

MSG302

Common Troubleshooting and Support Issues for Exchange Server 2003

Alan Cardenas

Escalation Engineer

Global Technical Support Centre

alancar@microsoft.com

Agenda

- **Types of issues**
 - **Performance issues**
 - **Mail routing and message flow issues**
 - **Migration issues**
- **Useful References**
- **Summary**

Performance Issues

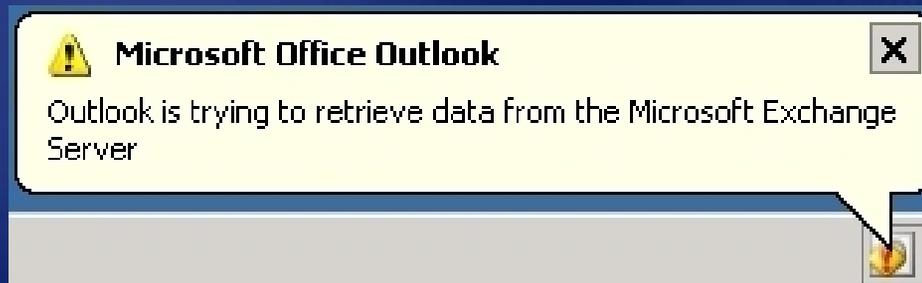
Performance issues

- **“Not with the hardware I’ve got!”**
- **Disk-related performance issues**
- **Memory-related performance issues**
- **AD-related performance issues**

Performance issues

What do we mean?

- In most cases, this gets noticed as:
 - RPC pop-ups (Outlook 2002 and 2003)



- Client hangs (earlier Outlook versions)
- Mail pending in the Outbox
- Mail waiting in queues

Performance issues

Disk-related performance issues

- **Exchange is hugely disk intensive**
 - **Database** - random I/O
 - **Transaction Logs** - sequential I/O
 - **Queue folders** - sequential I/O
 - **Temporary storage (TEMP)**- random I/O
 - **Page file** - random I/O
- **Try not to mix I/O patterns –
Separate all of these if possible!**

Performance issues

Disk-related performance issues

- Exchange is hugely disk intensive
- How does your disk measure up?
 - What do you measure?
 - When do you measure?

Performance issues

Disk-related performance issues

What do you measure?

Counter	Expected value
LogicalDisk*\Average Disk sec/Read	<40 ms (<20 ms ideal)
LogicalDisk\Average Disk sec/Write	<40 ms (<20 ms ideal)
MSExchangeIS\RPC Requests	<30
MSExchangeIS\RPC Averaged Latency	<50 ms

* We can use PhysicalDisk too, just make sure you know which disks are used by databases.

Performance issues

Disk-related performance issues

When do you measure?

- **Get a baseline**
 - So you have something to compare against
- **When the problem occurs**
 - What is different?

Performance issues

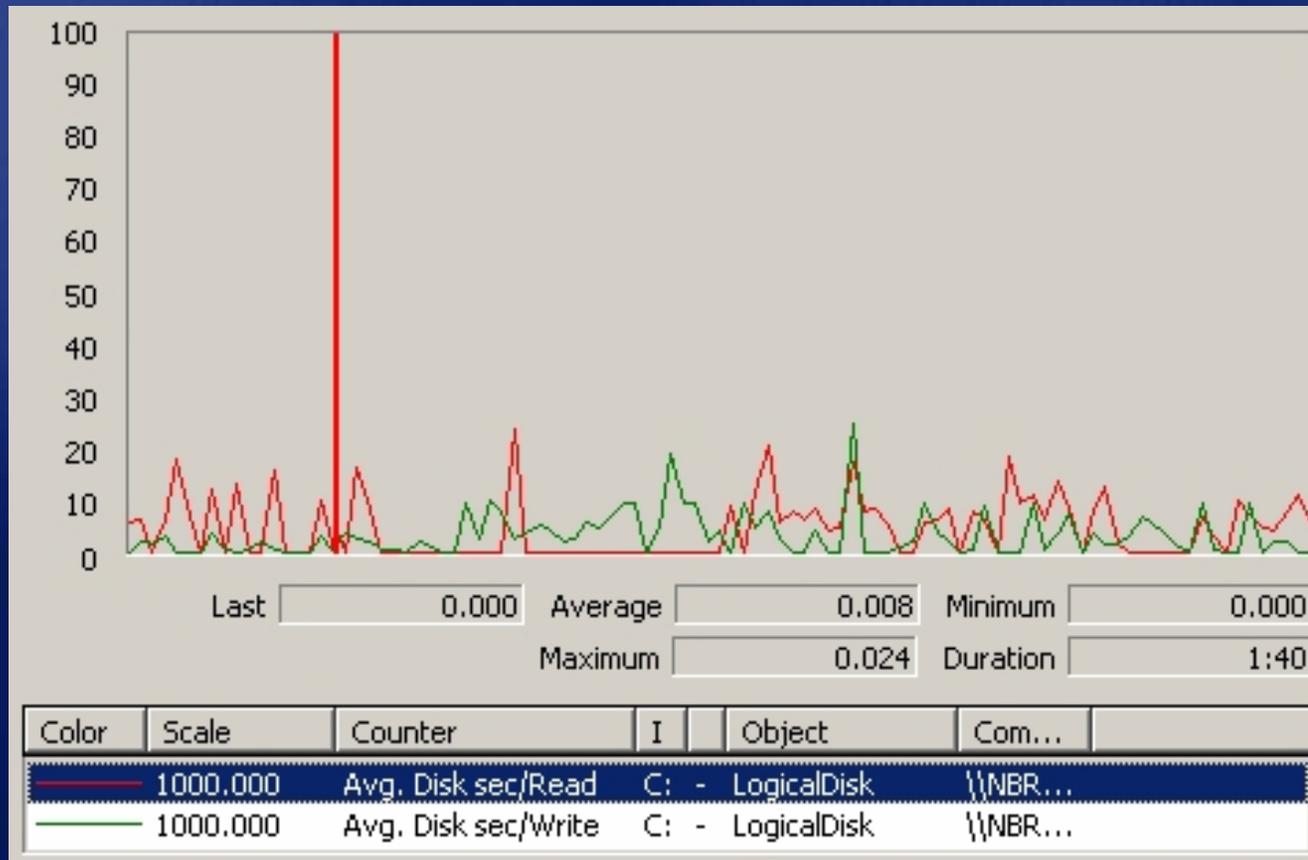
Disk-related performance issues

- Exchange is hugely disk intensive
- How does your disk measure up?
- How can you identify them?

Performance issues

Disk-related performance issues

How do you identify them?

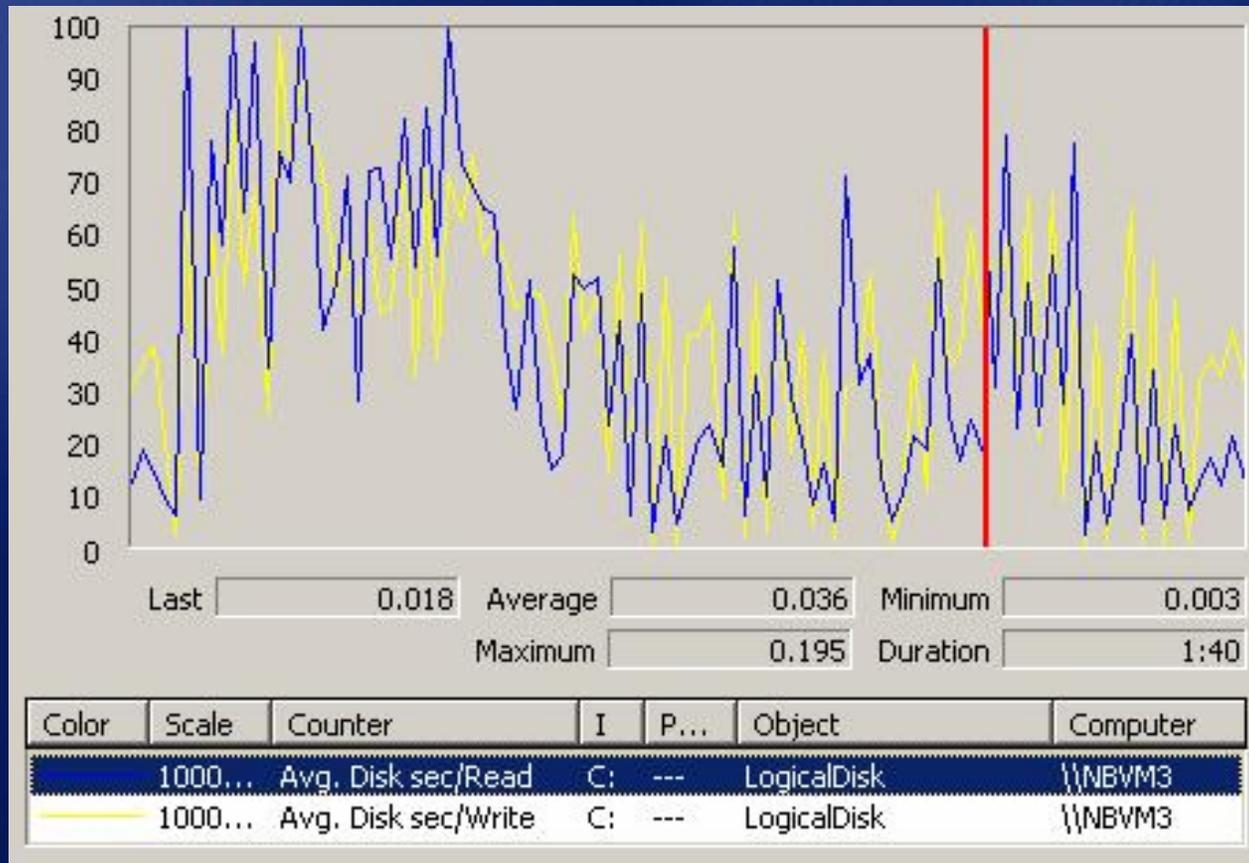


This is OK!

Performance issues

Disk-related performance issues

How do you identify them?



This isn't!

Performance issues

Disk-related performance issues

Quick guide

Slow database disk → Slow Outlook

Slow queue disk → Slow Mail Flow

How many messages are in the Inboxes?

How many messages are in the queues?

Are you paging?

Performance issues

Disk-related performance issues

- Exchange is hugely disk intensive
- How does your disk measure up?
- How can you identify them?
- How can you fix them?

Performance issues

Disk-related performance issues

How can you fix them?

Split I/O

- **Separate Databases to different drives**
- **Separate Logs for different Storage Groups**
- **Separate temporary storage**

- **Use more spindles**
 - **More throughput to write data**

- **Disk is getting cheaper**

Performance issues

Memory-related performance issues

How do you identify them?

- **Events in Event Log**
 - **When the Store starts**
 - MExchangeIS 9665 – Memory configuration not optimal
 - **When the Store is running**
 - MExchangeIS 12800 – Content Conversion Failure
 - MExchangeIS 9582 – Memory Fragmentation
 - **When the Store has crashed**
 - Users will tell you first!

Performance issues

Memory-related performance issues

How can you fix them?

- **Correct use of /3Gb switch in BOOT.INI**
 - Mailbox servers with > 1 Gb memory
 - *Not on Windows 2000 Standard*
- **HeapDeCommitFreeThreshold**
 - On all servers
- **ESE tweaks**
 - `msExchESEParamCacheSizeMax`
 - `msExchESEParamMaxOpenTables`
 - *Be careful with these*

Performance issues

AD-related performance issues

What do they look like?

- **Logon issues**
 - Continuous prompts for credentials
- **Queues building**
 - Especially “Messages awaiting directory lookup”
- **Events in Event Viewer**
 - DSAccess 2102 – All DS Servers in Use or ...

Outlook 2003 Logging

- “Enable Logging” checkbox
- HKCU\Software\Microsoft\Office\11.0\Outlook
 - Reg_DWORD
 - “EnablePerfTracking”
 - 1b

Performance issues

Performance issues

How else can you identify them?

- **Use ExMon (Exchange User Monitor)**

Some of things we can view:

- IP addresses used by clients
- Outlook version, mode (cached vs. online)
- Resource use such as:
 - CPU usage
 - Server-side processor latency
 - Total latency for network and processing with Outlook 2003 version MAPI
 - Network bytes

***Mail routing and message flow
issues***

Mail routing and message flow issues

What do we mean?

- Mail is useless if it doesn't go anywhere
- It's annoying if it's delayed
- What if it goes the wrong way?
- What if it's turfed?

Mail routing and message flow issues

Why does it happen?

● Lots of places to queue...

 DSN messages pending submission	SMTP	Default SMTP Virtual Server
 Failed message retry queue	SMTP	Default SMTP Virtual Server
 Local delivery	SMTP	Default SMTP Virtual Server
 Messages awaiting directory lookup	SMTP	Default SMTP Virtual Server
 Messages pending submission	SMTP	Default SMTP Virtual Server
 Messages queued for deferred delivery	SMTP	Default SMTP Virtual Server
 Messages waiting to be routed	X400	Exchange MTA
 Messages waiting to be routed	SMTP	Default SMTP Virtual Server
 My connector - [10.10.10.10] (SMTP ...	SMTP	Default SMTP Virtual Server
 SMTP Mailbox Store (SERVER)	X400	Exchange MTA

Mail routing and message flow issues

Why does it happen?

- Lots of places to queue
- Lots of reasons why...

Mail routing and message flow issues

Why does it happen?

“Local Delivery” queue

- Information store writes may be slow
 - check key performance counters, especially if other queues are backing up too
 - turn up MExchangeTransport → Store Driver diagnostic logging to Max and look for clues
- Check mailbox growth for possible loop

- Could it be disk-related?

Mail routing and message flow issues

Why does it happen?

“Messages awaiting directory lookup” queue

- Pre-categorizer queue
 - retry state indicates a systemic problem
 - turn up Categorizer diagnostic logging to Max, look for clues
 - try to “Force” queue
- Have there been any AD issues or changes?
- Could be too many restrictions or DG expansions

- Could it be disk-related?

Mail routing and message flow issues

Why does it happen?

“Messages pending submission” queue

- Memory or disk-related
- Could be PreSubmission (OnArrival) transport event sink issue
 - Anti-virus
 - Anti-spam
 - Disclaimers

“Messages waiting to be routed” queue

- Connector Restrictions
 - Nested Groups problematic
- Sending to Restricted Distribution Groups

Mail routing and message flow issues

Why does it happen?

“Remote delivery” queues

- Slow or incorrect DNS responses
- Firewalls blocking ESMTP verbs to remote Exchange
- Anti-virus problems/Anti-spam problems
- Clues in the queue viewer:

Name	Protocol	Source	State	Number of messages	Time next connectio...	System
DSN messages pending submission	SMTP	Default SMTP Virtual Server	Ready	0		Yes
Failed message retry queue	SMTP	Default SMTP Virtual Server	Ready	0		Yes
Local delivery	SMTP	Default SMTP Virtual Server	Ready	0		Yes
Messages awaiting directory lookup	SMTP	Default SMTP Virtual Server	Ready	0		Yes
Messages pending submission	SMTP	Default SMTP Virtual Server	Ready	0		Yes
Messages queued for deferred delivery	SMTP	Default SMTP Virtual Server	Ready	0		Yes
Messages waiting to be routed	X400	Exchange MTA	Ready	0		Yes
Messages waiting to be routed	SMTP	Default SMTP Virtual Server	Ready	0		Yes
My connector - [10.10.10.10] (SMTP ...	SMTP	Default SMTP Virtual Server	Retry	1	3/22/2005 1:59 PM	No
SMTP Mailbox Store (SERVER)	X400	Exchange MTA	Active	0		No

Additional queue information

The remote server did not respond to a connection attempt.

Settings...
Help

Mail routing and message flow issues

Why does it happen?

“Remote delivery” queues

- The remote server did not respond to a connection attempt.
 - Check SMTP connector (smart host)
 - Could be a problem on receiving side
- The connection was dropped by the remote host.
 - Remote side does not support a required SMTP Extension (if you have AUTH configured, for example)
 - Network problems (get a network trace)

Mail routing and message flow issues

Why does it happen?

“Remote delivery” queues

- Unable to bind to the destination server in DNS.
 - No MX or A record was found, perhaps with only a non-authoritative response
 - Use NSLOOKUP – verify ALL DNS servers
- Destination server does not exist.
 - MX record points to an A record that does not exist
 - Check SMTP connector (smart host)

Mail routing and message flow issues

Why does it happen?

“Remote delivery” queues

- SMTP could not connect to any DNS server.
 - Your problems may be more severe than mail flow!
 - Check both Windows NIC properties and SMTP VS → Delivery → Advanced → DNS
- An SMTP protocol error occurred.
 - Check event log for Event 4000 (you may have to turn up *Transport -> SMTP Protocol* logging)
 - Get network trace

Deployment & migration issues

Deployment and Migration

Why migrate?

- *Exchange 5.5 support ends 31st of December, 2005*

What to migrate?

- NT 4.0 accounts
- Exchange 5.5 mailboxes to Exchange 2003
- Exchange 5.5 public folder to Exchange 2003

Deployment and Migration

Migration Tools

- **ADMT v.2**
 - Preserve SIDHistory and passwords
- **Active Directory Connector**
 - Connection Agreements
- **ADClean**
 - If ADC was deployed ahead of ADMT
 - Using ADMT first minimize need to this

Deployment and Migration

Connection Agreements

- Recipients
- Configuration
- Public Folder
- Use the Exchange 2003 Deployment Tool
 - Minimizes Connection Agreement issues

Deployment and Migration

Migrating 5.5 mailboxes to 2003

- Move mailbox
- Exmerge

Migrating public folders

- Replication
- PFMigrate

Deployment and Migration

Common Exchange Migration Pitfalls

- Using ADC ahead of ADMT
- Using NT 4.0 account after ADMT
- Enabling ADC-created disabled accounts
 - Delegate and Public Folder access

Deployment and Migration

Inter-org Migration

- GalSync
- Exchange Migration Wizard

Deployment and Migration

Site Consolidation Justification

- Outlook 2003 Cached Mode
- Improved WAN links
- Bigger hardware
- Central administration

Deployment and Migration

Site Consolidation Considerations

- Exchange 2003 SP1
- Post SP4-Rollup for Exchange 5.5
- Use the latest Deployment tool
- Domain consolidation

Deployment and Migration

Site Consolidation Considerations

- **Can hardware cope?**
- **Effect to network bandwidth?**
 - **Move mailbox process**
 - **Offline address book download**
 - **Directory and public folder replication**
 - **“Missing” in Global address list**
 - **Non-delivery when replying to old mail**

Deployment and Migration

Site Consolidation Considerations

- **Mailbox access**
 - **Delegates may loss access**
 - **Inbox rules**

Summary

The Top Ten

- **Disk issues**
 - Recoverability – logs and database
 - Performance – separate I/O
- **Memory issues**
 - /3Gb switch
 - `HeapDecommitFreeThreshold`
 - ESE tweaks
- **AD issues**
 - Verify DC/GC accessibility
- **Message flow issues**
 - Queuing due to DNS
 - Queuing due to server down
 - Queuing due to firewalls
- **Migration issues**
 - ADC, SRS, ADMT – plan, plan, plan

Useful references

Reading

[Exchange Server 2003 Performance and Scalability Guide](#)

[Optimizing Storage for Exchange Server 2003](#)

[How to troubleshoot virtual memory fragmentation in Exchange...](#)

[Exchange Server 2003 Transport and Routing Guide](#)

[Understanding and Deploying Exchange 2000 ADC](#)

Additional Tools

[Exchange Server User Monitor](#)

[Exchange Best Practice Analyser](#)

Operations Guide

[Exchange Server 2003 Operations Guide](#)

Your Feedback is Important!



Please write the number located in the bottom left hand corner of your name badge, on the top of the Evaluation Form. This number links back to your registration details so that we can contact you after TechEd.

When completing the Evaluation Form, please tick the number that best corresponds to your experience at TechEd. For additional comments, use the comments section at the end of each form.

Microsoft[®]

Your potential. Our passion.[™]

© 2005 Microsoft Corporation. All rights reserved.

This presentation is for informational purposes only. Microsoft makes no warranties, express or implied, in this summary.

Microsoft®

Tech·Ed

2005

Learn · Solve · Grow

ExBPA example

The screenshot displays the Microsoft Exchange Server Best Practices Analyzer (ExBPA) interface. The main window is titled "View Best Practices Report" and shows a report for "Server EXAMER01" dated "Full 9/9/2004 10:29:42 AM". The report is titled "Full Issues List" and indicates that 55 issues were found. The first issue is a warning: "Domain controller server response time". The description states: "Round-trip times from Exchange server EXAMER01 to Active Directory : EXEUR01.resource.contop.com are taking 12ms. This may cause Exchange Server performance issues." Below the description are three links: "Tell me more about this issue and how to resolve it", "Do not show me this issue again for this instance only", and "Do not show me this issue again for all instances".

A help window is open over the warning, titled "Round-trip times to Active Directory server are taking more than 10 ms". The help text explains: "The Microsoft Exchange Server Best Practices Analyzer Tool queries the WIN32_PingStatus Windows Management Instrumentation (WMI) class in the root\cimv2 name space to determine the value for the ResponseTime key. If the Exchange Server Best Practices Analyzer finds the value for the ResponseTime key to be greater than 10 milliseconds (ms) but less than 100 ms, a warning is displayed." It further explains that the ResponseTime key represents the time elapsed for the response to the ICMP echo request (ping) packets. To correct this warning, it advises: "1. Check to ensure that the domain controller in question is not overloaded. Use the ADTest.Exe tool to perform tests against the domain controller to see if the hardware can handle the anticipated load."

The "Full Issues List" also includes other warnings such as "GlobalFlag is set", "PageHeapFlags is set", "WINS primary is blank", "Crash upload logging disabled", "Real-time anti-virus configuration problem", "Software update available", "Trend ScanMail is stopped", "Disk timeout changed", and "DSAccess configuration is hard-coded".

MPS Report

Download details: Microsoft Product Support's Reporting Tools - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Copy Paste

Address <http://www.microsoft.com/downloads/details.aspx?familyid=cebf3c7c-7ca5-408f-88b7-f9c79b7306c0&displaylang=en> Go Links >>

Microsoft.com Home | Site Map

Search Microsoft.com for: Go

Download Center

Search for a download: Go

Advanced Search

Download Center Home

Download Categories

- Games
- DirectX
- Internet
- Windows (Security & Updates)
- Windows Media
- Drivers
- Office and Home Applications
- Mobile Devices
- Macintosh & Other Platforms
- Server Applications
- System Management Tools
- Development Resources

Download Resources

- Download Center Help
- Related Download Sites
- Update Services
- Microsoft Download Notifications
- Worldwide Downloads

Microsoft Product Support's Reporting Tools

[Download files below](#)

Version:	1.0
Date Published:	9/29/2004
Language:	English
Download Size:	9 KB - 7005 KB*

*Download size depends on selected download components.

Overview

The Microsoft Product Support Reporting Tool facilitates the gathering of critical system and logging information used in troubleshooting support issues. The reporting tool DOES NOT make any registry changes or modifications to the operating system. There are 8 specialty versions, one for each of the following support scenario categories: Alliance, Directory Services (not for Windows NT 4.0), Networking, Clustering, SQL, Software Update Services, MDAC and Base/Setup/Storage/Print/Performance. Each version gathers some of the same basic information but there are specific reports unique to each of the support scenario categories. Please read the readme.txt files for more details about each version.

Important Notes

1. You may install and use an unlimited number of copies of MPSReports solely for the purpose of gathering system information necessary for Microsoft Product Support Services to provide you with technical support services requested by you. All other purposes are not supported by Microsoft. Please refer to the EULA for more detailed information regarding your usage rights.
2. No MPSReport versions are currently supported to run on 64bit Operating system versions.

Quick Description

Download the scripted system configuration gathering tools. The Microsoft Platform Support Reporting Utility facilitates the gathering of critical system and logging information used in troubleshooting support issues.

On This Page

- [Overview](#)
- [System Requirements](#)
- [Instructions](#)
- [Similar Downloads](#)

Related Resources

- [Advance Your Technical Career with Microsoft Certifications](#)
- [Home Page for Product Support](#)
- [Download the Latest Service Packs](#)
- [Get Your Questions Answered: Product Support Newsgroups](#)

Internet

Winroute example

WinRoute - [AST-E2K3-01.rte]

File Edit View Actions Options Window Help

Organization Name: AST Corporation

- General Info (fe63bbd603930ca129607213ae0d89f1)
- Administrative Groups
 - Castle Hill
 - Kellyville
 - North Ryde
 - Routing Groups
 - North Ryde (1.2fe.0)**
 - Routing Group Distinguished Name: CN=North Ryde,CN=Routing Groups,CN=North Ryde,CN=Administrative Groups,CN=AST Corporation,CN=Microsoft Exchange,CN=Serv
 - Routing Master: AST-E2K3-01
 - Version Info
 - Routing Group Addresses
 - Members
 - Connectors
 - 1st RG-to-North Ryde
 - Connector Distinguished Name: CN=1st RG-to-North Ryde,CN=Connections,CN=North Ryde,CN=Routing Groups,CN=North Ryde,CN=Administrative Groups,CN=AS
 - Type: SMTP
 - Local Bridgehead Address: _de7b42bf0ea27b42b299549bd3c8267d_5
 - Remote Bridgehead Address: _de7b42bf0ea27b42b299549bd3c8267d_D
 - Legacy Distinguished Name: /o=AST Corporation/ou=North Ryde/cn=Configuration/cn=Connections/cn=1st RG-to-North Ryde
 - Schedule ID: 0
 - Restrictions
 - Address Spaces
 - Local Bridgehead Servers
 - AST-E2K3-01

Address Space	Address Type	Cost	Non-default Restrictions	Connector	Routing Group	Administrative Group
*	SMTP	1	Yes	Internet Mail Service (AST-EX55-01)	North Ryde	North Ryde
@	NOTES	1	Yes	Connector for Lotus Notes (AST-E2K...	First Routing Group	Castle Hill
c=AU;a= ;p=AST Corporation;o=Kellyville;	X.400	1	Yes	Site Connector (Kellyville)	North Ryde	North Ryde
c=AU;a= ;p=AST Corporation;o=North Ryde;	X.400	1	No	1st RG-to-North Ryde	North Ryde	North Ryde
c=AU;a= ;p=AST Corporation;o=North Ryde;	X.400	1	Yes	Site Connector (North Ryde)	Kellyville	Kellyville
c=AU;a= ;p=AST Corporation;o=North Ryde;	X.400	1	No	1st RG-to-North Ryde	First Routing Group	Castle Hill
CN=First Routing Group,CN=Routing Groups,CN=Castle H...	Routing Group	1	No	1st RG-to-North Ryde	North Ryde	North Ryde
CN=First Routing Group,CN=Routing Groups,CN=Castle H...	Routing Group	1	No	1st RG-to-North Ryde	North Ryde	North Ryde
CN=Kellyville,CN=Routing Groups,CN=Kellyville,CN=Admi...	Routing Group	1	Yes	Site Connector (Kellyville)	North Ryde	North Ryde
CN=North Ryde,CN=Routing Groups,CN=North Ryde,CN...	Routing Group	1	Yes	Site Connector (North Ryde)	Kellyville	Kellyville
CN=North Ryde,CN=Routing Groups,CN=North Ryde,CN...	Routing Group	1	No	1st RG-to-North Ryde	First Routing Group	Castle Hill
CN=North Ryde,CN=Routing Groups,CN=North Ryde,CN...	Routing Group	1	No	1st RG-to-North Ryde	First Routing Group	Castle Hill

9d32f517d6b80748913c9fcebfbf53e CONN_AVAIL {b}AST-EX55-01) STATE UP) 63b9537483296f4284840059f90805de (CONFIG {6}ccMail {b}AST-EX55-02 {

Ready NUM

-1018 JET_errReadVerifyFailure

```
Information Store (2160) The database page read from  
the file "d:\exchsrvr\MDBDATA\PRIV.EDB" at offset  
897024 (0x000000000000db000) for 4096 (0x00001000)  
bytes failed verification due to a page checksum  
mismatch. The expected checksum was 2651583211  
(0x9e0bf2eb) and the actual checksum was 2651582996  
(0x9e0bf214). The read operation will fail with error  
-1018 (0xfffffc06). If this condition persists then  
please restore the database from a previous backup.
```

- Checksum is performed every read/write
- Most likely hardware-related (Trust me!)