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Advanced Exchange Web Services Programming

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Agenda

- What is new in Exchange 2010 Web Services?
- Advanced EWS Managed API Concepts
  - Using Autodiscover
  - Accessing Mailbox Items
- Writing Scalable Applications
  - Using Diagnostics to Identify Potential Performance Problems
  - Best Practice Recommendations

Same Rich Capabilities as E2007

- Rich Mailbox Access
  - Calendar - Free/busy, Meeting time Suggestions
  - E-mail – Send, Retrieve, Forward, Reply, Move, MIME
  - Contacts/Tasks
  - Search
- Name Resolution
- Change notifications
- Synchronization services
- Autodiscover
- Rich Logon Modes
  - Delegate Access
  - Impersonation
  - Direct Logon
- Plus Much More…

What's New In Exchange 2010?

.NET Developer Experience

- EWS Managed API 1.0
- Built-in Autodiscover client for "anywhere access"
- Enables easy migration from legacy Exchange APIs

New Exchange Data Services

- Enhanced contacts (contact groups, pictures)
- Outlook Web App form links
- Mailbox-wide search and notifications services
- Room lists service

Application Management and Configuration

- Role-based Impersonation management
- User and application configuration service
- SOAP Autodiscover with batch request support
- Enhanced time zone support

Built for the Cloud

- Enabled on Live@EDU and Microsoft Online
- Same functionality on-premises and in the cloud

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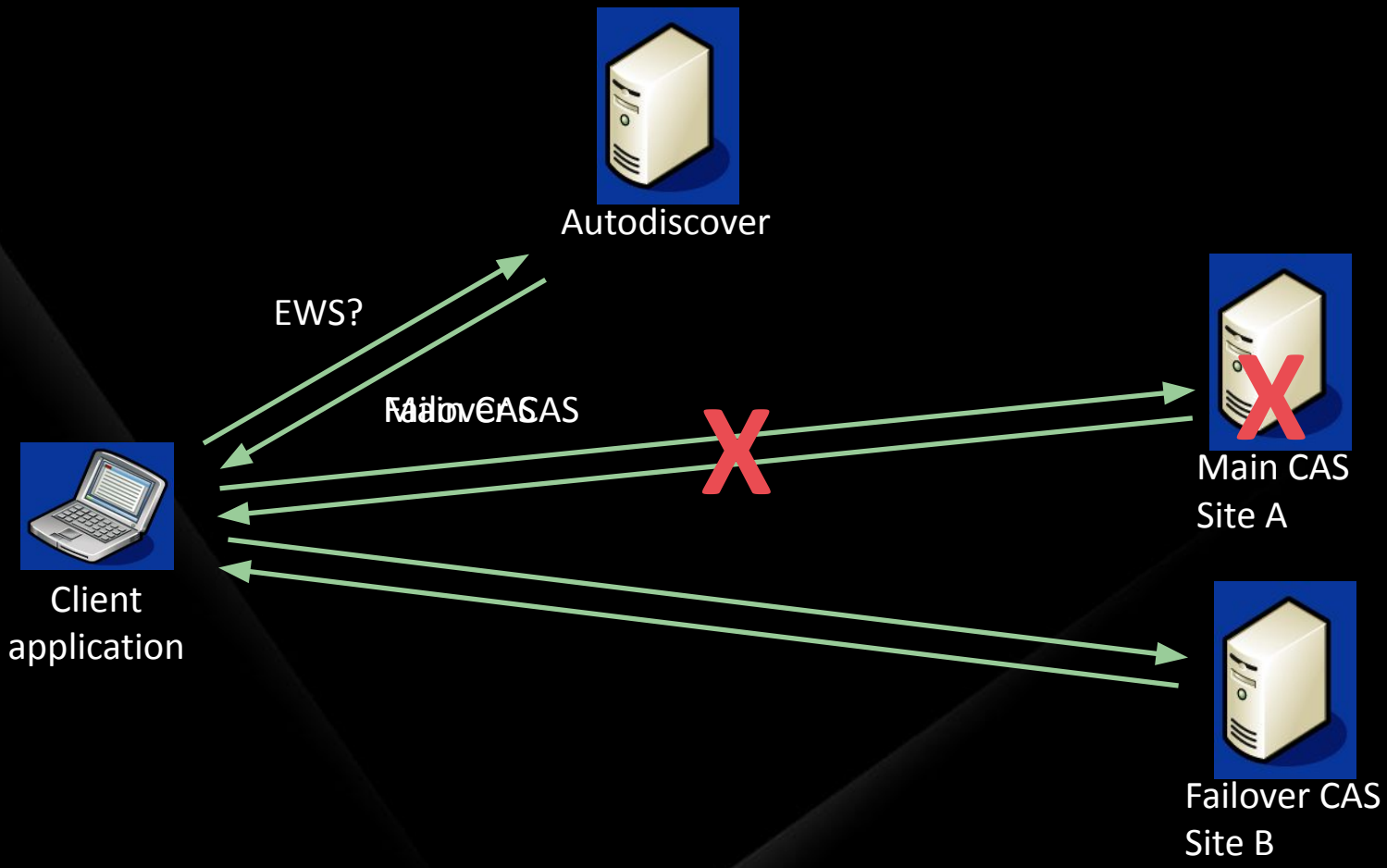
Using Autodiscover To Connect To EWS

- What is Autodiscover?
  - It's a web service that configures Exchange applications
  - Using a URL that can be automatically discovered by client applications
- Why use it?
  - Removes the need for hard-coding the EWS URL
  - Enables seamless failover and "anywhere access"
- Built-in client in the EWS Managed API
  - Makes it really easy to call Autodiscover

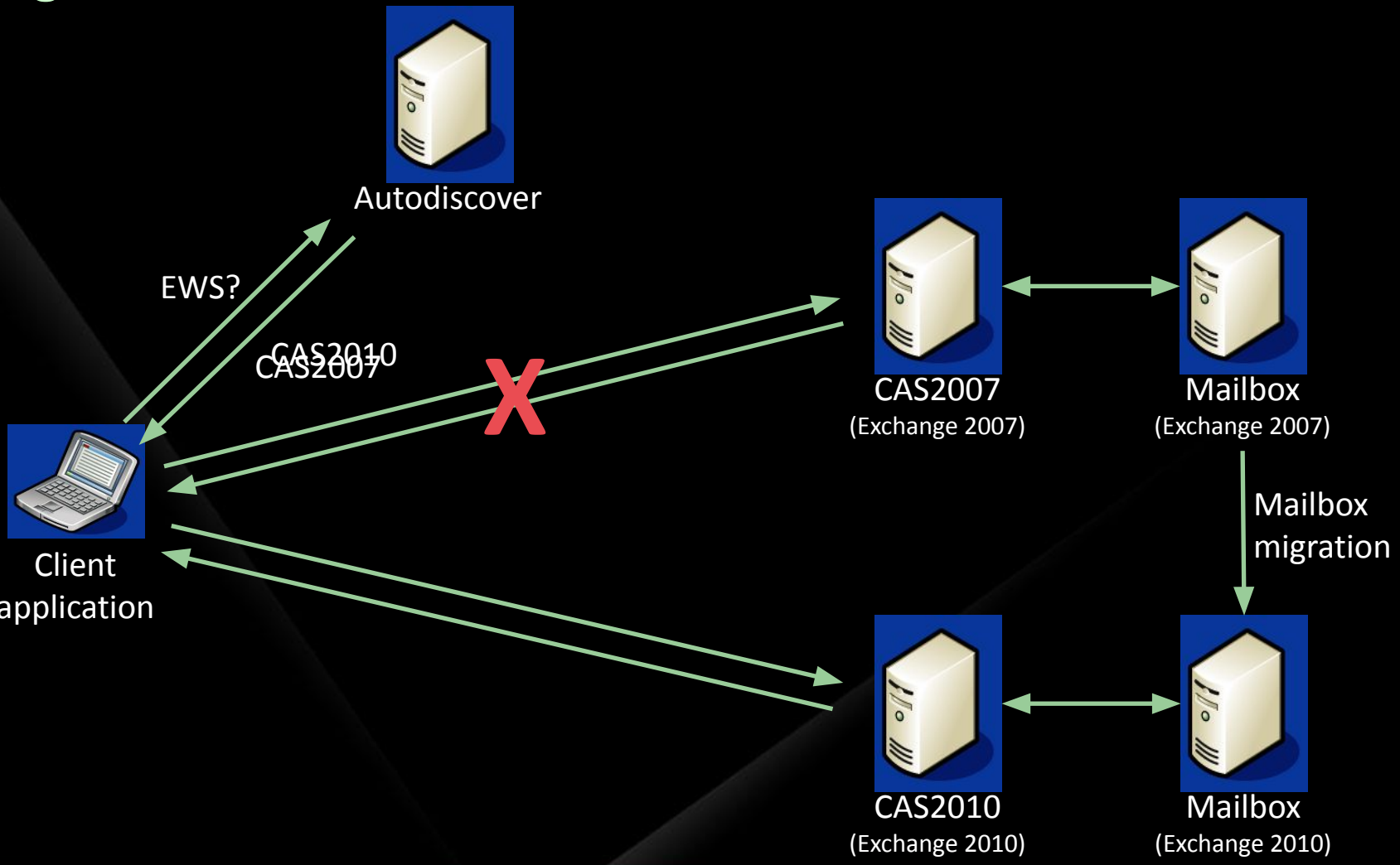
When To Autodiscover The EWS URL

Inter-site failover and move



When To Autodiscover The EWS URL

Migration



Demos

- Calling AutodiscoverUrl
- Using AutodiscoverService
  - Batch requests
  - Retrieving specific settings (e.g. OWA URLs)

Accessing Mailbox Items

Properties And Property Sets

- There are multiple ways to retrieve items
  - List items or search for specific items
    - Inbox.FindItems()
  - Bind to or load specific items
    - EmailMessage.Load();
  - Synchronize items
    - service.SyncFolderItems()
- All use PropertySets to scope data to return

Accessing Mailbox Items
Batch Operations

- Batch operations act on multiple items in a single EWS request
- Using batch operations:
  - Helps increases your application's performance
  - Helps reduce server load
- The EWS Managed API supports batch operations in addition to per-item operations

Extended Properties

- Complement “first class” properties
  - First class properties are directly available on items and folders (e.g. Item.Subject, Folder.DisplayName)
- Allow developers to:
  - Set and retrieve custom, application specific properties
  - Access properties that are not exposed as “first class” properties
  - Do bad things (so use with care):
    - Access properties that should not be accessed
    - Override EWS’ business logic

Demo

- Bind
- Property set
- FindItems w/filter on Extended Property and with IdOnly
- LoadProperties w/custom property set

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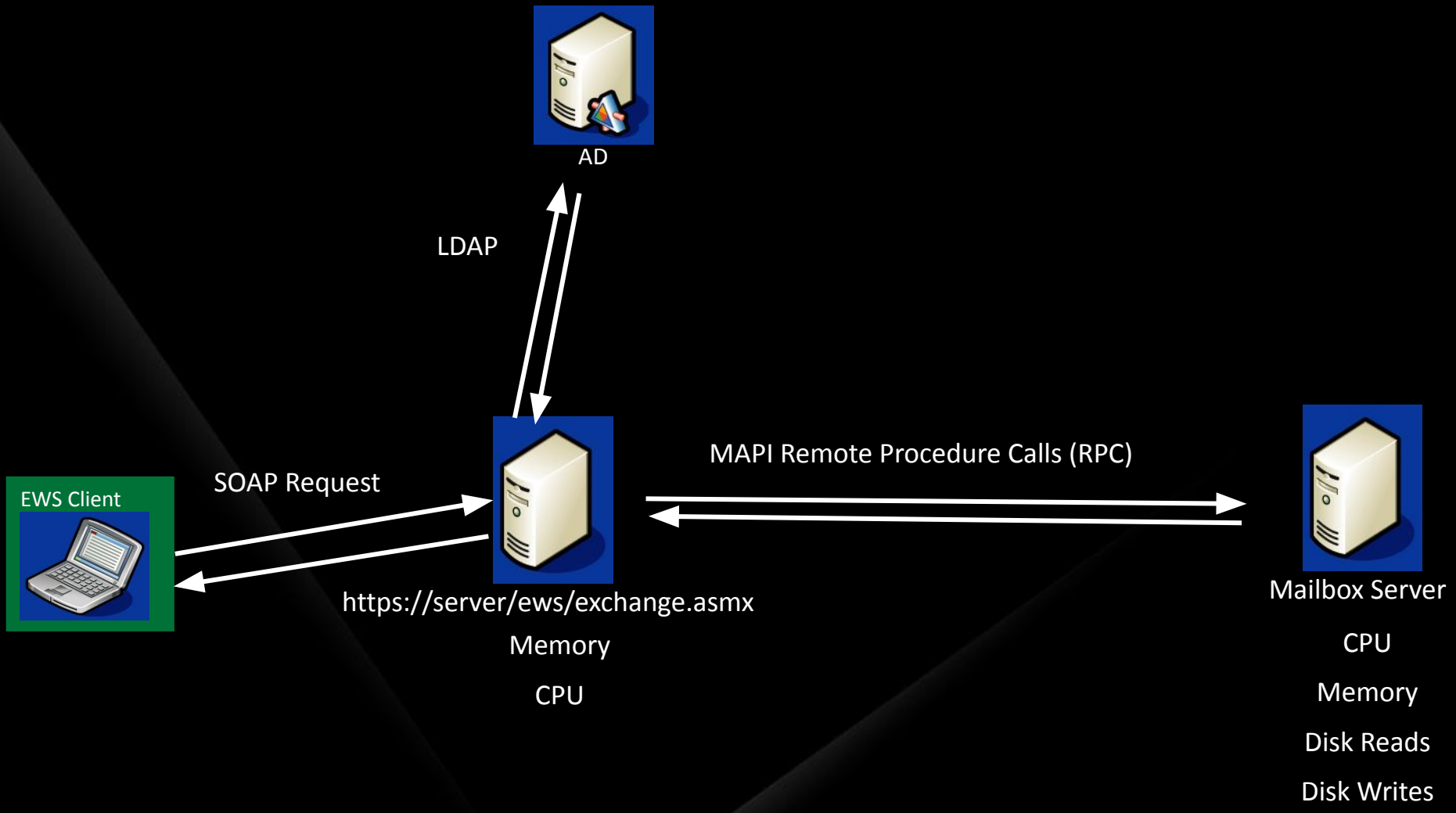
  - Best Practice Recommendations
  - Using Exchange Web Services Diagnostics

Scalability

- What is scalability?
  - It is doing more with fewer resources
  - It is minimizing the Exchange Server resource cost per user
- We will discuss:
  - How to measure the impact of your EWS requests on Exchange?
  - How to minimize the internal Exchange processing driven by your application

Exchange Architecture



Methodology for Maximizing Scale

- Think about your final end to end scenario and design your I/O patterns leveraging best practices
- Write code, Measure, Optimize, Repeat!
  - The Managed API can dramatically reduce your cycle time
- Simulate your application in a dedicated environment
  - Use Realistic Mailbox Sizes and Data
  - VM's don't usually work well for this testing

Best Practice #1: Minimize the number of web service calls

- Use batch to get more data in each request
- Use notifications to alert on item changes rather than repeatedly querying folders
- Cache data locally
  - Use cached data when application restarts

Why?

- Retrieving more data in a single request and making fewer requests increases the effectiveness of the CAS caches of LDAP and mailbox data, decreases the amount of xml serialization and deserialization, and decreases the authentication load on CAS and AD

Best Practice #2: Do not request unneeded data

- Use property sets
  - Request only the needed properties
- Use FindItem page sizes
  - Request only the items needed
- Minimize service account mailbox size to avoid retrieving old or unnecessary data

Why?
Requesting more properties and more items uses more resources.
Some properties are very expensive to generate.

Best Practice #3: Minimize search load on Exchange

- Do use SyncFolderItems or FindItem with no search criteria whenever possible
- Do use FindItem+QueryString if it supports the necessary search criteria
- Do delete SearchFolders after they are no longer needed
- Don’t use FindItem or SearchFolder with search criteria unless absolutely required

Why?

Specifying search criteria using FindItem search or Search Folders search criteria causes the Mailbox server to perform expensive search operations. FindItem + QueryString leverages Indexed Search which is much more efficient.

SyncFolderItems with ID Only shape is a very efficient operation.

IIS Log Diagnostics Deep Dive

```
2009-08-17 17:00:00 W3SVC1 EXCAS140001 153.23.45.31 POST
/EWS/Exchange.asmx
;RC:215d07c0-3769-49d5-a320-42cf63268bc3;Init>>Conn:0,AD:30
000/30000/0.00%,CAS:54000/54000/0.00%,AB:30000/30000/0.00%,
RPC:36000/36000/0.00%,FC:10000/0,Hash:46727838,Sub:20/1;Soa
pAction=m:GetItem;Version=1;
RpcC=4;RpcL=15;LdapC=0;LdapL=0;End(15.5997ms)>>Conn:1,AD:0/
30000/0.00%,CAS:54000/53998/0.00%,AB:30000/30000/0.00%,RPC:
36000/36000/0.00%,FC:10000/0,Hash:46727838,Sub:20/1; 443
mydomain\user1 157.54.79.65 HTTP/1.1
Microsoft+Office+Communicator+Deskphone/3.0 - -
                                    4015 4133 12261
```

- Important Diagnostics
  - SoapAction: EWS Method Being Called
  - RpcC: Number of RPC's Made to Mailbox
  - RpcL: Average RPC Latency (ms)
  - LdapC: Number of LDAP Calls Made to AD
  - LdapL: Average LDAP Latency (ms)
  - End(x.xms): Milliseconds spent processing request

Performance Counter Diagnostics

- Performance counters give you a "big picture" view
- Under the MSExchangeWS* Counter
  - Requests/sec
    - Overall number of requests being served by EWS, this includes successful requests
  - Items [Read|Moved|Sent|Updated]/sec
  - Average Response Time
    - Running average in ms
  - *Command/sec*
    - GetItem Requests/sec
    - FindItem Requests/sec

Take-aways

- Exchange 2010 enables easy, rich and “cloud ready” development
- Use Autodiscover, explicit properties, and batch operations in your code
- Follow the best practices to develop scalable and efficient applications
- Download the Exchange Web Services Managed API 1.0 today!

Resources

- Download the Exchange Web Services Managed API 1.0
- Learn more about Exchange Web Services
  - MSDN
    - http://msdn.microsoft.com/en-us/library/bb204119(EXCHG.80).aspx
  - “Inside Microsoft Exchange 2007 Web Services”
- http://msdn.microsoft.com/blogs/exchangedev
- Download the EWS Editor
- Fill out session evaluations

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