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Microsoft Windows Small Business Server 2003 vs. Red Hat Enterprise Linux ES 2.1 Deployment

Test report prepared under contract from Microsoft

Executive summary

Microsoft commissioned VeriTest, a division of Lionbridge Technologies, Inc., to audit the amount of time and number of steps required to install and deploy similar configurations of Microsoft Windows Small Business Server (SBS) 2003 and Red Hat Enterprise Linux ES 2.1.

Key findings

- Windows SBS 2003 required less time and steps to deploy all four audited tasks in the full installation configuration. Red Hat Enterprise Linux ES 2.1 took nearly 2 hours and 53 minutes longer than Windows SBS 2003 and 4.4 times the number of steps to deploy the same tasks.
- Windows SBS 2003 required less time and steps to deploy task 1 in the OEM installation configuration. Red Hat Enterprise Linux ES 2.1 took an additional 1 hour and 48 minutes and 3.3 times the number of steps compared to Windows SBS 2003 to deploy the same task.

Microsoft defined a set of deployment tasks to complete as part of the installation process of each operating system. The tasks included a set of installation and configuration operations required to set up a typical small business environment containing a single server, client system, and Internet connectivity provided via a hardware router. The tasks included the following:

1. Install the operating system and core services (E-mail, DNS, DHCP, Web, File/Print). Configure an external hardware firewall/router device providing Internet connectivity. Configure the server to host a shared contact directory for the small business client. Configure the server to have a synchronized username/password infrastructure for the applications used in tasks two, three and four. Add a user and a Windows XP client to the network, and send external e-mail.
2. Build a basic performance/usage monitoring and reporting infrastructure for the network
3. Build an intranet web site for information worker collaboration
4. Configure the network such that information workers and administrators can perform remote management and access key business data while working remotely

VeriTest engineers audited the amount of time and number of steps required to complete the 4 deployment tasks listed above for each operating system. Microsoft engineers performed the actual deployment tasks for Windows SBS 2003. Microsoft commissioned a third party Linux consulting firm to perform the deployment tasks for Red Hat Enterprise Linux ES 2.1. Both parties reviewed the deployment tasks in advance and designed a set of procedures satisfying the requirements. The Microsoft engineers and Linux consultants executed a dry run of each deployment task before the final audited run.

Refer to the Test Methodology section for a description of the deployment tasks and the methods used to capture the results during the audits. Refer to Appendix B for a listing of the steps performed for each task in Windows SBS 2003 and Red Hat Enterprise Linux ES 2.1.

VeriTest performed the audits on two different operating system configurations – full installation and OEM installation. In the full installation configuration, each operating system was loaded from scratch from CD media onto the server. For the OEM installation configuration, the operating system image was preinstalled on the server before starting the audit. VeriTest audited all four installation and configuration tasks for the full installation configuration and audited task 1 for the OEM installation.

Figure 1 shows the elapsed time in hours:minutes:seconds and the number of steps required to execute tasks 1 – 4 for the full installation configuration for each operating system.

	Windows SBS 2003		Red Hat Enterprise Linux ES 2.1	
Task	**Time (hr:min:sec)**	**Steps**	**Time (hr:min:sec)**	**Steps**
1	3:46:23	94	4:20:44	311
2	0:18:00	9	0:31:19	57
3	0:07:19	0	0:53:35	87
4	0:22:31	22	1:41:26	100
Total	**4:34:13**	**125**	**7:27:04**	**555**

Figure 1: Full installation configuration audit results

The Windows SBS 2003 full installation required a total of 4 hours 34 minutes 13 seconds and 125 steps to complete all four deployment tasks. In contrast, the Red Hat Enterprise Linux ES 2.1 full installation deployment required 7 hours 27 minutes 3 seconds to complete – almost 2 hours and 53 minutes more than Windows SBS 2003. Additionally, the Red Hat Enterprise Linux ES 2.1 deployment required more than 4.4 times the number of steps (555 vs. 125) compared to Windows SBS 2003. The difference in the number of steps was primarily due to the use of GUI wizards for most tasks in Windows SBS 2003 vs. executing commands through the shell in Red Hat Enterprise Linux ES 2.1.

Also, unlike Windows SBS 2003, the monitoring and reporting solution used for Red Hat Enterprise Linux ES 2.1 did not support sending performance and usage reports to an email address at regular intervals. The Linux consultants estimated that this support could be added through custom scripting at a cost of 24 hours of development time.

Figure 2 shows the elapsed time and the number of steps required to execute task 1 for the OEM configuration for each operating system.

	Windows SBS 2003		Red Hat Enterprise Linux ES 2.1	
Task	**Time (hr:min:sec)**	**Steps**	**Time (hr:min:sec)**	**Steps**
1	0:59:06	69	2:47:07	240
Total	**0:59:06**	**69**	**2:47:07**	**240**

Figure 2: OEM installation configuration audit results

As in the full installation configuration, Windows SBS 2003 required less time and fewer steps to complete task 1 compared to Red Hat Enterprise Linux ES 2.1. The Linux deployment required an additional 1 hour 48 minutes (2.8 times longer) and 170 more steps (3.3 times more steps) than Windows SBS 2003.

Both the Windows SBS 2003 and the Red Hat Enterprise Linux ES 2.1 deployments provided the core services required for task 1 (DNS, DHCP, Web, File, E-mail). Both deployments successfully passed the task 1 verification steps. One major difference in the deployments was a richer set of e-mail services provided by the Windows SBS 2003 Exchange solution compared to SMTP/POP/IMAP in the Red Hat Enterprise Linux ES 2.1 solution. Also, the Windows SBS 2003 installation included support for automatically configuring a

Universal Plug-and-Play router, while the Red Hat Enterprise Linux ES 2.1 installation required manual router configuration.

The integrated Windows SBS 2003 monitoring and reporting solution provided more features and capabilities than the 3rd party monitoring solution (Big Brother) implemented in the Red Hat Linux Enterprise ES 2.1 deployment. Both solutions provided basic monitoring of system services and e-mail notification of alerts. However, the Windows SBS 2003 monitoring solution provided additional advanced capabilities such as scheduled usage and performance reports. These features were not available in the Red Hat Linux Enterprise ES 2.1 deployment by default, but could have been added through additional scripting.

The Windows SBS 2003 deployment included integrated Web portal support through Windows SharePoint Services. The Red Hat Linux Enterprise ES 2.1 deployment provided Web portal support through the 3rd party PHP-Nuke application. Both solutions provided a shared Web site for clients with support for uploading and downloading content.

Windows SBS 2003 provided an integrated remote management solution using Windows Remote Desktop. Red Hat Enterprise Linux ES 2.1 included support for Secure Shell remote access by default and VPN support through the 3rd party Poptop application. Both deployments provided secure remote management access to server and client systems for administrators and normal users.

Figure 3 summarizes the basic features provided in tasks 1 – 4 for both operating system deployments.

Feature	Windows SBS 2003	Red Hat Enterprise Linux ES 2.1
Core Services (DNS, DHCP, Web, File, E-mail)	Yes	Yes
Calendaring	Yes	Yes
To Do lists, tasks, offline mail synchronization	Yes	No
Shared address book	Yes	Yes
Client password synchronization	Yes	Yes
Monitoring – basic	Yes	Yes
Monitoring – advanced	Yes	No – requires extra scripting
Web portal solution	Yes	Yes
Web portal – upload/download content	Yes	Yes
Remote management of the server and clients	Yes	Yes
VPN support	Yes	Yes
Automatic router configuration (uPnP)	Yes	No
Integrated applications supporting deployment requirements	Yes	No – solution requires 3rd party applications
Wizard driven installation	Yes – steps the user through the process	No
Centralized management tools	Yes	No
Source code available	No	Yes
Ability to choose/customize applications for deployment	Yes	Yes

Figure 3: Deployment feature summary

The were two major differences in the deployment process for tasks 1 – 4, which directly impacted the number of steps results and the listings in Appendix B. First, the Windows SBS 2003 deployment solution was largely Wizard driven compared to the command line steps performed in the Red Hat Enterprise Linux

ES 2.1 deployment. The use of Wizards served to structure the installation process, reduce the amount of user input required, and reduce the opportunity for error. For example, the Wizard driven installation process insulated the user from editing complex configuration files such as DNS zone files and DHCP scope files.

Second, the Windows SBS 2003 deployment did not require any external 3rd party applications to satisfy the deployment requirements. All of the applications (core services, monitoring, Web portal, remote management) were included as part of the default initial Windows SBS 2003 installation. The default initial installation of Red Hat Enterprise Linux ES 2.1 did not include the necessary applications to satisfy the deployment requirements for parts of tasks 1 – 4 (specifically server monitoring, Web portal, address book/contact management, and VPN remote access). Therefore, 3rd party applications providing support for those features were installed after the default Red Hat Enterprise Linux ES 2.1 installation requiring additional time and steps. In addition to integrated applications, the Windows SBS 2003 deployments included integrated management tools providing centralized management support for core services and client administration.

The combination of a Wizard driven installation process plus integrated applications and management tools helped to reduce the number of steps and installation time for Windows SBS 2003 compared to Red Hat Enterprise Linux ES 2.1 in the deployment scenarios audited by VeriTest. Wizards reduced the amount of user input required and integrated applications eliminated the need to download, install, and configure separate applications. This led directly to the lower elapsed time and number of steps results for the Windows SBS 2003 deployments compared to Red Hat Enterprise Linux ES 2.1. For example, the task 1 deployment for Red Hat Enterprise Linux ES 2.1 in the OEM installation configuration required 2.8 times more elapsed time and 3.3 times the number of steps compared to Windows SBS 2003.

The Red Hat Enterprise Linux ES 2.1 deployments did have two advantages compared to Windows SBS 2003. First, the Linux operating system and utilities, as well as 3rd party applications, include source code through the open source development model. This provides support for customizing and tailoring the operating system to meet specific deployment needs. Windows SBS 2003 does not include source code. Second, even though downloading and installing 3rd party applications for the Red Hat Enterprise Linux ES 2.1 deployments required additional time and steps, it also provided deployment flexibility not found in Windows SBS 2003. The integrated applications for Windows SBS 2003 were fixed by design, while the modular design of Linux allowed more control and choice over the services and applications deployed.

Testing methodology

Microsoft commissioned VeriTest, a division of Lionbridge Technologies, Inc., to audit the amount of time and number of steps required to install and deploy similar configurations of Microsoft Windows Small Business Server (SBS) 2003 and Red Hat Enterprise Linux ES 2.1.

Microsoft defined a set of deployment tasks to complete as part of the installation process of each operating system. The tasks included a set of installation and configuration operations required to set up a typical small business environment containing a single server, client system, and Internet connectivity provided via a hardware router. The tasks included the following:

1. Install the operating system and core services (E-mail, DNS, DHCP, Web, File/Print). Configure an external hardware firewall/router device providing Internet connectivity. Configure the server to host a shared contact directory for the small business client. Configure the server to have a synchronized username/password infrastructure for the applications used in tasks two, three and four. Add a user and a Windows XP client to the network, and send external e-mail.
2. Build a basic performance/usage monitoring and reporting infrastructure for the network
3. Build an intranet web site for information worker collaboration
4. Configure the network such that information workers and administrators can perform remote management and access key business data while working remotely

VeriTest engineers audited the amount of time and number of steps required to complete the 4 deployment tasks for each operating system. Microsoft engineers performed the actual deployment tasks for Windows

SBS 2003. Microsoft commissioned a third party Linux consulting firm to perform the deployment tasks for Red Hat Enterprise Linux ES 2.1. Both parties reviewed the deployment tasks in advance and designed a set of procedures satisfying the requirements. The Microsoft engineers and Linux consultants executed a dry run of each deployment task before the final audited run.

VeriTest performed the audits on two different operating system configurations – full installation and OEM installation. In the full installation configuration, each operating system was loaded from scratch from CD media onto the server. For the OEM installation configuration, the operating system image was preinstalled on the server before starting the audit. Microsoft engineers installed the OEM version of Windows SBS 2003 on the server system. Since there is no standard OEM image for Linux, the Linux consultants purchased a Linux OEM server system from Penguin Computing. The system arrived from Penguin Computing with Red Hat Enterprise Linux ES 2.1 preinstalled. VeriTest audited all four installation and configuration tasks for the full install and audited task 1 for the OEM install.

Each task included a specific set of verification operations. The timing for each task started at the first user operation and stopped after the last verification operation. The elapsed time for each task included the time spent executing the task and verifying that the basic functions configured by the task were operating properly. VeriTest recorded the start and stop time for each task using a wall clock and then subtracted the stop time from the start time to arrive at the elapsed time for each task.

VeriTest also recorded the steps performed by the engineers during each task. The type of installation and configuration activities performed for each task differed between Windows SBS 2003 and Red Hat Enterprise Linux ES 2.1. The SBS 2003 tasks were executed through GUI-based wizards run during the installation process and through the Windows SBS 2003 management console. The Red Hat Enterprise Linux ES 2.1 tasks were completed through a mixture of GUI-based and command line driven tools.

In order to measure the number of steps consistently between the two operating systems, VeriTest, Microsoft, and the Linux consultants agreed that a step would consist of a manual operation required to progress the installation or configuration process. For example, each GUI screen requiring operator intervention (defined as entering data or clicking a Next, Finish, Yes, or OK button) counted as a single step. Screens with multiple data entry fields counted as a single step. Informational screens that appeared and disappeared without requiring manual intervention were not counted as a step. Executing a command on the command line counted as a single step. We did not count changing directories as a step. Editing a configuration file counted as two steps – one step to start the editor and one step to edit the file.

Note that VeriTest only counted steps required as part of the installation and configuration process for each task. We did not count the steps required for verification of each task. Refer to Appendix B for a listing of the steps performed in Windows SBS 2003 and Red Hat Enterprise Linux ES 2.1 for each task.

The Windows SBS 2003 deployment did not require any external third party applications to complete the tasks while the Red Hat Enterprise Linux ES 2.1 deployment required external third party applications for reporting and monitoring (Big Brother), the collaboration Web site (PHP-Nuke), contact management (open source address book), and VPN services (Poptop).

The deployments were performed on test networks containing a single server, a client system, and a Universal Plug-N-Play hardware router. Where possible, similar hardware platforms were used for each operating system. Before starting the audit, the server and client systems were connected directly to the router and the router was configured as the Internet gateway. The router also performed Network Address Translation (NAT) and initially served as a DHCP server (during installation, DHCP services were moved to the server).

The server used for the Windows SBS 2003 full installation was a Dell Precision 610 MT system with a 500Mhz Pentium III Xeon processor and 256MB of RAM. The server used for the Red Hat Enterprise Linux ES 2.1 full installation contained a 500MHz Pentium III processor and 256MB of RAM. The server system used for both OEM installs was a Penguin Computing Tempest 110XP Workstation system with an AMD Athlon 2000+ processor and 256MB of RAM. The client system used for both operating system deployments was a Compaq Evo D510 SFF system with a 2.266 GHz Pentium 4 processor and 512MB of RAM running

Windows XP Professional SP1. The Windows SBS 2003 test network used a Microsoft MN-100 4-port router and the Red Hat Enterprise Linux ES 2.1 network used a Linksys BEFSR81 8-port router. Refer to Appendix A for a complete description of the hardware and software used during the test.

Microsoft engineers used Windows SBS 2003 RTM pre-release build 2636 for the full installation deployment and Windows SBS 2003 RTM pre-release build 2651 for the OEM installation deployment. The Linux consultants used the shipping version of Red Hat Enterprise Linux ES 2.1 for both deployment configurations.

The following sections list the goals and subtasks defined by Microsoft for each of the four deployment tasks. Microsoft engineers and the Linux consultants used these definitions to plan and execute the deployment tasks.

Task 1: Clean Install of a Server

Starting from a scratch, configure a new single server to provide basic network infrastructure needs to a small business.

Subtasks:

- Install the server Operating System
- Configure core services including:
  - POP3 / SMTP
  - DNS / DHCP
  - Web Services
  - File / Print Sharing
  - Integrated password infrastructure used by applications in Tasks 2, 3, and 4
  - Shared contact directory
- Open the necessary ports on the router for remote access to core services
- Deploy the latest appropriate security fixes/OS updates to the server
- Configure the server to send mail to the Internet with a registered domain name
- Create one user account for a knowledge worker
- Add a Windows XP Professional client to the network

Verification steps:

- Send and receive mail from the client to an external Internet e-mail address
- Send and receive mail from the server to an external Internet e-mail address
- Verify the proper core services are running
- Verify the proper settings on the router

Task 2: Build a basic monitoring and reporting infrastructure for the network.

Subtasks:

- Configure instant e-mail alerting to the administrator if any of the following conditions are met
  - Critical services cease functioning: Mail, Directory, Web, File/Print
  - The following performance thresholds are met:
    - Free System hard disk space drops below a configurable amount
    - The system reboots for any reason
    - More than a configurable amount of messages are waiting to be delivered in the outbound SMTP queue
    - Any security audit failures are generated
  - Create a regularly scheduled email report of system performance, including
    - Statistics of average processor, memory, and hard disk utilization
    - Top processes, organized by memory and processor utilization
    - Status of any critical application events
- Create a regularly scheduled email report of system usage, intended for consumption by the business owner. Details to include:

    - Email usage by employee
    - Rate of change in mailbox size since last report
    - Web Browsing activity by client
- Report and Alert status need to be available on a scheduled basis and on demand

Verification steps:

- Stop a service and verify the monitoring tool sends email to the administrator
- View a performance report
- View a usage report
- Verify assigned users can manually monitor the state of the system

Task 3: Build an Intranet web site for information worker collaboration

Subtasks:

- Create a Web-based basic framework that allows for the sharing of the following information types:
    - Documents - allow for check-in, check-out, and document versioning
    - Calendar Events
    - Contacts
    - Pictures
    - Announcements
    - Links
- Web site provides user-level authentication based on existing network credentials
- Users in the network are granted role-based permissions on the collaboration site.
    - The administrator of the network has full access to the site and can change other user roles as well as add and change any content
    - The information workers have the ability to add any content into the site, but do not have the ability to grant other users access to the site.
- Configure each of the information workers to have a web-browser shortcut to the homepage of the collaboration site

Verification steps:

- Verify the web site uses synchronized passwords based on user accounts
- Create two accounts and upload files and images to each account. Verify that each account can download content posted by the other account
- Verify user accounts can not perform administration on the site

Task 4: Configure the network such that information workers and administrators can perform remote management and access key business data while working remotely

Administrator subtasks:

- Configure the network such that the administrator can remotely access the server console
- Configure the network such that the administrator can remotely access the client workstation to perform basic management tasks

Information Worker subtasks:

- Information Workers need to work remotely via the web. Provide an SSL??? secure Web-based interface to:
    - The email services established in Task 1
    - The collaboration web site established in Task 3
- Configure the server to allow for incoming VPN access by Windows 2000 and Windows XP clients
- Configure the network such that clients can access their desktops inside the network from an outside location.

Verification steps:

- Verify administrator can remotely access server and client desktop over secure channel
- Verify user can remotely access client desktop over secure channel
- Verify user can access email and the Web site over SSL
- Verify user can create VPN tunnel into the local network

Appendix

A. Test hardware and software

Windows SBS 2003 Full Install Server	
Model	Dell Precision Workstation 610 MT
Processor	500 MHz Pentium III Xeon
L2 cache	512KB
BIOS	Version A11
Memory	256MB
CD-ROM	Toshiba DVD-ROM SD-M1202
Disk	9GB Quantum Atlas10K2-TY092L SCSI disk drive
Network Adapter	3Com 3C918 Integrated Fast Ethernet Controller (3C905B-TX Compatible) el90xbc5.sys (4.25)
OS	Windows SBS 2003 RTM pre-release Build 2636

Figure 4: Windows SBS 2003 full install server configuration

Red Hat Enterprise Linux ES 2.1 Full Install Server	
Processor	500 MHz Pentium III
L2 cache	512KB
BIOS	PhoenixBIOS 4.0 Release 6.0
Memory	256MB
CD-ROM	Toshiba CD-ROM XM-6602B
Disk	34GB Seagate ST34321A IDE disk drive
Network Adapter	Compaq NC3122
OS	Red Hat Enterprise Linux ES 2.1

Figure 5: Red Hat Enterprise Linux ES 2.1 full install server configuration

Windows SBS 2003/Red Hat Enterprise Linux ES 2.1 OEM Install Server	
Model	Penguin Computing Tempest 110XP Workstation
Processor	AMD Athlon XP 2000+ (1.66 GHz)
L2 cache	512 KB
BIOS	AMIBIOS A6712VMS V1.8 021203
Memory	256 MB
CD-ROM	Samsung CD-ROM SC-152A
Disk	18GB Maxtor 5T020H2 IDE disk drive
Network Adapter	VIA Rhine II Compatible Fast Ethernet Adapter
OS	Microsoft Windows SBS 2003 RTM pre-release Build 2651 Red Hat Enterprise Linux ES 2.1

Figure 6: Windows SBS 2003/Red Hat Enterprise Linux ES 2.1 OEM install server configuration

Client System	
Model	Compaq Evo D510 SFF
Processor	2.266GHz Pentium 4
L2 cache	512 KB
BIOS	Compaq 68602 v2.20 12/30/2002
Memory	512 MB
CD-ROM	HL-DT-ST DVD-ROM GDR8161B
Disk	80GB Maxtor 6Y080L0 IDE drive, 5.1.2535.0 driver
Network Adapter	Intel PRO/100 VM, e100b325.sys (6.04.14.0000) driver
OS	Windows XP Professional Service Pack 1

Figure 7: Client system configuration

Router used for Windows SBS 2003 installation	
Brand	Microsoft Broadband Networking 10/100 Ethernet Wired Base Station
Model	MN-100
Firmware	V1.09.010
Ports	4 10/100 ports, 1 WAN port
UPnP capable	Yes

Figure 8: Router configuration used for Windows SBS 2003 installation

Router used for Red Hat Enterprise Linux ES 2.1 installation	
Brand	Linksys EtherFast Cable/DSL Router
Model	BEFSR81
Firmware	2.44.2 12/13/2002
Ports	8 10/100 ports, 1 WAN port
UPnP capable	Yes

Figure 9: Router configuration used for Red Hat Enterprise Linux ES 2.1 installation

B. Steps recorded for each task on each operating system

Lines numbered with 1., 2., 3., etc., represent steps counted as part of the audit process for the task. Lines numbered with a., b., c., etc. represent informational screens or verification steps that do not count towards to the total number of steps measurement.

B.1 Windows SBS 2003 full installation task 1

1. Inserted Windows Small Business Server 2003 RTM pre-release build 2636 CD into server and powered on the server
2. Pressed Enter to boot from the CD
3. Displayed text mode Windows Server 2003 for Small Business Server Setup screen – Enter
4. Windows Licensing Agreement screen – Pressed F8 to agree to license agreement
5. Recognized an existing copy of Windows - Selected Esc to install a fresh copy of Windows
6. Selected D to Delete the existing C: partition – D
7. Selected Enter to proceed with the deletion
8. Selected L to confirm the deletion
9. Selected C to create a new C: partition in the unpartitioned space
10. Accepted the default for the partition size and pressed Enter
11. Selected the C: partition to install Windows SBS (default) and pressed Enter
12. Selected to format the partition with the NTFS file system (default) and pressed Enter
    a. After the format completed, the install process copied files from the CD and then the system automatically rebooted

    b. After reboot, the install process displayed a GUI progress screen containing Collecting information, Dynamic Update, Preparing installation, Installing Windows, and Finalizing installation steps. The install process automatically started the Installing Windows step.
13. Regional and Language Options screen - accepted the default English options - Next
14. Personalize Your Software screen - entered Name and Organization (the install process used the Name later to populate domain/DNS defaults) - Next
15. Your Product Key screen - entered the product key - Next
16. Computer Name and Administrator Password screen - entered computer name and admin password – Next
17. Windows Setup popup dialog - acknowledged that the Administrator password did not meet strong password criteria - Yes
18. Date and Time Settings - accepted default date, time, and time zone settings – Next
    a. Installing Windows step continued and then automatically moved to the Finalizing installation step
    b. System automatically rebooted
19. Welcome to Windows login screen – pressed ctl-alt-delete
20. Log On to Windows screen - Logged in as administrator – OK
21. Continuing Microsoft Windows Small Business Server Setup screen - Next
22. Setup Requirements screen - Indicated what minimum configuration requirements weren't met – not enough memory, only one network adapter – proceeded - Next
23. Company Information screen - entered company information – phone, fax, address, city, state, zip, country - Next
24. Internal Domain Information screen - accepted defaults for internal DNS domain (based on company name entered earlier), NetBIOS name, and computer name -Next
25. Popup window alerted that there was an existing DHCP server (on the router) – recommended we disable the existing DHCP server and use the SBS DHCP server – Selected Yes after performing the following five steps.
26. On client system connected to router, run Start->Internet Explorer
27. Enter URL http://192.168.2.1 (address of the router)
28. Router logon screen - entered password to logon into router
29. Main router configuration screen - selected Local Area Network link
30. Local Area Network screen - disabled DHCP – Apply
31. On server system, Local Network Adapter Configuration screen - accepted defaults for server IP address, subnet mask, and default gateway – defaults prepopulated based on router settings (uPnP capable router required for this to happen) - Next
32. Logon Information screen - accepted default to logon automatically after reboots during setup – entered administrator password - Next
33. Windows Configuration screen – instructed to select Next to perform additional configuration – Next
    a. System automatically performed network and domain configuration
    b. System automatically rebooted and logged in as administrator
    c. Install process automatically installed IIS and Microsoft Search
34. Component Selection screen - accepted default component list (Server tools – Intranet, Monitoring, Networking, Administration, Client Deployment - Exchange server, Fax Services) - everything is loaded by default - Next
35. Data Folders screen - accepted default location for data folders - Next
36. Component Summary screen – Next
    a. Install process started installing components
    b. Process installed Fax Services, Exchange server, Server tools (Intranet, Administration, Monitoring, Networking, Client deployment, IE 6.0), Server Configuration components
37. Install process prompted for SBS CD 2 – manually inserted CD and selected OK
38. Process prompted for SBS CD 3 – manually inserted CD and selected OK
39. Process prompted for Office Outlook 2003 CD (part of SBS package) – manually inserted CD and selected OK
40. Finishing Your Installation screen – Finish
41. Popup window indicated system must be rebooted – OK
    a. System rebooted
    b. Automatically logged in as administrator
42. Complete the configuration screen - selected Connect to the Internet option
43. Welcome to the Configure E-mail and Internet Connection wizard screen - Next
44. Popup dialog prompted that the install process recognized a uPnP router and asked if the install process should attempt to configure the router – Yes
45. Router connection screen – entered preferred and alternate DNS server addresses, and accepted the default local IP address of router – Next
46. Services Configuration screen - asked which services should be accessible through the firewall – E-mail was selected by default - added VPN, terminal services, and FTP – Next
47. Web Services Configuration screen – allowed access to the following Web site services from the Internet - Outlook Web Access, Remote Web Workplace selected by default, added Windows SharePoint Services intranet site - Next
48. Web Server Certificate screen – accepted the default to create a new Web server certificate – entered FQDN as the Web server name - Next
49. Internet E-mail screen – accepted default to enable Internet e-mail – Next
50. E-mail Delivery Method screen - accepted default to use DNS to route e-mail - Next
51. E-mail Retrieval Method screen – accepted default to use Exchange and that E-mail is delivered directly to the server - Next
52. E-mail Domain Name screen – entered the FQDN - Next
53. Remove E-mail Attachments screen – accepted the defaults to enable attachment blocking - Next
54. Completing the Configure E-mail and Internet Connection Wizard screen - Finish
55. Select close to exit wizard completion screen - Close
56. Popup dialog indicating that password policies have not been enabled on the network. Asked if we want to enable password policies now – No
57. Run Start->Programs->Internet Explorer

58. Set URL to www.msn.com web site
59. Popup window indicating that the web site is blocked – no sites are trusted by default – select Add to add the site
60. Trusted sites screen – select Add and Close to add www.msn.com
61. Msn.com home page loads in Internet Explorer - select Windows Update link
62. Agree to install Windows Update applet – Yes
63. Welcome to Windows Update screen – select Scan for updates link
64. Pick updates to install screen – select Review and install updates link
65. Total Selected Updates screen – select Install Now to install 2 critical updates - 822925, 819639 – downloaded 6.1 MB of files
66. Windows Update – Web Page Dialog screen – accept the update license agreements – Accept
    a. Displayed the update download and install progress
67. Popup dialog indicated that we must restart the computer to complete the update installation – selected OK to reboot now and the system rebooted
68. Welcome to Windows login screen – pressed ctl-alt-delete
69. Log On to Windows screen - Logged in as administrator – OK
    a. View core running services through SBS console – DHCP, DNS, Exchange, IIS, Active directory
    b. Send external test mail through Outlook Web Access (Outlook cannot be installed on the server) on the server
70. Select the Users category from the SBS management console
71. Select the Add a User link
72. Welcome to the Add User Wizard screen – Next
73. User Account Information screen - entered user name; remaining user account info was defaulted based on the user name – Next
74. User Password screen - entered password for the new user – Next
75. Template Selection screen – accepted the default user template – named “User Template” – Next
76. Set Up Client Computer screen – accepted the default computer name – Next
77. Client Applications screen – accepted the default set of client apps to install (Client Operating System Service Packs, IE 6.0, Office Outlook 2003, Shared Fax Client) – Next
78. Mobile Client and Offline Use screen – accepted defaults - did not install any additional apps for mobile use – Next
79. Completing the Add User Wizard summary screen – Finish
    a. Install process creates user and computer account in the domain
80. Finishing Your Installation… popup dialog indicated we must finish installation by accessing the http://<server>/ConnectComputer URL on the client system – OK
81. The wizard has completed successfully screen – Close
82. Go to client system and Start->Internet Explorer
83. Enter URL http://<server>/connectcomputer
84. Network Configuration screen - select Connect to the network now link
85. Agree to install and run the SBS Network Configuration Wizard – Yes
86. User Account and Password Information screen - entered user name and password of an account that has permission to join computers to the domain – Next
87. Assign users to this computer and migrate their profiles screen – accepted the defaults (did not migrate any profiles) – Next
88. Computer Name screen – accepted the default computer name – Next
89. Completing the Network Configuration Wizard screen – Finish
    a. Client system automatically rebooted and automatically logged in to join the domain
    b. Client system automatically rebooted again
90. Welcome to Windows login screen – pressed ctl-alt-delete
91. Log On to Windows screen - logged in as new user – OK
92. Client Setup Wizard popup dialog asked if we wanted to install applications on the client system now or later – Start Now
93. Welcome to the Client Setup Wizard screen – Next
    a. Client applications started installing – Office Outlook 2003 client, Shared Fax client
94. Completing the Client Setup Wizard screen – Finish
    a. Launched outlook and sent/received external email mail from the client
    b. Verified new account info on the server
    c. Started IE and Viewed router configuration using the Web interface
    d. Verified router IP address settings
    e. Verified router firewall port settings – the following ports were automatically opened as part of the SBS install – email (25), vpn (1723), ftp (21), web (80), secure web (443), remote web access (4125), windows sharepoint intranet site (444)
    f. Changed client password and verified logon, email inbox access and share access – this verified password synchronization support on the server
    g. Created contact in Windows SharePoint Services for both the administrator and the new user and verified that they can see each others contact info – name, email address, business phone, address, city, state – this verified contact management support on the server

B.2 Windows SBS 2003 full installation task 2

1. Select the Monitoring and Reporting category in the SBS management console
2. Select the Set Up Monitoring Reports and Alerts link
3. Welcome to the Monitoring Configuration Wizard screen - Next
4. Reporting Options screen - selected to generate a performance and usage report with biweekly email notification for the usage report – Next
5. E-mail Options screen – entered the e-mail address of the administrator for report reception - Next
6. Business Owner Usage Report screen – accepted the default Domain Admins group as the authorized users who can view the usage report on the intranet site – Next

7. Alerts screen – selected to receive notification of performance alerts by e-mail. Accepted the default e-mail address (administrator) - Next
8. Completing the Monitoring Configuration Wizard screen - Finish
9. The wizard has completed successfully screen - Close
    a. Change alert notification – performance counters tab set disk threshold to less than 6GB – this should generate an instant alert
    b. Browsed the web and sent email from each client system to create stats for usage report
    c. Verified the schedules for the data collection and reports in the system tools scheduled tasks dialog
    d. Ran Collect Server performance data - default schedule every hour
    e. Ran Collect Usage data – default schedule 4:30am each day
    f. Ran SBS – server status report – server performance report – default schedule 6am every day
    g. Ran SBS – server status report – server usage report – default schedule Mon 6:30am every 2 weeks
    h. Verified the two reports were generated – saw no server usage data – it takes 24 hours to collect enough data
    i. Stopped the web server and verified that the admin received an email alert

B.3 Windows SBS 2003 full installation task 3

a. On SBS console - Internal Web Site category – manage access task - verify roles for administrator and users – users had Web Designer role, Admin has admin role
b. On one user start IE – verified internal web site is the default home and a has an IE favorite shortcut
c. Upload file from local file system to general documents folder of Web site
d. Upload picture from local file system to company photos folder of Web site
e. Created new announcement
f. Viewed Site settings – view my information, verify that manage users option asked for admin user and password
g. Checked out document from general documents folder
h. Repeated same tasks for the administrator

B.4 Windows SBS 2003 full installation task 4

1. Select the Internet and E-mail category on the SBS management console
2. Select the Configure Remote Access link
3. Welcome to the Remote Access Wizard screen - Next
4. Remote Access Method screen – accept defaults to enable remote access with VPN access - Next
5. VPN Server Name screen – accepted default for the Server Name - Next
6. Completing the Remote Access Wizard screen – Finish
7. The wizard has completed successfully - Close
8. Remote Access Wizard popup dialog indicating that password policies have not been enabled on the network. Do you want to enable password policies now? - No
    a. Start IE on external system http://FQDN/remote
    b. Accept certificate from server
    c. Displays remote web workplace logon – logon as admin
    d. Choose Connect to server desktops option
    e. Choose server to connect to – select connect
    f. Logon screen for the server – logon as admin and see the server console
    g. Close session
    h. Choose Connect to client desktops option
    i. Select client to connect to
    j. Logon to the system as the admin
    k. Select yes to Log out the current user if present
    l. Displays the desktop for the system
    m. Log off
    n. Load IE and enter http://FQDN/remote
    o. Remote Web workplace logon – logon as user
    p. Choose Read my company e-mail option – brings up Outlook Web Access interface over https
    q. Choose Use my company's internal Web site – authenticate user and password – displays company internal web site
    r. Choose Connect to my computer at work option
    s. Select the computer to connect to
    t. Displays the logon screen - Logon to the system
    u. Get the same desktop view as the local system
    v. Log off
9. Select the Users category on the SBS management console
10. Select the Change User Permissions link
11. Welcome to the Change User Permissions Wizard screen - Next
12. Template Selection screen – select the Mobile User Template - Next
13. User Selection screen – Add all users to the Change permissions for window (this will allow the users to VPN into the network) - Next
14. Completing the Change User Permissions Wizard – Finish
15. The wizard has completed successfully screen - Close
16. Go to external system and run Start->Internet Explorer
17. Enter the URL https://FQDN/remote

18. Remote Web Workplace login screen - Log in to remote web workplace with the I'm using a public or shared computer option unchecked – Log On
19. Remote Web Workplace screen – select the Download Connection Manager link – downloads VPN connection settings for the network to external system
20. IE popup warning that all users of the computer should have strong passwords - OK
21. File Download screen – download and install the connection manager package - Open
22. Do you wish to install the connection to Small Business Server? Screen - Yes
    a. This automatically creates vpn shortcut on the external system's desktop
    b. Select the shortcut, and type in the user and password into to the VPN logon page – click connect
    c. Cannot connect probably due to corporate firewall blocking outbound VPN connections
    d. Tried on another client connected to raw internet feed
    e. VPN connection succeeded and we could successfully ping the SBS server

B.5 Windows SBS 2003 OEM installation task 1

1. Powered on the server
2. Welcome to the Microsoft Windows Small Business Server Setup screen – Next
3. License Agreement screen – Next
4. Regional and Language Options screen - accepted the default English options - Next
5. Personalize Your Software screen - entered name and organization (the install process used the Name later to populate domain/DNS defaults) - Next
6. Date and Time Settings screen - accepted default date, time, and time zone settings – Next
7. Company Information screen - entered company information – phone, fax, address, city, state, zip, country - Next
8. Computer Name and Administrator Password screen – entered name, password – Next
9. Internal Domain Information screen - accepted defaults for internal DNS domain (based on company name entered earlier), NetBIOS name, and computer name -Next
10. Popup window alerted that there was an existing DHCP server (on the router) – recommended we disable the existing DHCP server and use the SBS DHCP server – Selected Yes after performing the following five steps.
11. Start->Internet Explorer
12. Enter URL http://192.168.2.1 (address of the router)
13. Router logon screen - entered password to logon into router
14. Main router configuration screen - selected Local Area Network link
15. Local Area Network screen - disabled DHCP – Apply
16. On the server system, Local Network Adapter Configuration screen - accepted defaults for server IP address, subnet mask, and default gateway – defaults prepopulated based on router settings (uPnP capable router required for this to happen) – Next
    a. Performing Initial Tasks information screen
    b. Server automatically rebooted
    c. Applying Settings information screen
17. Finishing Your Installation screen – Finish
18. Complete the configuration screen - selected Connect to the Internet option
19. Welcome to the Configure E-mail and Internet Connection wizard screen - Next
20. Popup dialog indicated that the install process recognized a uPnP router and asked if the install process should attempt to configure the router – Yes
21. Router connection screen – entered preferred and alternate DNS server addresses, and accepted default for the local IP address of router – Next
22. Services Configuration screen - asked which services should be accessible through the firewall – all services were selected by default - Next
23. Web Services Configuration screen – allowed access to the following Web site services from the Internet - Outlook Web Access, Remote Web Workplace selected by default, added Windows SharePoint Services intranet site - Next
24. Web Server Certificate screen – accepted the default to create a new Web server certificate – entered FQDN of the Web server - Next
25. Internet E-mail screen – accepted default to enable Internet e-mail – Next
26. E-mail Delivery Method screen - accepted default to use DNS to route e-mail - Next
27. E-mail Retrieval Method screen – accepted default to use Exchange and that e-mail is delivered directly to the server - Next
28. E-mail Domain Name screen – entered the FQDN - Next
29. Remove E-mail Attachments screen – accepted the defaults to enable attachment blocking - Next
30. Completing the Configure E-mail and Internet Connection Wizard screen - Finish
31. Select close to exit wizard completion screen - Close
32. Popup dialog indicating that password policies have not been enabled on the network. Asked if we want to enable password policies now – No
33. Popup dialog indicating the server is now connected to the Internet. Click OK to go to the Windows Update site to get updates – OK
    a. IE automatically starts and loads Windows update home page
34. Agree to install Windows Update applet screen – Yes
35. Welcome to Windows Update screen – select Scan for updates link
36. Pick updates to install screen – select Review and install updates link
37. IE popup dialog requesting permission to send information to a trusted site - Yes
38. Total Selected Updates screen – selected Install Now to install 1 critical update - 819639 – downloaded 2 MB of files
39. Windows Update – Web Page Dialog screen – accept the update license agreements – Accept
    a. Displayed the update download and install progress
40. Installation Complete screen – exited IE
    a. View core services through SBS console – DHCP, DNS, Exchange, IIS, Active directory are running

    b. Send external test mail through Outlook Web Access (Outlook cannot be installed on the server)
    c. Send test message and receive reply
41. Select the Users category from the SBS management console
42. Select the Add a User link
43. Welcome to the Add User Wizard screen – Next
44. User Account Information screen - entered user name; remaining user account info was defaulted based on the user name – Next
45. User Password screen - entered password for the new user – Next
46. Template Selection screen – accepted the default user template – named "User Template" – Next
47. Set Up Client Computer screen – accepted the default computer name – Next
48. Client Applications screen – accepted the default set of client apps to install (Client Operating System Service Packs, IE 6.0, Office Outlook 2003, Shared Fax Client) – Next
49. Mobile Client and Offline Use screen – accepted defaults - did not install any additional apps for mobile use – Next
50. Completing the Add User Wizard summary screen – Finish
    a. Install process creates user and computer account in the domain
51. Finishing Your Installation… popup dialog indicated we must finish installation by accessing the http://<server>/ConnectComputer URL on the client system – OK
52. The wizard has completed successfully screen – Close
53. On the client run Start->All programs->Accessories->Command prompt
54. Run ipconfig to check to client's IP address
55. Run ipconfig /release to release client's DHCP information
56. Run ipconfig /renew to renew client's DHCP information
57. Run Start->Programs->Internet Explorer
58. Enter URL http://<server>/connectcomputer
59. Network Configuration screen - select Connect to the network now link
60. Agree to install and run the SBS Network Configuration Wizard – Yes
61. User Account and Password Information screen - entered user name and password of an account that has permission to join computers to the domain – Next
62. Assign users to this computer and migrate their profiles screen – accepted the defaults (did not migrate any profiles) – Next
63. Computer Name screen – accepted the default computer name – Next
64. Completing the Network Configuration Wizard screen – Finish
    a. Client system automatically rebooted
    b. Client system automatically logged in to join the domain and automatically rebooted again
65. Welcome to Windows login screen – pressed ctl-alt-delete
66. Log On to Windows screen - logged in as new user – OK
67. Client Setup Wizard popup dialog asked if we wanted to install applications on the client system now or later – Start Now
68. Welcome to the Client Setup Wizard screen – Next
    a. Client applications started installing – Office Outlook 2003 client, Shared Fax client
69. Completing the Client Setup Wizard screen – Finish
    a. Launch Outlook 2003 and sent/received external email
    b. Verify account info for the new user on the server
    c. Change client password and verify logon, email inbox access and share access – this verified password synchronization support on the server
    d. Create contact in Windows SharePoint Services for both the administrator and the new user and verify that they can see each others contact info – name, email address, business phone, address, city, state – this verified contact management support on the server
    e. Started IE and viewed the router configuration using the Web interface
    f. Verified router IP address settings
    g. Verified router firewall port settings – the following ports were automatically opened as part of the SBS install – email (25), vpn (1723), ftp (21), web (80), secure web (443), remote web access (4125), windows sharepoint intranet site (444)

B.6 Red Hat Enterprise Linux ES 2.1 full installation task 1

1. Inserted Red Hat Enterprise Linux ES 2.1 CD #1 into server and powered on the server
2. Red Hat Linux text mode boot options screen – Enter
3. Language Selection screen – accept defaults - Next
4. Keyboard Configuration screen – accept defaults - Next
5. Mouse Configuration screen – select 2 Button Mouse (PS/2) – Next
6. Welcome screen – Next
7. Installation Type screen – accept default Server option – Next
8. Disk Partitioning Setup screen – accept default to have installer partition the drive – Next
9. Automatic Partitioning screen – accept defaults – Next
10. Popup dialog asking if we want to remove all partitions – Yes
11. Disk Setup screen – accept defaults – Next
12. Boot Loader Configuration screen – accept defaults – Next
13. Boot Loader Password Configuration screen – accept defaults – Next
14. Network Configuration screen – enter IP address, netmask, network, broadcast, hostname, gateway, and DNS addresses for interface eth0 – Next
15. Firewall Configuration screen – select No Firewall option – Next
16. Additional Language Support screen – accept defaults – Next
17. Time Zone Selection screen – select LA Pacific time – Next
18. Account Configuration screen – set the root password and select to add a new user – Next

19. Add a new user popup dialog window – add name, full name, and password – OK
20. Package Group Selection screen – add software development package – Next
21. Graphical Interface (X) Configuration screen – accept defaults – Next
22. About to Install screen – Next
    a. Installing Packages screen displayed package installation status
23. Please insert disc 2 to continue screen – inserted CD #2 – OK
24. Boot Disk Creation screen – select to skip boot disk creation – Next
25. Monitor Configuration screen – accept defaults – Next
26. Customize Graphics Configuration screen – select text login type – Next
27. Congratulations screen – Exit
    a. System automatically rebooted
28. Text mode login screen - login as root user
29. cd to /etc/mail and execute ls
30. cp sendmail.mc sendmail.mc.original
31. vi sendmail.mc
32. Replace cwlocalhost.local domain with cwFQDN domain. Comment out DAEMON_OPTIONS
33. cp /etc/sendmail.cf /etc/sendmail.cf.original
34. m4 sendmail.mc > /etc/sendmail.cf
35. more /etc/sendmail.cf
36. /etc/init.d/sendmail restart
37. locate pop3 – could not open /var/lib/slocate/slocate.db
38. updatedb
39. locate pop3 – not installed
40. mount /dev/hdd /mnt/cdrom
41. rpm –i /mnt/cdrom/RedHat/RPMS/imap-2001a-10.0as.i386.rpm
42. vi /etc/xinetd.d/ipop3
43. Set disable = no
44. ls /etc/xinetd.d/
45. vi /etc/xinetd.d/imaps
46. Set disable = no
47. /etc/init.d/xinetd restart
48. nmap localhost
49. ifconfig
50. ifconfig eth0 192.168.0.2
51. From a client system attached to the router – start Mozilla
52. Go to URL http://192.168.1.1
53. Router password screen - enter router admin password - OK
54. Router main configuration screen – change default router address – Apply
55. Go to URL http://192.168.0.1
56. Router password screen - enter router admin password - OK
57. Router main configuration screen - select DHCP tab
58. DHCP screen - disable DHCP Server - Apply
59. Select Advanced tab
60. Select Forwarding tab
61. Enter port forwarding parameters for ssh (22), smtp (25), html (80), pop3 (110), shtml (443), imaps (993), vpn (1723) - Apply
62. Go to server and vi /etc/sysconfig/network-scripts/ifcfg-eth0
63. Change IPADDR to 192.168.0.2
64. ping www.google.com
65. more /etc/resolv.conf
66. ping address
67. ifconfig
68. ping 192.168.0.1
69. /etc/init.d/networking restart
70. ping www.google.com
71. locate dhcpd – not installed
72. rpm –i /mnt/cdrom/RedHat/RPMS/dhcp-2.0pl5-8.i386.rpm
73. scp remote@FQDN:/directory/dhcpd.conf_sbs_lab_redhat /etc/dhcpd.conf
74. Continue – yes
75. Enter password
76. vi /etc/dhcpd.conf
77. Set subnet address, set routers option, set domain-name-servers option, set range option
78. /etc/init.d/dhcpd start
79. tail /var/log/messages –n 10 to verify dhcpd started
80. cd /etc and locate bind | grep bin
81. rpm –i /mnt/cdrom/RedHat/RPMS/bind-9.2.1-1.7x.2.i386.rpm
82. rpm –i /mnt/cdrom/RedHat/RPMS/bind-devel-9.2.1-1.7x.2.i386.rpm
83. rpm –i /mnt/cdrom/RedHat/RPMS/bindconf-1.6.1-1.noarch.rpm
84. cd /var/named and execute ls
85. scp –r remote@FQDN:/directory/bind_config_for_sbs_lab/* ./
86. Enter password
87. vi intranet.zone

88. change A record addresses to the proper subnet addresses, delete unneeded A records, add FQDN NS record
89. vi named.conf
90. remove unneeded zone entries
91. cp named.conf /etc/
92. /etc/init.d/named start
93. tail /var/log/messages –n 10 to verify named started
94. host www.google.com
95. dig @localhost FQDN
96. startx – loading X Windows crashed the system
97. Power cycled the system
98. Text mode login screen – logged in as root
99. startx
100. Start Mozilla
101. Go to URL http://rhn.redhat.com
102. Mozilla popup dialog indicating access to encrypted Page – OK
103. Red Hat Network home page - select the “are available” link to access new up2date executables
104. Select up2date-2.8.46.3-1.2.1AS.i386.rpm
105. Downloading screen – OK
106. Enter name of file to save to screen - Save
107. Download Status screen - Close
108. Select rhn_register-2.8.34-1.2AS.i386.rpm
109. Downloading Screen - OK
110. Enter name of file to save to screen - Save
111. Download Status screen - Close
112. Ctl-Alt-F2 to exit X
113. Login as root
114. rpm –e old version of up2date – error up2date-gnome must be removed first
115. rpm –e old version of up2date-gnome
116. rpm –e old version of up2date
117. rpm –e old version of rhn_register-gnome
118. rpm –e old version of rhn_register
119. rpm –i new rhn_register
120. rpm –i new up2date
121. rhn_register
122. Hit Enter (no proxy option)
123. Register with the Red Hat Network screen – Next
124. Step 1: Review the Red Hat Privacy Statement screen - Next
125. Step 2: Register a User Account screen - enter user name, password, and email address – Next
126. Step 3: Register a System Profile – Hardware screen - Next
127. Step 3: Register a System Profile – Packages screen – Next
128. Send Profile Information to Red Hat Network screen – Next
129. Finish screen
130. up2date -u
131. runlevel
132. cd /etc/rc3.d and run ls
133. ln /etc/init.d/dhcpd /etc/rc3.d/S99dhcpd –s
134. ln /etc/init.d/named /etc/rc3.d/S60named –s
135. nmap localhost
136. /etc/init.d/dhcpd start
137. /etc/init.d/named start
138. nmap localhost
139. mount /mnt/cdrom
140. rpm –Uvh /mnt/cdrom/RedHat/RPMS/vim-enhanced-6.0-7.15.i386.rpm
141. rpm –qa | grep samba
142. ntsysv
143. System Services screen – set samba to start – OK
144. cd /etc/samba and ls
145. cp smb.conf smb.conf.orig
146. vim smb.conf
147. Set workgroup to sbsteam, set netbios name to servername, set passwd program to /root/passwrap %u, set pam password change to no, set local master = yes, uncomment os level, domain master, preferred master, and domain logons, set logon script to logon.bat, uncomment wins support, [netlogon] section, set write list to @admins, set path to /home/netlogon, uncomment [public] section, delete write list, set path to /home/public
148. cd .. and ls- ld root
149. mkdir --mode=0755 /home/netlogon
150. mkdir --mode=0755 /home/public
151. groupadd machines
152. groupadd admins
153. grep user /etc/group
154. chown root.admins /home/netlogon/
155. chown root.users /home/public/

156. vim /home/netlogon/logon.bat
157. added net use s: \\servername\public, net use h: /home /yes
158. adduser –G users testxpuser
159. smbpasswd –a root
160. Enter password for root
161. smbpasswd –a testxpuser
162. Enter password for testxpuser
163. /etc/init.d/smb restart
164. Go to client system and Start->Run…
165. Run screen – enter regedit - OK
166. Select Key HKLM\system\currentcontrolset\services\netlogon\parameters
167. change requiressignorseal to 0
168. change signsecurechannel to 0
169. Exit regedit
170. Start->Shut Down
171. Shut Down Windows screen – select restart - OK
172. Welcome to Windows screen – Ctl-Alt-Del
173. Logon to Windows screen – enter administrator name and password
174. Start->My Computer->Properties
175. System Properties screen - select Computer Name tab
176. Select Change option
177. Computer Name Changes screen - select Domain and enter domain name – OK
178. Computer Name Change popup – enter root user and password – OK
179. Access is denied error - OK
180. Start->Run…
181. Run screen - enter cmd
182. Command window – enter ipconfig /release
183. ipconfig /renew
184. Go to server system and mount /mnt/cdrom
185. cp /mnt/cdrom/audit.tgz .
186. tar xvf audit.tgz
187. cp passwrap ~/.
188. vi passwrap – add the following lines #!/bin/sh, username="$@", echo –n 'Enter new UNIX password: ', read newpass1, echo –n 'Retype new UNIX password: ', read newpass2, /usr/bin/passwd --stdin $username, echo "$newpass2"
189. smbpasswd –a root
190. Enter root password
191. /etc/init.d/smb restart
192. Go to client system and enter OK to attempt to join domain
193. Computer Name Change popup - enter root user and password - OK
194. Access is denied – OK
195. Go to server and vim /etc/samba/smb.conf
196. Add "add user script = /user/sbin/useradd –d /dev/null –g machines –s /bin/false –M %u" entry
197. /etc/init.d/smb restart
198. Go to client system and enter OK to attempt to join domain
199. Computer Name Change popup - enter root user and password
200. Error – cannot join the domain - OK
201. Start->Shut Down
202. Shut Down Windows screen - select restart to reboot the client system - OK
203. Welcome to Windows screen – Ctl-Alt-Del
204. Log On to Windows screen – enter user and password
205. Start->My Computer->Properties
206. System Properties screen - select Computer Name tab
207. Select Change option
208. Computer Name Changes screen - select domain and enter domain name – OK
209. Computer Name Change popup - enter root user and password – OK
210. Welcome to the domain popup dialog – OK
211. Popup dialog indicating you must restart the computer – OK
212. Exit System Properties screen - OK
213. Popup dialog asking if we want to restart computer – Yes
    a. System rebooted
214. Welcome to Windows screen – Ctl-Alt-Del
215. Log On to Windows – enter user and password and select the domain
    a. Start->My Computer and view samba default shares
    b. Ctl-Alt-Del
    c. Select Change Password option
    d. Enter new password – OK
    e. Your password has been changed – OK
    f. Log out on the client
    g. Welcome to Windows screen - Ctl-Alt-Del
    h. Log in with old password – fails
    i. Log in with new password – OK

j. Verify you can still access the shares with new password
k. Goto server and su –testxpuser – verify old password does not work – verifies password synchronization support on the server

216. cd /home and ls –l
217. chmod -R 0777 public
    a. Send/receive mail on the server to external account
    b. Launch Outlook Express on client and send/received external email
    c. Verify account info for the new user on the server
    d. Verify core services are running on the server
    e. Start IE and view the router configuration using the Web interface
    f. Verified router IP address settings
    g. Verified router firewall port settings – the following ports were automatically opened as part of the SBS install – email (25), vpn (1723), ftp (21), web (80), secure web (443), remote web access (4125), windows sharepoint intranet site (444)
218. Go to /var/named and vi db.0.168.192 file
219. Update the IN PTR entries with the proper hostname
220. vi /etc/named.conf
221. vi /etc/resolv.conf
222. add nameserver 127.0.0.1
223. host 192.168.0.1
224. /etc/init.d/named restart
225. host 192.168.0.1
226. cd /etc/mail
227. vi sendmail.mc
228. add MASQUERADE_AS(FQDN)
229. m4 sendmail.mc > sendmail.cf
230. /etc/init.d/sendmail restart
231. vi access
232. add FQDN RELAY
233. /etc/init.d/sendmail restart
234. ntsyssv
235. enable httpd service to start - OK
236. rpm –qa | grep mysql – not installed
237. rpm –qa | grep apache - installed
238. insert Red Hat CD #2
239. mount /dev/cdrom /mnt/cdrom
240. rpm –Uvh /mnt/cdrom/RedHat/RPMS/mysql* /mnt/cdrom/RedHat/RPMS/php-mysql-4.1.2-2.1.6.i386.rpm &&rpm –e msql-devel
241. rpm –qa |grep php – installed
242. umount /mnt/cdrom
243. insert Red Hat CD #1
244. mount /dev/cdrom /mnt/cdrom
245. rpm –Uvh /mnt/cdrom/RedHat/RPMS/unzip-5.50-2.i386.rpm
246. umount /mnt/cdrom
247. ntsysv
248. enable mysqld service to start – OK
249. ps afx |grep httpd
250. /etc/init.d/mysqld start
251. mkdir address
252. wget http://www.corvalis.net/address/files/address101c.zip
253. cp address101.c.zip ..
254. unzip address101c.zip
255. rm address101c.zip
256. vi config.php
257. change $db_hostname=”localhost”, $db_name=”addressbook”, $db_username=”root”, $db_password=”password”
258. mysqladmin –u root password password
259. mysqladmin –u root –ppassword create addressbook
260. grep addressbook config.php
261. less /etc/httpd/httpd.conf
262. cp config.php /var/www/.
263. echo ‘<?php include(“/var/www/config.php”; ?)’ >config.php
264. rsync –avP * /var/www/html/addressbook
265. Start Mozilla
266. Go to URL http://FQDN/addressbook/install.php - parse error
267. cd addressbook
268. mv config.php config.php.src
269. cp /var/www/config.php .
270. Go to URL http://FQDN/addressbook/install.php
271. Select next link – no page loaded
272. mysql –u root –p
273. use addressbook;
274. show tables;
275. quit

276. vi /var/www/html/addressbook/config.php
277. chown –R apache.apache addressbook/
278. Go to URL http://FQDN/addressbook/install.php
279. Select next link – no page loaded
280. chown –R root.root addressbook/
281. rsync –avP addressbook/* .
282. Go to URL http://FQDN/install.php
283. Select next link – no page loaded
284. rm –f *.php
285. rm –rf images/ mugshots/
286. rm con* gpl.txt
287. rm –rf styles.css usage/
288. rm –rf addressbook/
289. mysql –u root –p
290. show databases;
291. use addressbook;
292. show tables;
293. exit
294. cd /root/address
295. rm –rf *
296. rm –f ../address101c.zip ../address101c-2.zip
297. wget http://www/corvalis.net/address/files/address101b.zip
298. unzip address101b.zip
299. mv address101b.zip ../.
300. vi config.php
301. change $db_hostname="localhost", $db_name="addressbook", $db_username="root", $db_password="password"
302. rsync –avP * /var/www/html/.
303. Go to URL http://localhost/install.php
304. Select next link – no page loaded
305. vi /etc/php.ini
306. /etc/init.d/httpd restart
307. /etc/init.d/mysqld restart
308. rpm –qa | grep php
309. Go to http://localhost/install.php
310. Select next link – proper install page for the address book loaded
311. Select click here link to go to the address book main page
    a. Select Add a new entry link
    b. Entered contact info for the new user
    c. Go to client and access the addressbook – view server entry and add new entry
    d. Go to server and verify access to the client entry

B.7 Red Hat Enterprise Linux ES 2.1 full installation task 2

1. startx - Start the X Window server
2. Start the Mozilla Web browser
3. Go to URL http://bb4.com
4. Select the download link
5. Download screen - fill in registration info – name, email, city, select Linux package option, and click Downloading Big Brother button
6. Mozilla popup dialog - Do you want to remember page form input - NO
7. Non commercial license agreement page – click Yes
8. Downloading window – OK
9. Specify file location – accept default – Save
10. Download status window - Close
11. Start a terminal window
12. tar xvfz bb-1.9c.tar.gz - untar archive
13. adduser bbuser - create user for Big Brother
14. passwd bbuser - Set password for bbuser – make same as user name
15. cp bb19c.tar /home/bbuser - copy bb19c.tar to bbuser home directory
16. Go to /home/bbuser and tar xvf bb19c.tar
17. Go to bb19c/install directory and run ./bbconfig redhat
18. Agree to license agreement – y
19. Prevent the execution of BB as user root – y
20. What will be the user ID of BB: bbuser
21. Old-style directory structure? – n
22. Use FQDN – y
23. What machine will be the BBDISPLAY: enter FQDN
24. What machine will be the BBPAGER: same as above
25. Is the host a BBDISPLAY host? – y
26. Is this host a BBPAGER host? – y
27. Enter the default recipient? enter test email address
28. Enter the base URL for BB: /bb

29. Enter CGI directory: - /var/www/cgi-bin
30. Enter the base URL of the CGI scripts: /cgi-bin
31. Enter web server user ID: nobody
32. Enter group name: nobody
33. Cd ../src directory and run make – builds the executables
34. Run make install – copies the executables to their proper directories
35. Go to /home/bbuser and run chown –R bbuser:bbuser bbvar bb19c
36. Go to bb19c/etc and edit bb-hosts file
37. Comment out all active default entries and add entry for the server – IP address FQDN # BBPAGER BBNET BBDISPLAY smtp pop3 dns http://FQDN
38. Go to /var/www/html and ln –s /home/bbuser/bb19c/www bb – link bb web site to Apache
39. Go to /home and chmod go+rw bbuser
40. Go to bbuser and become bbuser – su bbuser
41. Go to bb19c and start BB - ./runbb.sh start
42. Tail –f BBOUT to verify startup output
    a. Wait 5 minutes to populate test results
43. Go to http://FQDN/bb
44. Connection refused message – OK
45. apachectl graceful
46. Go to /etc/httpd/conf and run ls
47. su to root
48. apachectl graceful
49. Go to http://FQDN/bb - forbidden message
50. Go to /home and chmod go+x bbuser
51. Go to http://FQDN/bb - see Big Brother home page - notice that BB can't read /var/log/messages
    a. Verify that email user got a message about the problem
52. Cd /var/log and view permissions of /var/log/messages
53. Change permissions on messages file – chmod go+rw messages
54. Change to /home/bbuser/bb19c and vi README file
55. Start terminal window
56. vi /etc/rc.d/rc.local - edit rc.local file so that BB starts at boot time
57. Add su –bbuser –c "cd /home/bbuser/bb19c; ./runbb.sh start"
    a. Verify through BB Web interface that http server is running
    b. Stop POP3 service – vi /etc/xinetd.d/ipop3 and disable the service
    c. Restart xinetd - kill –HUP xinetd process number
    d. Refresh the main BB Web interface and verify that the POP3 service is stopped
    e. Saw verification after about 4 – 5 minutes – saw external email that pop3 service is down

B.8 Red Hat Enterprise Linux ES 2.1 full installation task 3

1. mkdir phpnuke
2. cd phpnuke/ and wget http://easynews.dl.sourceforge.net/sourceforge/phpnuke/PHP-NUKE-6.8.tar.gz
3. cd .. and wget http://address/eventcal_212-ed.tgz
4. wget http://www.phpnuke.holbrookau.net/eventcal_212.zip
5. wget http://www.programmando.org/php/files/download_upload_nuke.ip
6. cd phpnuke/ and tar xvf PHP-Nuke-6.8.tar.gz && mv PHP-Nuke-6.8.tar.gz ..
7. less INSTALL
8. cd sql/ and mysqladmin –u root –ppassword create nuke
9. mysql – u root –ppassword nuke < nuke.sql
10. cd .. and ls
11. cd html/ and vi config.php
12. change $dbpass to "password";
13. ls /var/www/html
14. rsync –avP * /var/www/html/.
15. vi ~/passwrap
16. add to end of file - md5pass=`echo –n "$newpass2"|md5sum|cut –d " " –f1` and echo "update nuke_users set user_password='$md5pass' where username='$username';"|mysql –u root –ppassword nuke
17. Go to client system and Start->IE
18. Go to URL http://FQDN - view php nuke home page
19. Select create super user link
20. Set administrator nickname and password and email - Submit
21. Add Admin ID and password and security code – Logon
22. Administration Menu – select Preferences link
23. Set Site URL, Administrator Email, Email to send the message, Footer Message in all sent emails – Save Changes
24. Select Messages link
25. Delete the default welcome message
26. Click Yes to delete the message
27. Go to terminal window and cd .. and ls
28. mkdir eventcal_212
29. cd eventcal_212 and cp ../eventcal_212.zip .
30. upzip eventcal_212.zip && rm –f eventcal_212.zip

31. rm Eventcalender_install.txt
32. cd docs/ and ls
33. less readme.txt
34. less diffs.txt
35. tar –xvzf eventcal_212-ed.tgz
36. cd eventcal_212-ed and rm eventcal_212.zip EventCalendar_install.txt –f
37. rsync –avP –exclude SQL/ --exclude corefiles/ --exclude docs/ * /var/www/html/.
38. cd corefiles/ and ls
39. rsync –avP * /var/www/html/.
40. cd .. and ls
41. cd /var/www/html/modules/ and ls –l
42. cd /var/www/html/ and ls
43. mkdir –mode=777 uploads
44. vi /etc/php.ini
45. set file_uploads=On and set upload_tmp_dir = /tmp, and set upload_max_filesize=20M
46. /etc/init.d/httpd restart
47. mkdir download_upload_nuke
48. cd download and cp ../download_upload_nuke.zip ..
49. unzip download_upload_nuke.zip && rm –f download_upload_nuke.zip
50. less readme.txt
51. rm readme.txt
52. cd Downloads/ and ls
53. vi d_config.php
54. set $uppath=/var/www/html/uploads, set $upbaseurl=FQDN/uploads
55. rsync –avP * /var/www/html/modules/Downloads/.
56. Go to client and enter URL http://FQDN/ec_install.php
57. Select Click here to install
58. Select Click here to continue
59. Go to URL http://FQDN
60. Go to server and rm –f /var/www/html/ec_install.php
61. Go to client and select Administration link
62. Select Modules
63. Select activate for calendar module
64. Select Blocks link
65. Set filename to Calendar4, Position on Right – Create Block
66. Move the new Calendar4 block up the list
67. Select Downloads link
68. Set Name: and Description - Add
69. Select the Home link
70. Go to server and adduser –G users testxpuser2
71. smbpasswd –a testxpuser2
72. Enter password
73. Go to client system and run Start->Shut Down
74. Shut Down Windows screen – select log off - OK
75. Welcome to Windows screen – Ctl-Alt-Del
76. Log on to Windows – enter testxpuser2 name and password
77. Start->IE
78. Enter URL http://FQDN/ - go to Web site home page
79. Drag URL to desktop
80. Select create one link
81. User Registration/Login screen - Enter nickname, email, password, security code – New User
82. Finish
83. Start->Outlook Express
84. Click activate link in the email message – starts IE with web portal logon screen
85. Enter user name and password
86. Go to server system and cd /var/www/html/ and ls
87. cd modules and vi d_config.php
    a. Check in, check out document and images
    b. Web site provides user-level authentication based on existing network credentials - supports access control and synchronized passwords
    c. Users in the network are granted role-based permissions on the collaboration site.
    d. The administrator of the network has full access to the site and can change other user roles as well as add and change any content – yes
    e. The information workers have the ability to add any content into the site, but do not have the ability to grant other users access to the site – yes
    f. Configure each of the information workers to have a web-browser shortcut to the homepage of the collaboration site – yes.

B.9 Red Hat Enterprise Linux ES 2.1 full installation task 4

1. cd /usr/share/ssl

2. openssl req –new –x509 –nodes –out imapd.pem –keyout imapd.pem –days 365
3. Enter Country Name
4. Enter State
5. Enter Locality
6. Enter Organization Name
7. Enter Organizational Unit Name
8. Enter Common Name
9. Enter Email address
10. cd certs and mv imapd.pem imapd.pem.old
11. cp ../imapd.pem .
12. Start Mozilla
13. Go to URL http://www.poptop.org
14. Select Downloads link
15. Select pptpd-1.1.4-b4.tar.gz
16. Select site to download from
17. Downloading window – OK
18. Specify file location – accept default – Save
19. Download status window - Close
20. start terminal window
21. mv pptpd-1.1.4-b4.tar.gz /usr/src
22. cd /usr/src and rpm –q kernel-source – not installed
23. Insert Red Hat CD #2
24. cd /mnt/cdrom/RedHat/RPMS and ls kernel-source*
25. rpm –ivh kernel-source-2.4.9-e.24.i386.rpm
26. cd /usr/src and ls
27. ln –s linux-2.4 linux
28. tar xvfz pptpd-1.1.4-b4.tar.gz
29. cd poptop-1.1.4/
30. ./configure
31. make
32. make install
33. cd samples and cp pptpd.conf /etc
34. cp options.pptpd /etc/ppp
35. cd /etc and vi pptpd.conf
36. uncomment option and speed parameters, set localip 192.168.0.50, set remoteip 192.168.0.60-192.168.0.70
37. cd ppp and vi options
38. comment out the lock option
39. vi chap-secrets
40. add name pptpd name *
41. /usr/local/sbin/pptpd –debug
42. cd /etc and vi modules.conf
43. Go to URL http://poptop.
44. Select documentation link
45. select modules.conf link
46. copy modules.conf example text
47. paste in modiules.conf vi session
48. depmod –a
49. cd /proc/sys/ipv4
50. more ip_forward
51. echo 1 > ip_forward
52. ps ax | grep pptpd
53. Go to external client system outside of local LAN and right click on Network Properties
54. Click on Make New Connection
55. Welcome to the Network Connection Wizard screen – Next
56. Network Connection Wizard screen - select Connect to a private network through the internet – Next
57. Public Network screen - select Do not dial the initial connection - Next
58. Destination Address screen - enter host name of the server – Next
59. Connection Availability screen - accept defaults – Next
60. Completing the Network Connection Wizard screen – enter connection name – Finish
61. Connect Connection screen - select properties
62. Select Options tab
63. Select Security tab
64. Disable require data encryption setting
65. Select Networking tab
66. Set Type to Point to Point Tunneling Protocol, select Internet Protocol (TCP/IP) and select properties
67. Set the DNS address manually - OK
68. OK
69. Enter password – Connect – connection succeeded
70. Start->Run
71. Run screen – enter cmd
72. ping 192.168.0.100 – client system

73. exit
74. Go to server system and go to URL http://192.168.0.1
75. Enter router password
76. Select Advanced tab
77. Select Forwarding tab
78. Add remote desktop (3389) entry – Apply
79. Add imaps entry (993) entry - Apply
80. Go to client system and Start->Log off
81. Are you sure you want to log off – Log Off
82. Welcome to Windows - Ctl-Alt-Del
83. Log on to Windows - Login as local administrator
84. Start->Control Panel
85. Switch to Classic View
86. Select Administrative tools
87. Select Local Security Policy
88. Select Local Policies->User Rights Assignment and double click on Allow logon through Terminal Services Properties
89. Select Add User or Group
90. Select Users or Groups screen - enter testxpuser – OK
91. OK to exit dialog
92. Click on Deny logon through Terminal Services
93. Select the Administrator account and click remove
94. OK to exit dialog
95. Select Computer Management
96. Double click on Users and Groups and select Groups
97. Right click on Remote Desktop Users and select Add to Group
98. Remote Desktop Users Properties - Select Add
99. Enter testxpuser – OK
100. Exit Remote Desktop Users Properties - OK
    a. On remote client with ssh - start ssh session and connect to the server system – log into server as root
    b. On remote client with Windows Remote Desktop client - start->Programs->Accessories->Communications->Remote Desktop Connection – enter IP address of client logon as local administrator
    c. Verify that the administrator can remotely access the server console
    d. Verify that the administrator can remotely access the client workstations to perform basic management tasks.
    e. Verify client can access email services via SSL established in Scenario #1.
    f. Verify client can access web site via SSL established in Scenario #3
    g. Setup the server to allow for incoming VPN access by Windows 2000, and Windows XP Home/Pro clients.
    h. Configure the network such that clients can access their desktops inside the network from an outside location.

B.10 Red Hat Enterprise Linux ES 2.1 OEM installation task 1

1. Power on the OEM server machine
2. Text mode login screen – login as root
3. passwd – change root password
4. enter new root password
5. netconfig
6. Would you like to set up networking - Yes
7. Configure TCP/IP screen – enter IP address, netmask, gateway, DNS – OK
8. cd /etc/sysconfig/network-scripts and vi ifcfg-eth1
9. Set ONBOOT=no
10. ifconfig eth0 down
11. ifconfig eth1 down
12. /etc/init.d/network restart
13. ifconfig
14. ifconfig eth0 down
15. /etc/init.d/network restart
16. cd /etc/mail and run ls
17. vi access
18. add FQDN RELAY
19. cp sendmail.mc sendmail.mc.original
20. vi sendmail.mc
21. change Cwlocalhost.localdomain to CwFQDN, set MASQUERADE_AS(FQDN), comment out DAEMON_OPTIONS
22. cp /etc/sendmail.cf /etc/sendmail.cf.original
23. m4 sendmail.mc > /etc/sendmail.cf
24. /etc/init.d/sendmail restart
25. locate pop|grep bin - installed
26. cd /etc/xinetd.d and vi ipop3
27. set disable = no
28. vi imaps
29. set disable = no
30. /etc/init.d/xinetd restart
31. nmap localhost

32. ifconfig 192.168.1.99
33. startx
34. Start Mozilla
35. Go to URL http://192.168.1.1
36. Password prompt – enter router password - OK
37. Main Router configuration page – select Advanced tab
38. Select Forwarding tab
39. Add forwarding for ssh (22), smtp (25), html (80), pop3 (110), shtml (443), imaps (995), vpn (1723) – Apply
40. Mozilla security warning – OK
41. Select Setup tab
42. Select DHCP tab
43. Disable DHCP Server option
44. Select Setup tab
45. Change LAN IP address – Apply
46. Ctl-Alt-F2 – exit X to shell
47. login as root
48. /etc/init.d/network restart
49. ifconfig
50. Ctl-Alt-F7 – return to X
51. Go to URL http://192.168.0.1
52. Ctl-Alt-F2 – exit X to shell
53. locate dhcpd – installed
54. scp address:/path/dhcpd.conf_sbs_lab_redhat ./
55. vi /etc/resolv.conf
56. comment out default nameserver entry, add nameserver <address>
57. scp address:/path/dhcpd.conf_sbs_lab_redhat ./
58. Enter password
59. mv dhcpd.conf_sbs_lab_redhat dhcpd.conf
60. vi dhcpd.conf
61. Set subnet address, routers option, domain-name-servers option, range option
62. /etc/init.d/dhcpd restart
63. runlevel
64. cd /etc/rc3.d and run ls
65. ln /etc/init.d/dhcpd S99dhcpd –s
66. locate named|grep bin – installed
67. cd /etc/var/named and run ls
68. mkdir original
69. mv * original/
70. scp address:/path/redhat-named-om/* ./
71. Enter password
72. vi intranet.zone
73. delete old server entry, add new A record for server
74. vi db.0.168.192
75. delete unneeded entry
76. cp /etc/named.conf /etc/named.conf.original
77. vi /etc/named.conf
78. add zone for FQDN and point to intranet.zone file, add zone for reverse lookups and point to db.0.168.192 file
79. /etc/init.d/named restart
80. tail /var/log/messages –n 10
81. chmod u+r *
82. chmod 644 *
83. chmod 755 original
84. /etc/init.d/named restart
85. dig @localhost server
86. dig @localhost local1
87. vi /etc/resolv.conf
88. comment out nameserver entry, add search FQDN, add nameserver entry for the server
89. cd /etc/rc3.d and run ls
90. ln /etc/init.d/named S60named –s
91. Ctl-Alt-F7 – go to X
92. Start Mozilla
93. Go to URL http://rhn.redhat.com
94. Mozilla popup dialog indicating access to encrypted Page – OK
95. Red Hat Network home page - select the “are available” link to access new up2date executables
96. Select up2date-2.8.46.3-1.2.1AS.i386.rpm
97. Downloading screen – OK
98. Enter name of file to save to screen – Save
99. Download Status screen – Close
100. Select rhn_register-2.8.34-1.2AS.i386.rpm
101. Downloading Screen – OK
102. Enter name of file to save to screen – Save

103. Download Status screen – Close
104. Ctl-Alt-F2 to exit X
105. rpm –e old version of up2date-gnome
106. rpm –e old version of up2date
107. rpm –e old version of rhn_register-gnome
108. rpm –e old version of rhn_register
109. rpm –i new rhn_register
110. rpm –i new up2date
111. rhn_register
112. Hit Enter (no proxy option)
113. Register with the Red Hat Network screen – Next
114. Step 1: Review the Red Hat Privacy Statement screen – Next
115. Step 2: Register a User Account screen - enter user name, password, and email address – Next
116. Step 3: Register a System Profile – Hardware screen – Next
117. Step 3: Register a System Profile – Packages screen – Next
118. Send Profile Information to Red Hat Network screen – Next
119. Finish screen - OK
120. up2date –u
121. adduser testxpuser
122. passwd testxpuser
123. Enter new password
124. /bin/su – testxpuser
125. cd /etc/sysconfig/ and vi network
126. set hostname to FQDN
127. /etc/init.d/network restart
128. exit
129. login as root
130. init Q
131. login as root
132. reboot
133. login as testxpuser
    a. Send/receive test email from server
    b. Send/receive test email from client
    c. Verify account info for the new user on the server
    d. Verify core services are running on the server
    e. Start IE and view the router configuration using the Web interface
    f. Verified router IP address settings
    g. Verified router firewall port settings
134. rpm –qa|grep samba - installed
135. rpm –qa|grep unzip - installed
136. rpm –qa|grep apache - installed
137. rpm –qa|grep mysql - installed
138. ntsysv
139. enable httpd, mysqld, smb to start at boot - OK
140. ps afx|grep mbd
141. vi /etc/samba/smb.conf
142. save backup copy of smb.conf from within vi
143. Set workgroup, netbios name, passwd program = /etc/samba/passwrap %u, pam password change=no, add user script=/usr/sbin/useradd –d /dev/null –g machines –s /bin/false -%u, local master=yes, uncomment os level, domain master, preferred master, domain logons, set logon script=logon.bat, uncomment wins support, uncomment [netlogon], set write list=@admins, set path=/home/netlogon, uncomment [public], set path=/home/public, set write list=@users
144. mkdir --mode=0755 /home/netlogon
145. mv smb.conf.orig /etc/samba/.
146. vi /etc/samba/passwrap
147. lynx address
148. select directory path for passwrap file
149. save
150. select directory path for logon.bat file
151. save
152. exit
153. chmod 0500 passwrap
154. vi logon.bat
155. add net use s: \\server\public /yes, net use h: /home /yes
156. mkdir--mode=0775 /home/public
157. mv logon.bat /home/netlogon/.
158. Go to /home and ls –l
159. chmod 775 –R netlogon/
160. groupadd machines
161. groupadd admins
162. chown –R root.admins /home/netlogon/
163. chown –R root.users /home/public/

164. vigr
165. add client to users group
166. y
167. add client to users shadow group
168. vi /etc/samba/passwrap
169. smbpasswd –a root
170. Enter password
171. smbpasswd –a root
172. Enter password
173. smbpasswd –a testxpuser
174. Enter password
175. /etc/init.d/smb restart
176. Go to client system and login - Welcome to Windows screen - Ctl-Alt-Del
177. Log on to Windows screen – enter client user name and password
178. Start->Run
179. Run screen – enter regedit – OK
180. Select Key HKLM\system\currentcontrolset\services\netlogon\parameters
181. change requiressignorseal to 0
182. change signsecurechannel to 0
183. Exit regedit
184. Start->Shut Down
185. Shut Down Windows screen – select restart – OK
186. Welcome to Windows screen – Ctl-Alt-Del
187. Logon to Windows screen – enter client user name and password
188. Start->My Computer->Properties
189. Select Computer Name tab
190. Select Change option
191. Select domain and enter new domain name
192. Enter root name and password
193. Welcome to the new domain screen –OK
194. Popup dialog indicating you must restart the computer – OK
195. Exit System Properties screen – OK
196. Popup dialog asking if we want to restart computer – Yes
197. Welcome to Windows screen – Ctl-Alt-Del
198. Log on to Windows – enter client user name and password and set domain - System could not logon error
199. Go to server and run smbpasswd –a testxpuser
200. Enter password
201. Go to client and try to logon again – System could not logon error
202. Go to server and adduser –G users testxpuser2
203. smbpasswd –a testxpuser2
204. Enter password
205. Go to client and log on as new user – successful logon
206. Go to server and vi /etc/gshadow
207. vi /etc/group
208. vi /etc/passwd
209. vi /etc/shadow
210. delete part of original testxpuser entry
    a. Go to client system and verify you can successfully change client password and logon, access share, and access email
211. Go to server and ps afx|less
212. /etc/init.d/mysqld start – got startup error
213. mysql
214. mysqladmin –u root –p
215. enter password
216. mysqladmin –u root –pmysqld
217. /etc/init.d/mysqld start – got startup error
218. exit – exit into root user shell
219. /etc/init.d/mysqld start – started successfully
220. /etc/init.d/httpd start
221. cd /var/www/html and mkdir address
222. cd address/ and ls
223. wget http://www.corvalis.net/address/files/address101c.zip
224. unzip address101c.zip && rm –f address101c.zip
225. mysql
226. exit
227. mysqladmin –u root password password
228. vi config.php
229. change $db_hostname=”localhost”, $db_name=”addressbook”, $db_username=”root”, $db_password=”password”
230. Ctl-Atl-F7 - go to X
231. Start Mozilla
232. Go to URL http://FQDN/address/install.php
233. Select next link – got startup error indicating database did not exist

234. Ctl-Alt-F2 – exit X
235. mysqladmin –u root –ppassword create addressbook
236. Ctl-Alt-F7 - go to X
237. Go to URL http://FQDN/address/install.php
238. Select next link – addressbook logon page displays
239. Enter guest user and password - incorrect
240. Enter default user and password – addressbook main page displays
    a. Add new addressbook entry for two users, verify they can see each others entries

VeriTest (www.veritest.com), the testing division of Lionbridge Technologies, Inc., provides outsourced testing solutions that maximize revenue and reduce costs for our clients. For companies who use high-tech products as well as those who produce them, smoothly functioning technology is essential to business success. VeriTest helps our clients identify and correct technology problems in their products and in their line of business applications by providing the widest range of testing services available.

VeriTest created the suite of industry-standard benchmark software that includes WebBench, NetBench, Winstone, and WinBench. We've distributed over 20 million copies of these tools, which are in use at every one of the 2001 Fortune 100 companies. Our Internet BenchMark service provides the definitive ratings for Internet Service Providers in the US, Canada, and the UK.

Under our former names of ZD Labs and eTesting Labs, and as part of VeriTest since July of 2002, we have delivered rigorous, objective, independent testing and analysis for over a decade. With the most knowledgeable staff in the business, testing facilities around the world, and almost 1,600 dedicated network PCs, VeriTest offers our clients the expertise and equipment necessary to meet all their testing needs.

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