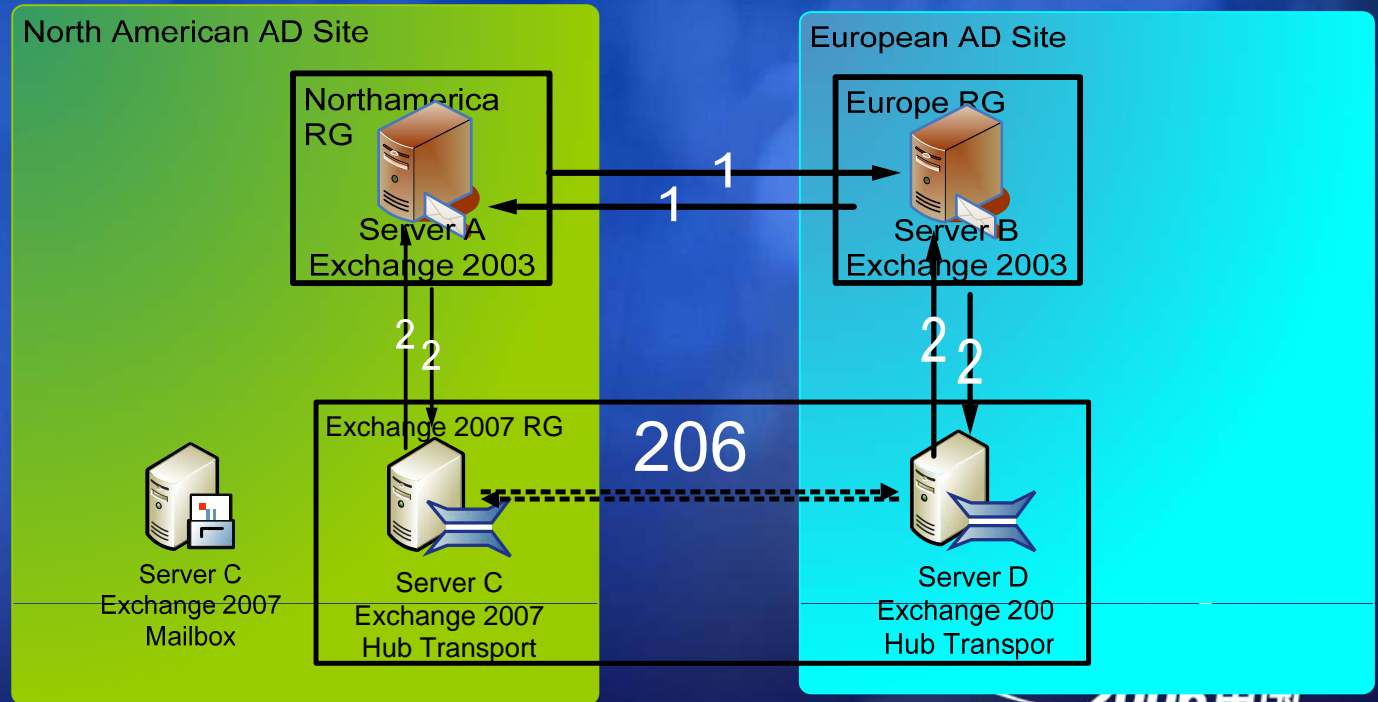
SuppressStateChanges	REG_DWORD = 0 or non-zero <u>0 = Normal operation</u> [Default] non-zero = Suppress link state changes	If set to non-zero, this registry setting will suppress all minor link state changes on this server. This property will prevent up/down status from being propagated.
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- Open a registry editor, such as Regedit.exe or Regedt32.exe;
- Navigate to
HKLM\System\CurrentControlSet\Services\RESvc\Parameters;
- Right-click Parameters and select New | DWORD value. Name the new DWORD value SuppressStateChanges;
- Double-click SuppressStateChanges;
- In the Value data field, enter 1;
- Close the registry editor and then restart the Simple Mail Transfer Protocol (SMTP), the Microsoft Exchange Routing Engine, and the Microsoft Exchange MTA Stacks services for the change to take effect.

Migrating to Exchange 2007

- The Exchange 2007 Hub Transport role is used to route mail from the Exchange 2003 Hub Transport role in the North American Hub and European Hub sites.
- Exchange 2007 RG model spans all AD Sites.
- Use the new RoutingGroupConnector task links.
- Exchange 2007 Costing Model: E2K3Cost.E2K7Cost
- The existing IP Site Link Cost is used.
- Avoids Loops for deterministic routing tables

Servers		B	C	D
A	Cost	1.0	2.0	2.206
	Route	A-B	A-C	A-C-D
B	Cost		2.206	2.0
	Route		B-D-C	B-D
C	Cost			0.206
	Route			C-D



Foreign Connectors on Exchange 2007

- Creating the installation
 - Add custom action to create the NonSMTPConnector in AD
 - Create the drop folder with the correct permissions
 - Use .net FileSystemWatcher class to monitor Exchange drop folder
- Receiving a message from Exchange:
 - MIME data streams in dropped .eml files
 - Unpack message data and access properties
- Submitting a message to Exchange:
 - Create envelope .eml file in pickup/replay directory
 - Build the list of the required MAPI properties
- Managed Objects provided with Exchange 2007:
 - Native encapsulation and de-encapsulation of custom address types
 - Message body conversion routines (e.g. RTF to TEXT, HTML, etc.)
- Add management UI using monad extension interfaces

X.400 Bridgehead on Exchange 2007 (Boldon James)

- Experience:
 - “Compared to developing EDK applications this was a much simpler and cleaner solution, eliminating the complex legacy MAPI programming and data structures required to implement equivalent functionality when developing against the 2003 platform.”
 - “The development was surprisingly straightforward.”
 - Added the analogous X.400 capabilities to Exchange 2003 in a month with one dev and one test

Resources

Technical Chats and Webcasts

<http://www.microsoft.com/communities/chats/default.mspx>

<http://www.microsoft.com/usa/webcasts/default.asp>

Microsoft Learning and Certification

<http://www.microsoft.com/learning/default.mspx>

MSDN & TechNet

<http://microsoft.com/msdn>

<http://microsoft.com/technet>

Virtual Labs

<http://www.microsoft.com/technet/traincert/virtuallab/rms.mspx>

Newsgroups

<http://communities2.microsoft.com/communities/newsgroups/en-us/default.aspx>

Technical Community Sites

<http://www.microsoft.com/communities/default.mspx>

User Groups

<http://www.microsoft.com/communities/usergroups/default.mspx>

session evaluation



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