

NotesBench Disclosure Report
for
IBM @server xSeries 232
using
Lotus Domino Server 5.09a
and
Windows 2000 Server

Results Submitted February 26, 2002

IBM Corporation



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Edition Notice

Executive Summary

The IBM® @server xSeries 232 server demonstrated leadership performance running Lotus® Domino® Server Release 5.09a on Microsoft® Windows® 2000 Server. The results detailed in this report were obtained using the NotesBench R5Mail-Only workload.

| Test Script | Maximum Users | NotesMark (tpm) | Ave. Response Time (sec) | \$/User | \$/NotesMark |
|-------------|---------------|-----------------|--------------------------|---------|--------------|
| R5Mail-Only | 12,050 | 16,005 | 0.798 | \$4.86 | \$3.66 |

The xSeries 232 server was configured with two 1.4GHz¹ Intel® Pentium® III™ processors, 4GB memory, and 53 hard disk drives. Two Domino partitions, which were part of the same domain, shared a directory containing more than 50,000 person documents. For complete configuration details, see Appendix A: Overall Test Setup and Software Versions.

The server under test supported an R5Mail-Only workload of 12,050 active mail users (see price/performance results² above), configured with two Domino partitions.

IBM's xSeries Server Performance Laboratory in Research Triangle Park, NC, conducted the benchmark in February, and KMDS Technical Associates, Inc., audited the results in March 2002.

NotesBench provides an objective method for evaluating the performance of different platforms running Lotus Domino Server. NotesBench generates a transactions-per-minute (tpm) throughput metric, called a NotesMark, for each test, along with a value for the maximum capacity (number of users) supported, and the average response time.

Benchmarking Objectives

The benchmark objective was to provide customers with information on how to utilize the capability of the xSeries 232 system as a Domino Server 5.09a mail server configured with the ServeRAID-4Mx Ultra160 SCSI Adapter for RAID-1 data redundancy.

¹ GHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.

² The price/performance results are based on IBM's published list prices.

Test Methodologies

Test Setup and Hardware/Software Configuration

The xSeries 232 system under test (SUT) was configured with two 1.4GHz Pentium III processors (512KB of ECC full-speed L2 write-back cache), 4GB of memory, fifty-three 18.2GB 15K rpm hard disk drives. Four RAID-1 arrays, each composed of 12 hard drives, which contained the mail files, were connected to a channel on a ServeRAID-4Mx Ultra160 SCSI Adapter. Five hard drives, two of which were contained in a RAID-0 array that was used as the boot disk and three of which were contained in a RAID-1 array that was used as Domino program drive, were connected to a channel on a ServeRAID-4Mx Ultra160 SCSI Adapter. A more detailed description of the configuration of the RAID-1 arrays is provided in Appendix A.

The network consisted of two LAN segments; each segment consisted of one 16-port IBM Type 8371-A16 switch. One 10/100 Dual-Port Server Adapter was installed in the xSeries 232 system under test. The LAN segments were configured as follow:

- Segment 1 was connected to partition 1 on the SUT to child drivers 1, 3, 5, 7, and parent 1.
- Segment 2 was connected to partition 2 on the SUT to child drivers 2, 4, 6, and parent 2.

The xSeries 232 system under test ran Microsoft Windows 2000 Server and Domino Server 5.09a.

The RAID controller configuration value for Stripe Unit Size was set at 16KB. Write-back cache was enabled for all RAID-1 arrays.

The following NOTES.INI parameters were modified as recommended in the NotesBench operator's manual.

| R5Mail-Only Workload |
|----------------------------------|
| Server_Max_Concurrent_Trans=1000 |
| NSF_DBcache_MaxEntries=10000 |
| NSF_Buffer_Pool_Size_MB=360 |
| MailLogToEventsOnly=1 |
| Log_MailRouting=10 |
| Log_Sessions=0 |
| Mail_Number_Of_MailBoxes=2 |
| Server_Pool_Tasks=100 |
| Max_Users=10000 |
| DBMaxEntries=10000 |

In the Server-Configuration document for both partitions, two mail.boxes were used on each partition for mail routing.

The following parameters were added to suppress database activity logging after long runs and to capture server console output:

```
No_Force_Activity_Logging=1
Server_Show_Performance=1
TcpIp_TcpIpAddress=0,192.1.1.x:1352
Debug_Outfile=j:\tmp\SUTy\INFO.TXT
```

In the last two lines above, x is the net address and y is the partition number for the corresponding partition.

All Notes server tasks were disabled except Router.

All Domino data files were located on the D:, E:, F:, G:, and J: RAID-1 arrays. The Domino executable codes and data link files were located on the J: RAID-1 array. Partition 1 used the D: and E: arrays for the mail file; partition 2 used the F: and G: arrays.

Test Procedures

Several trial runs were conducted starting with a single Domino server to attempt to exhaust at least one of the system resources: processor, memory or disk subsystem. When average user response time reached an unacceptable level before any one of these resources had been fully utilized, an additional resource was installed. System resource utilization was monitored using Windows 2000 Performance Monitor (PERFMON), which enabled the system configuration to be optimized while balancing system resources.

The 12,050 users were distributed over 7 clients. Each client added 50 to 2,000 users to the system under test. The test ran for 10 hours and 40 minutes, including ramp-up. Child 1 through child 6 simulated 2,000 users each, child 7 simulated 50 users. The actual ramp-up period from startup of child 1 to the point when all 12,050 users were shown on the server console was approximately 4 hours. The test ran for more than 6 hours after ramp-up. During the test runs, the tools used to determine steady state included the child driver RES files, Notesizer command outputs, and Domino Server statistics output to the server console on a minute-by-minute basis.

To confirm steady state, we verified the number of users at the server and its logs. We confirmed steady state when the number of users on the SUT Domino Server console reached the intended number of users. We also used the Show Stat Mail command on the server to verify that at least 90 percent of the mail generated during the test period was delivered to the local mail databases during the test period.

To ensure that the test results were reproducible, all tests were repeated, and the results were compared and were found to be consistent.

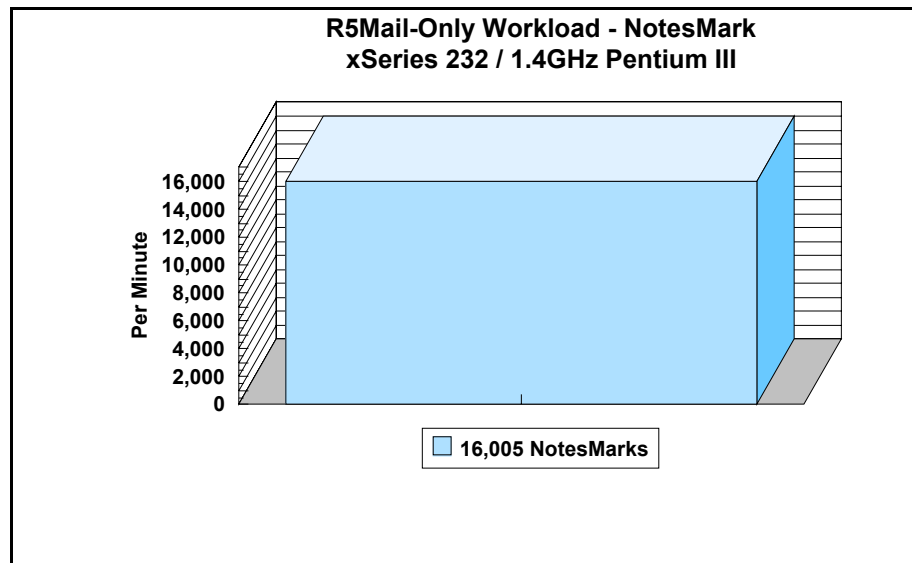
Other NotesBench Tests

IBM intends to continue conducting NotesBench measurements to further optimize and exploit the performance capability of the xSeries product line running Domino Server 5.09a.

Data

xSeries 232 NotesMark Value for R5Mail-Only Test

The xSeries 232 server demonstrated that it can support 12,050 concurrent, active users with this workload. The NotesMark throughput value was 16,005. Average response time was 0.798 seconds. The test ran error-free for a period of 10 hours and 40 minutes.



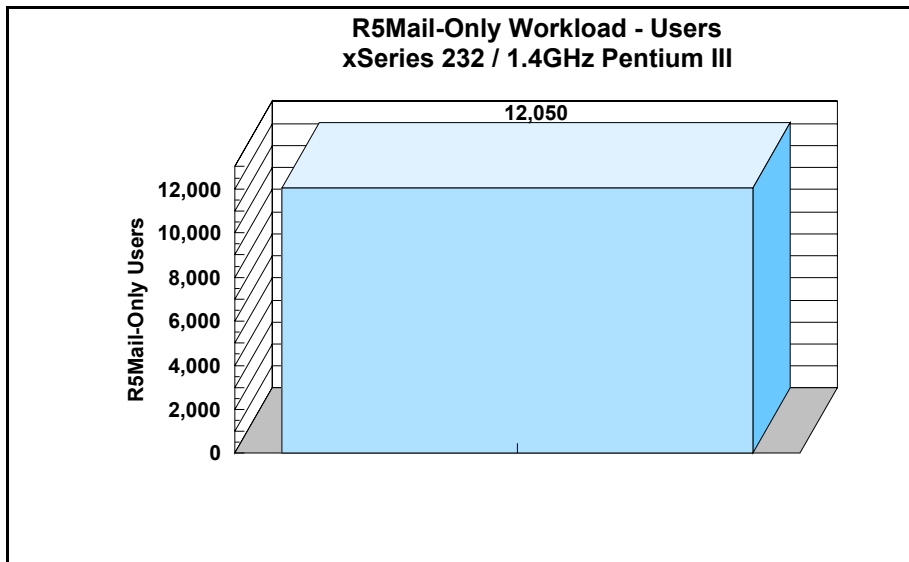
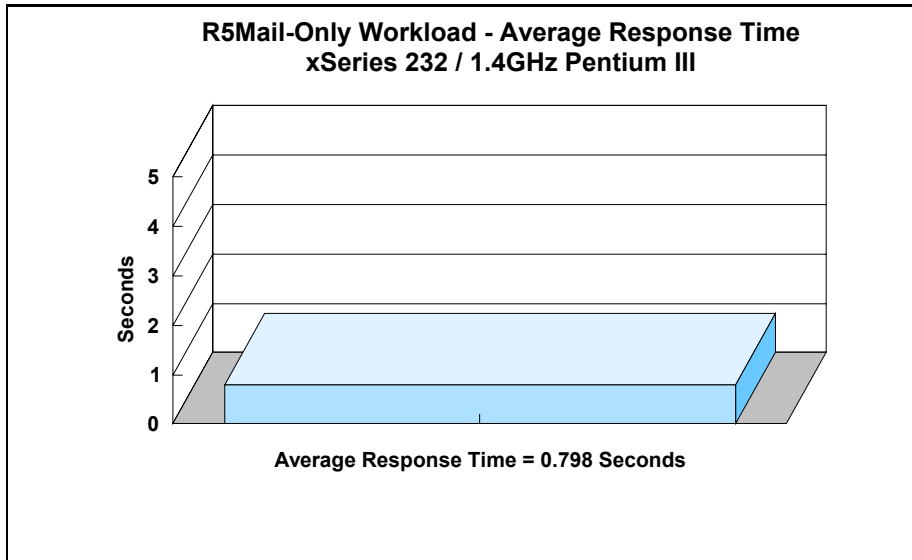
The R5Mail workload executes Notes transactions that model a server for mail users at sites that rely only on mail for communication. The resulting capacity metric for a mail-only server is the maximum number of users that can be supported before the average user response time becomes unacceptable.

The Domino R5Mail-Only test script models an active user who is reading and sending mail. The script contains an average of 15 minutes of waiting; thus, the average user would execute this script a maximum of four times each hour. For each iteration of the test script, there are 5 documents read, 2 documents updated, 2 documents deleted, 2 documents added, 1 view scrolling operation, 1 database opened and closed, 1 view opened and closed, looking up of recipients and sending an invitation every 30 minutes, as well as some miscellaneous operations. In sending messages, each user creates and sends a mail message to NumMessageRecipients no more frequently than every 90 minutes. About every 90 minutes, each user creates a meeting invitation and responds to an invitation.

NotesNum Output for R5Mail-Only Test

Min Start Time = 02/22/2002 10:29:22 AM Max Stop Time = 02/22/2002 08:48:32 PM
Total Test Errors = 0
Total Test Time = 37140 sec

Test Run: Users = 12050 NotesMark = 16005 Response Time = 798 msec (02/22/2002 02:38:00 PM to 02/22/2002 08:40:00 PM)



Analysis

When configured as described in this report, the xSeries 232 server demonstrated that it can manage the intense resource usage during ramp-up to 12,050 concurrent R5Mail users with no errors at the clients. During the steady-state period on one of the successful 12,050-user runs, the average CPU utilization was 87.48 percent. The average available memory was 1300.17MB.

The transaction logging option was not enabled for this audit run. When this option is enabled, we recommended placing the transaction logging directory on a dedicated disk that is attached to a less-busy adapter on a less-busy PCI bus to improve response time.

Conclusions

The test results demonstrate that the xSeries 232 configured as described in this report can support up to 12,050 concurrent, active R5Mail users with a response time well below that permitted by the test criteria.

These results are based on running the xSeries 232 as a dedicated Domino server. The addition of other application workloads will affect the number of users supported as well as the response time. Achieving optimum performance in a customer environment is highly dependent upon selecting adequate processor power, memory and disk storage as well as balancing the configuration of that hardware and appropriately tuning the operating system and Domino software.

Statement by Auditor

The original “Lotus NotesBench Test Results Report Certification Letter” was signed by Daryl K. Thompson, NotesBench Auditor for KMDS Technical Associates, Inc., and is on file at IBM.

Appendix A: Overall Test Setup and Software Versions

Number of Client Systems

For the R5Mail-Only test, Nine driver systems were used. Seven of those systems were configured as child drivers (child 1 through child 7). Two parent systems were used to control the run.

The disk configuration used for the child systems is as follows:

- Child drivers 1-7
 - C: Partition (2GB - NTFS) - Windows 2000
 - D: Partition (6.5GB - NTFS) - Notes 5.09a code and data

Number of Server Platforms

One server platform, the xSeries 232 with two 1.4GHz Pentium III processors and 4GB of memory, was benchmarked.

The disk configuration used for the system under test is as follows:

- H: Two-drive RAID-0 (18.1GB - NTFS) - Windows 2000 Server (Boot Partition)
- D: Partition (109.2GB - NTFS) - Domino mail files
- E: Partition (109.2GB - NTFS) - Domino mail files
- F: Partition (109.2GB - NTFS) - Domino mail files
- G: Partition (109.2GB - NTFS) - Domino mail files
- J: Partition (27.3GB - NTFS) - Domino executables and Domino mail data subdirectory

Network

The network consisted of two segments. All child drivers, parents and SUT were connected to one of 16 ports on two IBM TYPE 8371 A-16 switches. One 10/100 Dual-Port Server Adapter was installed in the xSeries 232 system under test. The LAN segments were configured as follow:

- Segment 1 was connected to partition 1 on the SUT to child drivers 1, 3, 5, 7, and parent 1.
- Segment 2 was connected to partition 2 on the SUT to child drivers 2, 4, 6, and parent 2.

Software Versions

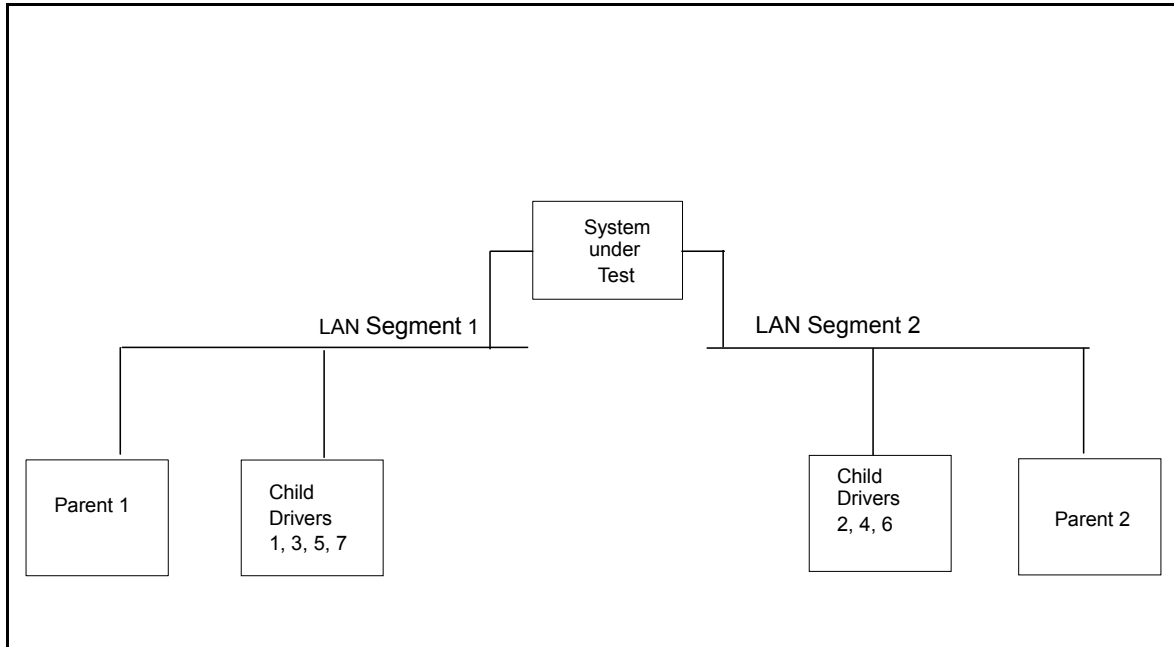
Software versions used on the system under test were as follows:

- Microsoft Windows 2000 Server and Service Pack 2
- Lotus Domino Server Release 5.09a for Windows 2000

Software versions used on the child and parent drivers were as follows:

- Microsoft Windows 2000 Professional for child drivers and Windows 2000 Server for the parent systems
- Lotus Domino Client Release 5.09a for Windows 2000
- NotesBench Version 5.08 - Windows/32, released July 11, 2001

Test Setup Diagram



Details of Configuration

| System Under Test | Parent Source Drivers and Child Drivers 1-7 |
|--|---|
| xSeries 232 | IBM IntelliStation M Pro |
| 2 x 1.4GHz Pentium III | 1 x 500MHz Pentium III |
| 4GB Memory | 256MB Memory |
| 53 x 18.2GB Drives (5 RAID-1 arrays) | 1 x 9.1GB Drive |
| 3 x ServeRAID-4Mx Ultra160 SCSI Adapter | |
| Dual-port 10/100 Ethernet Server Adapter | Integrated 10/100 Ethernet Controller |
| Microsoft Windows 2000 Server | Microsoft Windows 2000 Professional |

Appendix B: System Configurations

| Server under Test | |
|--------------------------|--|
| System | xSeries 232 |
| Processor | 2 x 1.4GHz Pentium III |
| Memory | 4GB |
| Cache | 512KB ECC Full-Speed L2 Cache per Processor |
| RAID Controller | 3 x ServeRAID-4Mx Ultra160 SCSI Adapter |
| Disk Drive | 48 x 18.2GB 15K rpm (configured as four RAID-1 arrays) 5 x 18.2GB 15K rpm (configured as one RAID-1 array, plus a RAID-0 for system boot) |
| Network Interface | 10/100 Dual-Port Server Adapter |
| I/O | PCI Bus (64 Bit) |
| Operating System | Microsoft Windows 2000 Server with Service Pack 2 |
| Notes | Lotus Domino Server Release 5.09a for Windows 2000 |

| Parent Source Drivers and Child Drivers 1 - 7 | |
|---|--|
| System | IBM IntelliStation M Pro |
| Processor | 1 x 500MHz Pentium III |
| Memory | 256MB |
| Disk Drive | 1 x 9.1GB |
| Network Interface | Integrated 10/100 Ethernet Controller |
| I/O | PCI Bus |
| Operating System | Microsoft Windows 2000 Professional with Service Pack 2 |
| Notes | Lotus Domino Client Release 5.09a for Windows 2000 |
| NotesBench | NotesBench Version 5.08 - Windows/32, released July 11, 2001 |

Appendix C: Operating System Parameters

In the system under test, the following registry variables were changed from their default values of 2 to 0:

HKEY_LOCAL_MACHINE/System/CurrentControlSet/Control/PriorityControl/Win32PrioritySeparation:
REG_DWORD:0

HKEY_LOCAL_MACHINE/System/CurrentControlSet/Control/SessionManager/MemoryManager/
LargeSystemCache: REG_DWORD:0

Appendix D: NOTES.INI Settings

NOTES.INI for First Partition Server

[Notes]

```
Directory=j:\notesr5\sut1
KitType=2
SetupDB=Setup.nsf
UserName=administrator
CompanyName=ibm
NotesProgram=j:\notesr5
InstallType=4
CONSOLE_Lotus_Domino_Server=80 300 7 125 18 793 349
WinNTIconPath=j:\notesr5\sut1\W32
Timezone=5
DST=1
$$HasLANPort=1
WWWDSPP_SYNC_BROWSERCACHE=0
WWWDSPP_PREFETCH_OBJECT=0
EnablePlugins=1
Preferences=2147486833
AltNameLanguage=en
ContentLanguage=en-US
WeekStart=1
ViewWeekStart=2
NavWeekStart=2
XLATE_CSID=52
SPELL_LANG=1033
Region=en-US
Passthru_LogLevel=0
Console_LogLevel=2
VIEWIMP1=Lotus 1-2-3,0,_IWKSV,,WKS,WK1,,WR1,,WRK,,WK3,,WK4,,4,
VIEWIMP3=Structured Text,0,_ISTR,,LTR,,CGN,,STR,,1,
VIEWIMP4=Tabular Text,0,_ITAB,,PRN,,RPT,,TXT,,TAB,,1,
VIEWEXP1=Lotus 1-2-3,0,_XWKS,,WKS,WK1,,WR1,,WRK,,4,
VIEWEXP3=Structured Text,0,_XSTR,,LTR,,CGN,,STR,,1,
VIEWEXP4=Tabular Text,1,_XTAB,,LTR,,RPT,,CGN,,TAB,,1,
EDITIMP1=ASCII Text,0,_ITEXT,,TXT,,PRN,,C,,H,,RIP,,1,
EDITIMP2=Microsoft RTF,0,_IW4W,_IRTF,,DOC,,RTF,,2,
EDITIMP3=Lotus 1-2-3,0,_IW4W,_IWKSE,,WKS,WK1,,WR1,,WRK,,WK3,,WK4,,123,,4,
EDITIMP4=Lotus PIC,0,_IPIC,,PIC,,8,
EDITIMP5=CGM Image,0,_IFL,,GMF,,CGM,,8,
EDITIMP6=TIF 5.0 Image,0,_ITIFF,,TIF,,18,
EDITIMP7=BMP Image,0,_IBMP,,BMP,,18,
EDITIMP8=Lotus Ami Pro,0,_IW4W,W4W33F/V0,,SAM,,2,
EDITIMP9=HTML File,0,_IHTML,,HTM,,HTML,,1,
EDITIMP17=WordPerfect 5.x,0,_IW4W,W4W07F/V1,,DOC,,WPD,,2,
EDITIMP21=Lotus Word Pro,0,_IW4W,W4W12F/V0,,LWP,,2,
EDITIMP22=PCX Image,0,_IPCX,,PCX,,18,
EDITIMP28=Binary with Text,0,_ISTRNGS,,*,1,
EDITIMP29=WordPerfect 6.0/6.1,0,_IW4W,W4W48F/V0,,WPD,,WPT,,DOC,,2,
EDITIMP30=Microsoft Excel,0,_IW4W,W4W21F/V4C,,XLS,,4,
EDITIMP31=Microsoft Word,0,_IW4W,W4W49F/V0,,DOC,,2,
EDITIMP32=GIF Image,0,_IGIF,,GIF,,18,
EDITIMP33=JPEG Image,0,_IJPEG,,JPG,,18,
EDITEXP1=ASCII Text,2,_XTXT,,TXT,,PRN,,C,,H,,RIP,,1,
EDITEXP2=Microsoft RTF,2,_XRTF,,DOC,,RTF,,4,
EDITEXP3=CGM Image,2,_XCGM,,CGM,,GMF,,8,
EDITEXP4=TIF 5.0 Image,2,_XTIFF,,TIF,,18,
EDITEXP5=Lotus Ami Pro,2,_XW4W,W4W33T/V0,,SAM,,2,
EDITEXP14=WordPerfect 5.1,2,_XW4W,W4W07T/V1,,DOC,,2,
EDITEXP21=WordPerfect 6.0,2,_XW4W,W4W48T/V0,,DOC,,2,
```


SERVERS_FRAME_PERCENT=20
MONITOR_SCALE=1
ADMINWINDOWSIZEWIN=20 15 984 715
ADMINMAXIMIZED=0
WinNTIconCommonConfig=Universal
WinNTIconSize=2
WinNTIconPos=2
WinNTIconHidden=1
WinNTIconRect=0 0 0 24

server_show_performance=1
mailuseprocesses=0
TCPIP_TCPIPADDRESS=0,192.1.2.220:1352
MailLogToEventsOnly=1
Log_mailRouting=10
DBMaxEntries=10000
Max_users=10000
NSF_DBCache_MaxEntries=10000
Server_Pool_Tasks=100
Server_max_Concurrent_Trans=1000
No_Force_Activity_Logging=1
NSF_Buffer_Pool_Size_MB=360
MailCompactDisabled=1
Debug_OutFile=j:\temp\sut1info.txt

NOTES.INI for Second Partition Server

[Notes]

Directory=j:\notes5\sut2
KitType=2
SetupDB=Setup.nsf
UserName=administrator
CompanyName=ibm
NotesProgram=j:\notes5
InstallType=4
CONSOLE_Lotus_Domino_Server=80 300 7 148 393 816 724
WinNTIconPath=j:\notes5\sut2\W32
Timezone=5
DST=1
\$\$HasLANPort=1
WWWDSPP_SYNC_BROWSERCACHE=0
WWWDSPP_PREFETCH_OBJECT=0
EnablePlugins=1
Preferences=2147486833
AltNameLanguage=en
ContentLanguage=en-US
WeekStart=1
ViewWeekStart=2
NavWeekStart=2
XLATE_CSID=52
SPELL_LANG=1033
Region=en-US
Passthru_LogLevel=0
Console_LogLevel=2
VIEWIMP1=Lotus 1-2-3,0,_IWKSV,,WKS,,WK1,,WR1,,WRK,,WK3,,WK4,,4,
VIEWIMP3=Structured Text,0,_ISTR,,LTR,,CGN,,STR,,1,
VIEWIMP4=Tabular Text,0,_ITAB,,PRN,,RPT,,TXT,,TAB,,1,
VIEWEXP1=Lotus 1-2-3,0,_XWKS,,WKS,,WK1,,WR1,,WRK,,4,
VIEWEXP3=Structured Text,0,_XSTR,,LTR,,CGN,,STR,,1,
VIEWEXP4=Tabular Text,1,_XTAB,,LTR,,RPT,,CGN,,TAB,,1,
EDITIMP1=ASCII Text,0,_ITEXT,,TXT,,PRN,,C,,H,,RIP,,1,
EDITIMP2=Microsoft RTF,0,_IW4W,_IRTF,,DOC,,RTF,,2,
EDITIMP3=Lotus 1-2-3,0,_IW4W,_IWKSE,,WKS,,WK1,,WR1,,WRK,,WK3,,WK4,,123,,4,
EDITIMP4=Lotus PIC,0,_IPIC,,PIC,,8,


```
CertificateExpChecked=sut2.id 02/06/2002
ServerKeyFileName=sut2.id
MailServer=CN=sut2/O=ibm
Domain=ibm
Admin=CN=administrator/O=ibm
TemplateSetup=66
Setup=62
ServerSetup=55
DESKWINDOWSIZE=-4 -4 1032 748
MAXIMIZED=1
CleanSetup=1
PhoneLog=2
Log=log.nsf, 1, 0, 7, 40000
TRANSLOG_AutoFixup=1
TRANSLOG_UseAll=0
TRANSLOG_Style=0
TRANSLOG_Performance=2
TRANSLOG_Status=0
MTEEnabled=0
ECLSetup=3
AdminLastServer=CN=sut2/O=ibm
SERVERS_FRAME_PERCENT=20
MONITOR_SCALE=1
ADMINWINDOWSIZEWIN=20 15 984 715
ADMINMAXIMIZED=0
WinNTIconCommonConfig=Universal
WinNTIconSize=2
WinNTIconPos=2
WinNTIconHidden=1
WinNTIconRect=0 0 0 24
;=====
server_show_performance=1
mailuseprocesses=0
TCPIP_TCPIPADDRESS=0,192.1.2.221:1352
MailLogToEventsOnly=1
Log_mailRouting=10
DBMaxEntries=10000
Max_users=10000
NSF_DBCache_MaxEntries=10000
Server_Pool_Tasks=100
Server_max_Concurrent_Trans=1000
No_Force_Activity_Logging=1
NSF_Buffer_Pool_Size_MB=360
MailCompactDisabled=1
Debug_OutFile=j:\temp\sut2info.txt
;=====
```

NOTES.INI for Child 1

[Notes]

```
Directory=d:\notes\data
KitType=1
InstallType=6
;=====
NthIteration=6
Tmp=Notestmp
MaxSessions=100
NumAddLocalReplica=1
NumDeleteLocalReplica=1
NumStampLocalReplica=1
NumUpdateLocalReplica=1
NormalMessageSize=10000
NumMessageRecipients=3
NumMailNotesPerUser=100
AttachmentSize=500000
LargeMessageSize=32000
NodeName=nchild2
```



```

ChildStagger=1,1;37,2-3;41,4-5;57,6-7
;ChildStagger=1,1;35,2-3;43,4-5;53,6-7;62,8-9;55,10-12
NumClients1=2000
NumClients2=2000
NumClients3=2000
NumClients4=2000
NumClients5=2000
NumClients6=2000
NumClients7=50
NumClients8=2000
NumClients9=2000
NumClients10=2000
NumClients11=1000
NumClients12=1000
NumClients13=1000
NumClients14=1000
NumClients15=1000
NumClients16=1000
;NumClients17=1000
;NumClients18=1000
;NumClients19=1000
;NumClients20=1000
ResultsDirectory=c:\results
DEBUG_OUTFILE=c:\results\notesnum_sut1.txt
;-----End
;*****
;
;      Multirun Variables
;*****
; ProbeIntervalDelay=wait after end of one run before starting next
; ProbeWaitTime=wait to start Probe (default=15mins)
; ProbeRunTime=#minutes probe will collect stats
;;Probe_Interval=2800,2900,3000
;;ProbeIntervalDelay=30
;;ProbeWaitTime=30
;;ProbeRunTime=180
; ProbeRunTime=2 because we want 240 minutes of runtime after ramp-up
; without overhead of PROBE
; Next line cause command 'show stat' to execute on SUT console
; before start of each multi-run and when ramped up for that run
; Mail statistics required for audit at ramp-up and before ramp-down
;;ProbeTestIncrementCMD=show stat mail
;;ProbeTestIncrementCMD=show stat database
;;NBTestReset=1
;*****
;      Server.Planner Variables
;*****
;;CPDatabase=c:\notesb3\data\Server.Planner.nsf
;;SUTMachineID=Teton600
;-----End
;-----End
WinNTIconPath=c:\notes\data\W32
Timezone=5
DST=1
$$HasLANPort=1
WWWDSPP_SYNC_BROWSERCACHE=0
WWWDSPP_PREFETCH_OBJECT=0
EnableJavaApplets=1
EnablePlugins=1
Preferences=-2147480463
AltNameLanguage=en
ContentLanguage=en-US
WeekStart=1
ViewWeekStart=2
NavWeekStart=2
XLATE_CSID=52
SPELL_LANG=1033
Region=en-US
Passthru_LogLevel=0

```


DESKWINDOWSIZE=17 9 984 715
WINDOWSIZEWIN=17 9 984 715
MAXIMIZED=0
WinNTIconCommonConfig=Universal
WinNTIconSize=2
WinNTIconPos=2
WinNTIconHidden=1
WinNTIconRect=0 0 0 24
PhoneLog=2
Log=log.nsf, 1, 0, 7, 40000
ECLSetup=3
NAMES=names.nsf
\$headlineDisableHeadlines=0
EmptyTrash=0
MIMEPromptMultilingual=1
MIMEMultilingualMode=1
EnableActiveXInBrowser=1
EnableJavaScript=1
EnableJavaScriptErrorDialogs=1
EnableLiveConnect=1
ShowAccelerators=1

Appendix E: Network Configuration

The standard TCP/IP stack provided by Microsoft Windows 2000 Server was used.

In the system under test, the network adapter speed for the 10/100 Dual-Port Server Adapter was changed from the default 'Auto' to 100Mbps. This forced the Duplex Mode to 'full'.

Appendix F: Guidelines for Information Usage

This report is intended for IBM Business Partners, customers, and IBM marketing and technical support personnel. The report may be distributed in accordance with the requirements stated in the Edition notice.

Appendix G: Pricing

The table provides the IBM List Price for the U.S. only. Actual prices may vary, and prices may also vary by country. Prices are subject to change without notice. For additional information and current prices, contact your local IBM representative.

| Item Description | Order Number | Qty | IBM List Price | Extended Price |
|---|--------------|-----|----------------|-----------------|
| IBM xSeries 232 with one 1.4 GHz Pentium III | 8668-54X | 1 | \$2,549 | \$2,549 |
| 1.4GHz Pentium III Processor Upgrade | 48P7467 | 1 | 1,199 | 1,199 |
| 1GB 133MHz ECC SDRAM Memory | 33L3326 | 4 | 989 | 3,956 |
| ServeRAID-4Mx Ultra160 SCSI Adapter | 06P5736 | 3 | 999 | 2,997 |
| 18.2GB 15K Ultra160 SCSI Hard Disk Drives | 06P5767 | 53 | 549 | 29,097 |
| EXP300 Rack Storage Expansion Enclosure | 3531-1RU | 4 | 3,179 | 12,716 |
| 10/100 Dual-Port Server Adapter | 22P4901 | 1 | 209 | 209 |
| E54 15" (13.8" Viewable) Color Monitor | 633147N | 1 | 149 | 149 |
| Software | | | | |
| Windows 2000 Server | | 1 | 738 | 738 |
| Lotus Domino R5 Enterprise Server (List Price) | | 1 | 4,995 | 4,995 |
| Total System Price | | | | \$58,605 |

Appendix H: Vendor-Defined Information

None.

First Edition - February 2002

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