NotesBench Disclosure Report

for

IBM @server xSeries 220

using

Lotus Domino Server 5.02a

and

Windows 2000 Server

Certified November 3, 2000

IBM Corporation

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Executive Summary

The IBM @server xSeries 220 server demonstrated leadership performance running Lotus** Domino** Server Release 5.02a 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	8,700	11,113	3.888	$4.47	$3.50

The xSeries 220 server was configured with two 933MHz[1] Intel** Pentium** III processors, 3GB[2] of memory, and 23 hard disk drives. All configuration details are provided in Appendix A: Overall Test Setup and Software Versions.

The server under test supported an R5Mail-Only workload of 8,700 active mail users (see price/performance results[3] above).

IBM's Server Performance Laboratory in Research Triangle Park, NC, conducted the benchmark in October, and KMDS Technical Associates, Inc., audited the results in October 2000.

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 fully utilize the capability of the xSeries 220 system as a Domino Server 5.0 mail server configured with the Netfinity ServeRAID-3L Ultra2 SCSI Adapter for RAID-1 data redundancy.

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[1] MHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.

[2] When referring to hard drive capacity, GB stands for one thousand million bytes. Total user-accessible capacity may vary depending on operating environments.

[3] The price/performance results are based on IBM's estimated reseller pricing. IBM resellers set their own prices, and actual prices may vary.

Test Methodologies

Test Setup and Hardware/Software Configuration

The xSeries 220 system under test (SUT) was configured with two 933MHz Pentium III processors (256KB of ECC full-speed L2 write-back cache and 133MHz front-side bus per processor), 3GB of memory, twenty 18.2GB and three 9.1GB 10K rpm hard disk drives. Each of four RAID-1 arrays, which contained the mail files, was connected to a channel on a Netfinity ServeRAID-3L Ultra2 SCSI Adapter. Three drives, two of which were contained in a RAID-1 array, and one of which was used as the boot disk, were connected to a ServeRAID-3L Ultra2 SCSI Adapter. A more detailed description of the configuration of the RAID-1 arrays is provided in Appendix A.

The network consisted of an IBM Type 8371-A16 switch with a 16-port 10/100 modules. All child drivers, parent and SUT were connected to a port on the switch. The xSeries 220 system under test ran Microsoft Windows 2000 Server and Domino Server 5.02a.

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
MailMaxThreads=2
NSF_DBcache_MaxEntries=10000
MailLogToEventsOnly=1
Log_MailRouting=10
Log_Sessions=0
Mail_Number_Of_MailBoxes=2
Server_Pool_Tasks=100
Max_Users=10000
DBMaxEntries=10000

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
Debug_Outfile=\\Parent1\Results\SUTINFO.TXT
```

All Notes server tasks were disabled except Router.

All Domino mail files were located on the D:, E:, F: and G: RAID-1 arrays. The Domino executable codes, data directory, and mail link files were located on the J: RAID-1 array.

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 8,700 users were distributed across nine clients. Each client added 700 to 1,000 users to the system under test. The test ran for 8 hours and 25 minutes, including ramp-up. Child 1 through child 8 simulated 1,000 users each, and child 9 simulated 700 users. The actual ramp-up period from startup of child 1 to the point when all 8,700 users were shown on the server console was approximately 2 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 5.0.

Data

xSeries 220 NotesMark Value for R5Mail-Only Test

The xSeries 220 server demonstrated that it can support 8,700 concurrent active users with this workload. The NotesMark throughput value was 11,113. Average response time was 3.888 seconds. The test ran error-free for a period of 8 hours and 25 minutes.
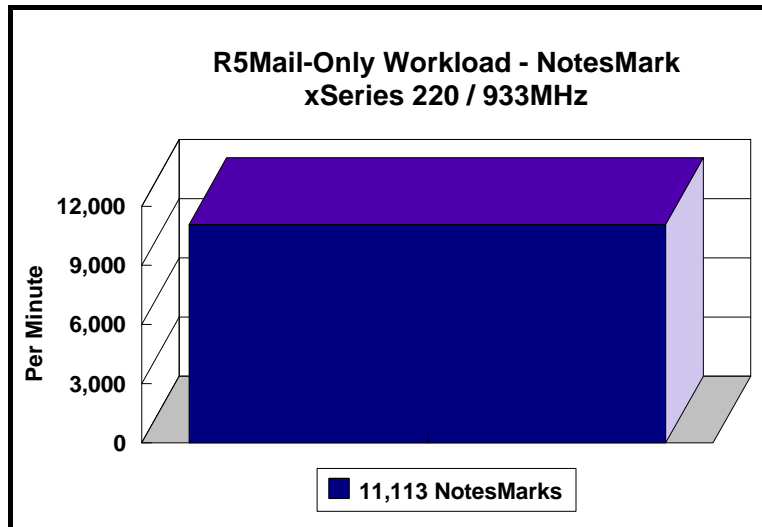
The R5Mail workload executes Notes transactions that model a server for mail users at sites that rely only on mail for communication. The resulting capacity metric for a mail-only server is the maximum number of users that can be supported before the average user response time becomes unacceptable.

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 = 10/12/2000 12:33:07 PM   Max Stop Time = 10/12/2000 08:56:53 PM
Total Test Errors = 0
Total Test Time = 30180 sec
Test Run: Users = 8700   NotesMark = 11113   Response Time = 3888 msec (10/12/2000
02:38:00 PM to 10/12/2000 08:44:00 PM)

**R5Mail-Only Workload - Average Response Time
xSeries 220 / 933MHz**

Average Response Time = 3.888 Seconds

**R5Mail-Only Workload - Users
xSeries 220 / 933MHz**
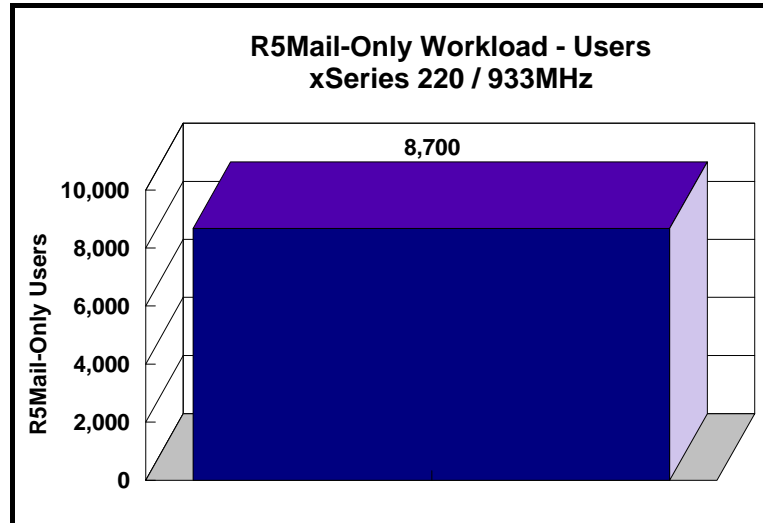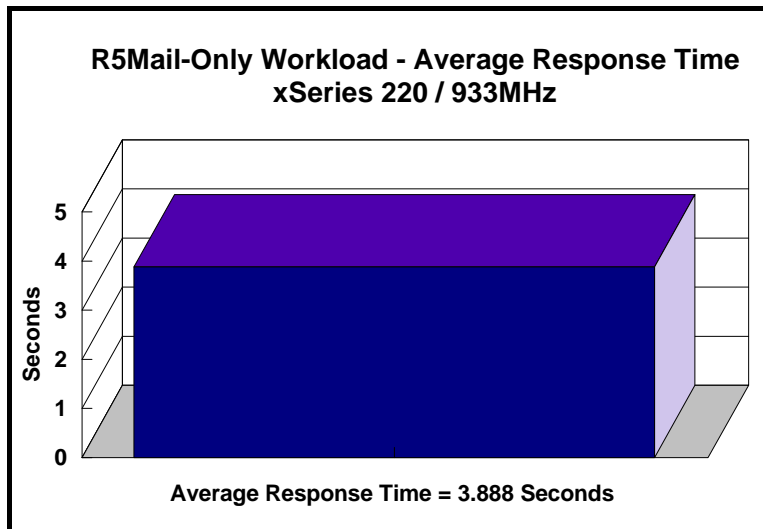
8,700

Analysis

When configured optimally as described in this report, the xSeries 220 server demonstrated that it can manage the intense resource usage during ramp-up to 8,700 concurrent R5Mail users with no errors at the clients. During the steady-state period on one of the successful 8,700-user runs, the average processor utilization was 93 percent. The average available memory was 1GB.

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 220 configured as described in this report can support up to 8,700 concurrent, active R5Mail users with a response time well below that permitted by the test criteria. The server's architecture provides many options that can expand its capability. Utilizing the expandable memory (up to 4GB) and I/O subsystem capacity, the system can be further expanded to accommodate additional Domino server tasks and other applications..

These results are based on running the xSeries 220 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.

These results represent leadership performance in a two-processor hardware platform for the Domino Server 5.0 environment.

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, 10 driver systems were used. Nine of those systems were configured as child drivers 1 through 9. A parent system was used to collect debug_output data and control the run.

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

- Child drivers 1 through 9
  - C: Partition (2GB - NTFS) - Windows 2000
  - D: Partition (6.5GB - NTFS) - Notes 5.03 code and data

Number of Server Platforms

One server platform, the xSeries 220 with two 933MHz Pentium III processors and 3 GB of memory, was benchmarked.

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

- C: Single disk drive (9.1GB - NTFS) - Windows 2000 Server (boot partition)
- D: Partition (45GB - NTFS) - Domino mail files
- E: Partition (45GB - NTFS) - Domino mail files
- F: Partition (45GB - NTFS) - Domino mail files
- G: Partition (45GB - NTFS) - Domino mail files
- J: Partition (9.1GB - NTFS - Domino executables and Domino mail data subdirectory

Network

The network consisted of a single segment. All child drivers, parent and SUT were connected to one of 16 ports on an IBM Type 8371-A16 switch. .

Software Versions

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

- Microsoft Windows 2000 Server
- Lotus Domino Server Release 5.02a

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

- Microsoft Windows 2000
- Lotus Domino Client Release 5.03 for Windows NT
- NotesBench Version 5.03 - Windows/32, released March 13, 2000

Test Setup Diagram

```
                    ┌──────────┐
                    │  System  │
                    │  under   │
                    │   Test   │
                    └────┬─────┘
              ┌──────────┴──────────┐
       ┌──────┴──────┐       ┌──────┴──────┐
       │   Parent    │       │    Child    │
       │             │       │   Drivers   │
       │             │       │    1 - 9    │
       └─────────────┘       └─────────────┘
```
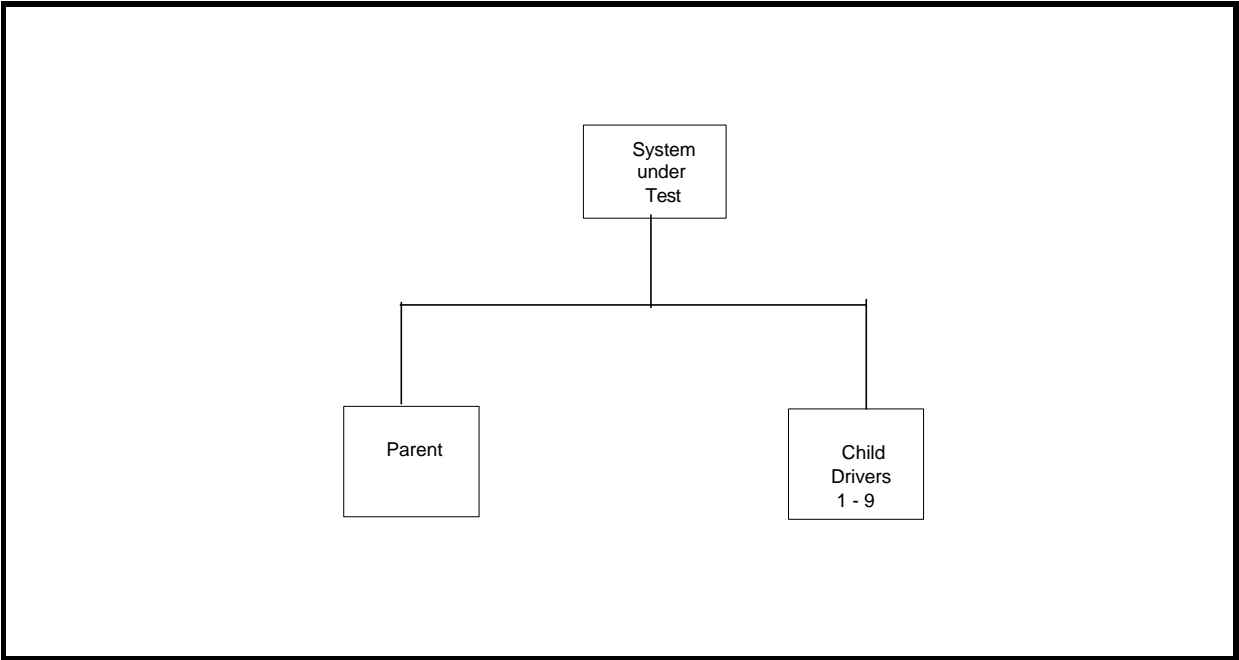
Appendix B: System Configurations

Details of Configurations

Server under Test	
System	xSeries 220
Processor	2 x 933MHz Pentium III
Memory	3GB
Cache	256KB ECC Full-Speed L2 Cache per Processor
RAID Controller	5 x Netfinity ServeRAID-3L Ultra2 SCSI Adapters
Disk Drive	3 x 9.1GB and 20 x 18.2GB 10K-4 Ultra160 SCSI Drives (configured as five RAID-1 arrays)
Network Interface	Integrated 10/100 Ethernet Controller
I/O	PCI Bus
Operating System	Microsoft Windows 2000 Server
Notes	Lotus Domino Server Release 5.02a for Windows NT

Child Drivers 1 - 9	
System	IBM IntelliStation M Pro
Processor	1 x 500MHz Pentium II
Memory	256MB
Disk Drive	1 x 9.1GB
Network Interface	1 x 10/100 Ethernet PCI Adapter
I/O	PCI Bus
Operating System	Microsoft Windows 2000 Professional
Notes	Lotus Domino Client Release 5.03 for Windows 2000
NotesBench	NotesBench Version 5.03 - Windows/32, released March 13, 2000

Parent	
System	IBM IntelliStation M PRO
Processor	1 x 500MHz Pentium II
Memory	256MB
Disk Drive	1 x 9.1GB
Network Interface	1 x 10/100 Ethernet PCI Adapter
I/O	PCI Bus
Operating System	Microsoft Windows 2000 Professional
Notes	Lotus Domino Client Release 5.03 for Windows 2000
NotesBench	NotesBench Version 5.03 - Windows/32, released March 13, 2000

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 System under Test

```
[Notes]
;           Server Performance
;
DBMaxEntries=10000
MailMaxThreads=2
Mail_Number_Of_MailBoxes=2
Max_Users=10000
NSF_DBcache_Maxentries=10000
;(IRIS recommended 2 params: 100 &1000)
;Server_Pool_Tasks=100
;Server_Max_Concurrent_Trans=1000
Server_Pool_Tasks=100
Server_Max_Concurrent_Trans=1000
;View_Rebuild_dir=m:\view_dir
;
;MailUseThreads=1
LOG_SESSIONS=0
MailLogToEventsOnly=1
LOG_MAILROUTING=10
SERVER_SHOW_PERFORMANCE=1
No_Force_Activity_Logging=1
DEBUG_OUTFILE=\\parent1\c$\results\sutinfo.txt
;Server_MaxSessions=8000
;Server_Session_timeout=15
;           end performance parameters
Directory=j:\notesr5\data
KitType=2
SetupDB=Setup.nsf
UserName=sut
CompanyName=ibm
NotesProgram=j:\notesr5
InstallType=5
CONSOLE_Lotus_Domino_Server=80 25 7 3 111 655 442
WinNTIconPath=j:\notesr5\data\W32
Timezone=5
DST=1
$$HasLANPort=1
WWWDSP_SYNC_BROWSERCACHE=0
WWWDSP_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 Worksheet,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 Worksheet,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=TIFF 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,_XTEXT,,.TXT,.PRN,.C,.H,.RIP,,1,
EDITEXP2=MicrosoftWord RTF,2,_XRTF,,.DOC,.RTF,,4,
EDITEXP3=CGM Image,2,_XCGM,,.CGM,.GMF,,8,
EDITEXP4=TIFF 5.0 Image,2,_XTIFF,,.TIF,,18,
EDITEXP5=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,
EDITEXP22=WordPerfect 6.1,2,_XW4W,W4W48T/V1,.WPD,.WPT,.DOC,,2,
EDITEXP23=Word for Windows 6.0,2,_XW4W,W4W49T/V0,.DOC,,2,
DDETimeout=10
NAMEDSTYLE0=03004261736963000000000000000000000000000000000000000000000000000000000000001010100000A00000000000
00100A0050A0000006400A0050A000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00009404000000000000
NAMEDSTYLE0_FACE=Default Sans Serif
NAMEDSTYLE1=030042756C6C65740000000000000000000000000000000000000000000000000000000000001010100000A0000000000
00000008070A000000640008070A0000000000000000000000000000000000000000000000000000000000000000000000000000000000
000049404000000000000
NAMEDSTYLE1_FACE=Default Sans Serif
NAMEDSTYLE2=0300486561646C696E6500000000000000000000000000000000000000000000000000000000000010101010B0C0000000000
000100A0050A0000006400A0050A000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00009404000000000000
NAMEDSTYLE2_FACE=Default Sans Serif
DefaultMailTemplate=mail50.ntf
ServerTasks=Router
;ServerTasks=Router,Replica,Update,Amgr,AdminP,CalConn,Event,Sched,Stats,maps
;ServerTasksAt1=Catalog,Design
;ServerTasksAt2=UpdAll,Object Collect mailobj.nsf
;ServerTasksAt3=Object Info -Full
;ServerTasksAt5=Statlog
TCPIP=TCP, 0, 15, 0
LAN0ip=NETBIOS, 0, 15, 0
VINES=VINES, 0, 15, 0
SPX=NWSPX, 0, 15, 0
AppleTalk=ATALK, 0, 15, 0
LAN1=NETBIOS, 1, 15, 0
LAN2=NETBIOS, 2, 15, 0
LAN3=NETBIOS, 3, 15, 0
LAN4=NETBIOS, 4, 15, 0
LAN5=NETBIOS, 5, 15, 0
LAN6=NETBIOS, 6, 15, 0
LAN7=NETBIOS, 7, 15, 0
LAN8=NETBIOS, 8, 15, 0
COM1=XPC,1,15,0,
COM2=XPC,2,15,0,
COM3=XPC,3,15,0,
COM4=XPC,4,15,0,
COM5=XPC,5,15,0,
Ports=TCPIP
DisabledPorts=LAN0ip,VINES,SPX,AppleTalk,LAN1,LAN2,LAN3,LAN4,LAN5,LAN6,LAN7,LAN8,COM1,COM2,COM3,COM4,COM5
LOG_REPLICATION=1
LOG_SESSIONS=1
KeyFilename=server.id
CertificateExpChecked=server.id 02/25/2000
CertifierIDFile=j:\notesr5\data\cert.id
MailServer=CN=sut/O=IBM
ServerKeyFileName=server.id
Domain=IBM
Admin=CN=admin/O=IBM
TemplateSetup=62
Setup=60

```
ServerSetup=50
DESKWINDOWSIZE=-4 -4 648 460
MAXIMIZED=1
ECLSetup=3
PhoneLog=2
Log=log.nsf, 1, 0, 7, 40000
ShowCertifierRecoveryWarning_j:\notesr5\data\cert.id=1
SERVERS_FRAME_PERCENT=20
MONITOR_SCALE=1
ADMINWINDOWSIZEWIN=0 9 616 447
ADMINMAXIMIZED=0
WinNTIconCommonConfig=Universal
WinNTIconSize=2
WinNTIconPos=2
WinNTIconHidden=1
WinNTIconRect=0 0 0 24
FileDlgDirectory=J:\notesr5\data
AdminSetup=502
CleanSetup=1
TRANSLOG_AutoFixup=1
TRANSLOG_UseAll=0
TRANSLOG_Style=0
TRANSLOG_Performance=2
TRANSLOG_Status=0
MTEnabled=0
MAILUSEPROCESSES=0
MAILUSETHREADS=1
```

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=nchild1
MailTemplate=mail50.ntf
USESERVERNAB=1
ResultsDirectory=\\parent1\c$\results
DEBUG_OUTFILE=\\parent1\c$\results\res1
NumNotesLocalReplica=90
NumSharedNotes=900
NormalMessageSize=10000
ThreadStagger=0.6
;====================================================================
WinNTIconPath=d:\Notes\Data\W32
Timezone=5
DST=1
$$HasLANPort=1
WWWDSP_SYNC_BROWSERCACHE=0
WWWDSP_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
Console_LogLevel=2
VIEWIMP1=Lotus 1-2-3 Worksheet,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 Worksheet,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=TIFF 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,_XTEXT,,.TXT,.PRN,.C,.H,.RIP,,1,
EDITEXP2=MicrosoftWord RTF,2,_XRTF,,.DOC,.RTF,,4,
EDITEXP3=CGM Image,2,_XCGM,,.CGM,.GMF,,8,
EDITEXP4=TIFF 5.0 Image,2,_XTIFF,,.TIF,,18,
EDITEXP5=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,
EDITEXP22=WordPerfect 6.1,2,_XW4W,W4W48T/V1,.WPD,.WPT,.DOC,,2,
EDITEXP23=Word for Windows 6.0,2,_XW4W,W4W49T/V0,.DOC,,2,
DDETimeout=10
NAMEDSTYLE0=030042617369630000000000000000000000000000000000000000000000000000001010100000A0000000000000100A0050A0000006400A0050A0000000000000000000000000000000000000000000000000000000000000000000000000000009404000000000000
NAMEDSTYLE0_FACE=Default Sans Serif
NAMEDSTYLE1=030042756C6C65740000000000000000000000000000000000000000000000000000001010100000A00000000000000008070A000000640008070A0000000000000000000000000000000000000000000000000000000000000000000049404000000000000
NAMEDSTYLE1_FACE=Default Sans Serif
NAMEDSTYLE2=0300486561646C696E65000000000000000000000000000000000000000000000000001010010B0C0000000000000100A0050A0000006400A0050A0000000000000000000000000000000000000000000000000000000000000000000000000000009404000000000000
NAMEDSTYLE2_FACE=Default Sans Serif
DefaultMailTemplate=mail50.ntf
TCPIP=TCP, 0, 15, 0
Ports=TCPIP
KeyFilename=nchild1.id
CertificateExpChecked=nchild1.id 09/05/2000
$headlineClientId=694AB8D8:129D982F-85256950:00684F89
MailServer=CN=sut/O=ibm
MailFile=mail\nchild1.nsf
TemplateSetup=60
Setup=60
Location=Office (Network),9A2,CN=nchild1/O=ibm
$IEVersionMajor=5
ECLSetup=3
NAMES=names.nsf
$headlineDisableHeadlines=0
EmptyTrash=0
MIMEPromptMultilingual=1

```
MIMEMultilingualMode=1
EnableActiveXInBrowser=1
EnableJavaScript=1
EnableJavaScriptErrorDialogs=1
EnableLiveConnect=1
ShowAccelerators=1
DisableImageDithering=1
DESKWINDOWSIZE=16 12 768 558
WINDOWSIZEWIN=16 12 768 558
MAXIMIZED=0
WinNTIconCommonConfig=Universal
WinNTIconSize=2
WinNTIconPos=2
WinNTIconHidden=1
WinNTIconRect=0 0 0 24
FileDlgDirectory=Y:\Topaz
MaxDocToDelete=10000
PhoneLog=2

Log=log.nsf, 1, 0, 7, 40000
```

NOTES.INI for Parent Source Driver

```
[Notes]

;
;   Begin Notesbench variables for PARTITION 1
;
; *********************************************
NodeName=parent1
;  Runtime in minutes
; for 13 nbs (530)
Runtime=505
; for ?? nbs
;Runtime=400
ChildStagger=10,1-3;12,4;13,5;15,6;17,7;19,8;20,9
;childStagger=0,1-9;1,10-11
NumClients1=1000
NumClients2=1000
NumClients3=1000
NumClients4=1000
NumClients5=1000
NumClients6=1000
NumClients7=1000
NumClients8=1000
NumClients9=700
;NumClients10=1000
;NumClients11=1000
;NumClients12=600
;NumClients13=600
;NumClients14=600
;NumClients15=200
;NumClients16=700
;NumClients17=700
;NumClients18=100
;  NumClients19=400
;  NumClients20=100
ResultsDirectory=c:\results
DEBUG_OUTFILE=c:\results\notesnum.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

Directory=c:\notes\data
KitType=1
InstallType=1
WinNTIconPath=c:\notes\data\W32
Timezone=5
DST=1
$$HasLANPort=1
WWWDSP_SYNC_BROWSERCACHE=0
WWWDSP_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
Console_LogLevel=2
VIEWIMP1=Lotus 1-2-3 Worksheet,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 Worksheet,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=TIFF 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,_XTEXT,,.TXT,.PRN,.C,.H,.RIP,,1,
EDITEXP2=MicrosoftWord RTF,2,_XRTF,,.DOC,.RTF,,4,
EDITEXP3=CGM Image,2,_XCGM,,.CGM,.GMF,,8,
EDITEXP4=TIFF 5.0 Image,2,_XTIFF,,.TIF,,18,
EDITEXP5=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,
EDITEXP22=WordPerfect 6.1,2,_XW4W,W4W48T/V1,.WPD,.WPT,.DOC,,2,
```

EDITEXP23=Word for Windows 6.0,2,_XW4W,W4W49T/V0,.DOC,,2,
DDETimeout=10
NAMEDSTYLE0=030042617369630000000000000000000000000000000000000000000000000000000000000001010100000A00000000000
00100A0050A0000006400A0050A00000000000000000000000000000000000000000000000000000000000000000000000000000000000
00009404000000000000
NAMEDSTYLE0_FACE=Default Sans Serif
NAMEDSTYLE1=030042756C6C65740000000000000000000000000000000000000000000000000000000000001010100000A0000000000
00000008070A000000640008070A00000000000000000000000000000000000000000000000000000000000000000000000000000000000
000049404000000000000
NAMEDSTYLE1_FACE=Default Sans Serif
NAMEDSTYLE2=0300486561646C696E6500000000000000000000000000000000000000000000000000000000001010100B0C0000000000
000100A0050A0000006400A0050A00000000000000000000000000000000000000000000000000000000000000000000000000000000000
00009404000000000000
NAMEDSTYLE2_FACE=Default Sans Serif
DefaultMailTemplate=mail50.ntf
TCPIP=TCP, 0, 15, 0
Ports=TCPIP
KeyFilename=user.id
CertificateExpChecked=user.id 09/06/2000
$headlineClientId=20EF55BD:5BF8B097-85256951:004C7511
MailServer=CN=sut/O=ibm
MailFile=mail\parent1.nsf
TemplateSetup=60
Setup=60
Location=Office (Network),9A2,CN=admin/O=ibm
$IEVersionMajor=5
ECLSetup=3
NAMES=names.nsf
$headlineDisableHeadlines=0
EmptyTrash=0
MIMEPromptMultilingual=1
MIMEMultilingualMode=1
EnableActiveXInBrowser=1
EnableJavaScript=1
EnableJavaScriptErrorDialogs=1
EnableLiveConnect=1
ShowAccelerators=1
DisableImageDithering=1
HELPWINDOWSIZEWIN=47 51 729 460
DESKWINDOWSIZE=12 9 616 447
WINDOWSIZEWIN=12 9 616 447
MAXIMIZED=0
WinNTIconCommonConfig=Universal
WinNTIconSize=2
WinNTIconPos=2
WinNTIconHidden=1
WinNTIconRect=0 0 0 24
FileDlgDirectory=Y:\Topaz
PhoneLog=2
Log=log.nsf, 1, 0, 7, 40000
AdminSetup=502
SERVERS_FRAME_PERCENT=20
MONITOR_SCALE=1
ADMINWINDOWSIZEWIN=16 12 768 558
ADMINMAXIMIZED=0

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 integrated 10/100 Ethernet controller 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 Estimated Reseller Price to end users for the U.S. only. Actual Reseller 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.

Note: Lotus Domino Server ships with the xSeries 220 server at no charge.

Item Description	Order Number	Qty	IBM Estimated Reseller Unit Price	IBM Estimated Reseller Extended Price
IBM @server **xSeries 220**	8645-41X	1	$2,005	$2,005
1 x 933MHz Pentium III Processor with 256KB L2 Cache (one 128MB RDIMM included); integrated 10/100 Ethernet controller.				
933MHz / 256KB L2 Cache Processor Upgrade	10K3819	1	1,149	1,149
1GB 133MHz ECC SDRAM RDIMM Memory	33L3152	3	4,279	12,837
Netfinity ServeRAID-3L Ultra2 SCSI Adapter	19K0564	5	659	3,295
9.1GB 10K-4 Ultra160 SCSI Hard Disk Drives	37L7204	3	385	1,155
18.2GB 10K-4 Ultra160 SCSI Hard Disk Drives	37L7205	20	605	12,100
Netfinity EXP200 Rack Storage Expansion Enclosure	35301RU	2	2,595	5,190
IBM E54 15" (13.8" Viewable) Color Monitor	6331B2N	1	173	173
Software				
Windows 2000 Server		1		999
Lotus Domino Server Release 5.02a		1	NC	
Total System Price				$38,903

Appendix H: Vendor-Defined Information

None.

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