

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|--------------|--|--|---|
| A | PERSONAL COMPUTER | | NEWCYTECH |
| | ** Note that graphics displays (monitors) are optional. | | |
| A.1 | GENERAL | | |
| A.1.1 | Manufacturer | (specify) | IBM |
| A.1.2 | Model | (specify) | A51p |
| A.1.3 | Case Type | Mini Tower | Yes |
| A.1.4 | Part Number | (specify) | 8422xxx [8422-53G] |
| A.2 | PROCESSOR | | |
| A.2.1 | Processor (CPU) Type | Intel Pentium 4 Hyper Threading Technology | Yes |
| A.2.2 | Clock Speed | 3.6 GHz (minimum) | Yes |
| A.2.3 | Motherboard Make & Model | (specify) | IBM with Intel 915G PCI Express |
| A.2.4 | L2 CPU Cache Memory | 1MB (minimum) | Yes |
| A.3 | MEMORY | | |
| A.3.1 | Memory offered (RAM) | 1GB (minimum) | Yes [2 x 512] |
| A.3.2 | Type of Memory Chip | (specify) | PC2-4200 CL4 Non-Parity DDR2 SDRAM |
| A.3.3 | Make of Memory Chip | (specify) | IBM |
| A.3.4 | RAM expandability | 4GB(minimum) on board | Yes |
| A.4 | I/O | | |
| A.4.1 | Bus architecture | PCI (with PCI express graphics system support) | Yes |
| A.4.2 | Bus Speed | 800MHz (minimum) | Yes |
| A.4.3 | Free PCI Slots (after the adapter card installations) | 2 (minimum) | One half length 1 lane PCI Express One full length PCI One half length PCI |
| A.4.4 | PS/2 or USB optical mouse with scroll | Required | Yes USB optical mouse with scroll |
| A.4.5 | USB 2.0 ports | 4 free (minimum), 2 front (minimum) after peripherals installation | 8 in total, 7 free after mouse installation |
| A.4.6 | Parallel Ports | 1 (minimum) | Yes |
| A.4.7 | Other I/O interfaces | (specify) | Two 9-pin serial ports capability (one cabled, one optional) [1 9pin serial] |
| | | | External Display (VGA), External Microphone / Line in (back), External Microphone / Line in (front), Headphone / Line out (back), Headphone / Line out (front), Keyboard (PS/2), Mouse (PS/2), RJ-45, |
| A.5 | GRAPHICS ADAPTER | | |
| A.5.1 | Make & Model | (specify) | Gainward 128MB GeForce 6600 Ultra/1760PCX TV-DVI - PCI EXPRESS |
| A.5.2 | Resolution | 1280X1024 (minimum) | Yes |
| A.5.3 | Memory | 128MB (minimum) | Yes |
| A.5.4 | Bus | PCI express x16 | Yes |
| A.5.5 | Refresh Rate support | 100Hz (minimum) | Yes [240 max] |
| A.5.6 | Drivers for Windows2000, Windows XP, Linux | Required | Yes |
| A.6 | STORAGE DEVICES | | |
| A.6.1 | HARD DISK | | |
| A.6.1.1 | Make & Model | (specify) | IBM (CAVIAR WD80GB-08JNCO) |
| A.6.1.2 | Capacity | 80GB (minimum) | Yes |
| A.6.1.3 | Rotational Speed | 7200 rpm (minimum) | Yes |
| A.6.1.4 | Hard disk controller/interface | Serial ATA | Yes |
| A.6.1.5 | Maximum Internal Disk Capacity | (specify) | 800GB |
| A.6.1.6 | Support for second Hard Disk | Required | Yes |
| A.6.2 | DVD/CD-RW combo drive | | |
| A.6.2.1 | Type | 48xCD write, 32xCD rewrite, 16xDVD read, 48xCD read | Yes |
| A.6.2.2 | Make & Model | (specify) | IBM [toshiba samsung] |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-------------|---|---|---|
| A.7 | NETWORK ADAPTER | | |
| A.7.1 | Make & Model | (specify) | Broadcom NetXtreme Gigabit Ethernet standard |
| A.7.2 | BUS Type | 32 bit PCI bus mastering DMA | Yes |
| A.7.3 | Ports | RJ45 | Yes |
| A.7.4 | Drivers and Support for WindowsXP/2000, Linux, TCP/IP | Required | Yes |
| A.7.5 | Speed | 10/100/1000 Mbits per sec autosense | Yes |
| A.7.6 | Full Duplex Capability | Required | Yes |
| A.7.7 | Plug and Play Capability | Required | Yes |
| A.7.8 | Wake on LAN | Required | Yes |
| A.7.9 | DMI 2.0 (Desktop Management Interface) | Required support | Yes |
| A.8 | SOUND CARD | | |
| A.8.1 | sound adapter type | 32-bit (minimum) sound blaster/compatible [D2A 20-bit and A2D 16-bit acceptable] | 16-Bit sound blaster/compatible (as per clarification provided) |
| A.8.2 | sound adapter make & model | (specify) | PCI AC'97 [Soundmax] |
| A.8.3 | Drivers and Support for WindowsXP/2000, Linux | Required | Yes |
| A.8 | KEYBOARD | | |
| A.8.1 | 102/104 keys ELOT-1000 keyboard | Required | Yes |
| A.8.2 | PS/2 or USB Type direct to port (no adaptors) | Required | PS/2 |
| A.8.3 | Make & Model | (specify) | IBM Business black Keyboard |
| A.8.3 | Manufacturer | Same manufacturer as Personal Computer, as A.1.1 | IBM |
| A.9 | PC VOLTAGE REQUIREMENTS | | |
| A.9.1 | Power Supply | 240V | Yes |
| A.9.2 | Frequency | 50Hz | Yes |
| A.9.3 | Wattage | (specify) | 310W |
| A.9.4 | PC Power Cable | 3-prong BS type | Yes |
| A.9.5 | Independent Monitor Power Cable | 3-prong BS type | Yes |
| A.10 | SOFTWARE | | |
| A.10.1 | WindowsXP Home Edition with | Required (latest version) | Yes |
| A.10.2 | Recovery CD | Required for every 20 equipment purchased (in case full operating system will not be provided for every pc) | Yes |
| | Recovery CD must be able to reload operating system, drivers and optional utilities | Required | Yes |
| A.11 | STANDARDS | | |
| A.11.1 | Windows 2000/XP | Required | Yes |
| A.11.2 | Linux | Required | Yes |
| A.11.3 | IEEE 802.2 | Required | Yes |
| A.11.4 | IEEE 802.3 | Required | Yes |
| A.11.5 | IEEE 802.3u | Required | Yes |
| A.11.6 | IEEE 802.3x | Required | Yes |
| A.11.7 | FCC Certification | CLASS B | Yes |
| A.11.8 | ISO 9000 | Required | Yes |
| A.11.9 | CE Certification | Required | Yes |
| A.11.10 | EPA Energy star compliance | Required | Yes |
| A.12 | OPTIONS AND ADDITIONS | | |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|---------|------------------------------------|---|--|
| A.12.1 | 17" (minimum) TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L170 |
| | Type | Color SVGA | Yes |
| | Size | 17" | Yes |
| | Resolution | 1280x1024 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 75Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 135°/150° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |
| A.12.2 | 17" Monitor CRT addition | | |
| | Make & Model | (specify) | IBM C170 |
| | Type | Color multifrequency | Yes |
| | Size | 17" | Yes |
| | Resolution | 1280 X 1024 (minimum) | Yes |
| | Dot pitch | 0.28mm (maximum) | Yes |
| | Horizontal scan range | 30-70KHz (minimum) | 30-85KHz |
| | Vertical scan range | 50-140 Hz (minimum) | 50-160Hz |
| | Minimum flicker free mode | 1024X768 @85Hz (NI) | 1024X768 @85Hz (NI) |
| | Low radiation | MPRII or TCO95 compliant | TCO99 |
| | Anti-static, anti glare | Required | Yes |
| | Energy star compliant | Required | Yes |
| | Tilt swivel | Required | Yes |
| | Viewable Image Size | 16" (minimum) | Yes |
| A.12.3 | 19" TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L191p |
| | Type | Color SVGA | Yes |
| | Size | 19" | Yes |
| | Resolution | 1280x1024 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 76Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 178°/178° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |
| A.12.4 | 20" TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L200p |
| | Type | Color SVGA | Yes |
| | Size | 20" | Yes |
| | Resolution | 1600x1200 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 75Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 176°/176° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |
| A.12.5 | MULTIMEDIA KIT | | |
| | Speakers | 120W (minimum) P.M.P.O. | Yes |
| | Microphone | Required | Yes |
| | Speaker cables, microphone cables | Required | Yes |
| | Power supply for speakers | 120W (minimum) P.M.P.O. | Yes |
| A.12.6 | Keyboard | Same system but section A.8 with UK Keyboard instead of ELOT-1000 | Yes, IBM Business Black keyboard |
| A.12.7 | Remote Management Software | (specify) | Remote deployment manager (RDM) (downloadable) RDM is a server-based application that simplifies the setup, configuration, rollout, and ongoing lower-level |
| A.12.8 | Internal Floppy Drive | 1.44MB/3.5" | Yes, IBM |
| A.12.9 | Additional 1GB RAM | Same system but section A.3 with additional 1GB RAM | Yes |
| A.12.10 | Graphics Adapter | Same system but section A.5 with 256MB memory | Gainward 256MB GeForce 6600 Ultra/1780PCX TV-DVI - PCI EXPRESS |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|------------|---|---|--|
| A.12.11 | Hard Disk Replacement | Same as A.6.1 but with 160GB (minimum) | Yes, IBM SATA 160GB |
| A.12.12 | Additional Hard Disk | Same as A.6.1 | Yes, IBM 80GB SATA |
| A.12.13 | DVD +/-R/RW drive Replacement | Same system but section A.6.2 with double layer 16x DVD +/-R/RW | Yes, IBM MultiBurner |
| A.12.14 | No operating system | Same system but section A.10 without operating system | Yes |
| A.12.15 | 17" (minimum) TFT Monitor addition with speakers | Same as A.12.1 but with built-in speakers | IBM L170m |
| A.12.16 | 19" TFT Monitor addition | Same as A.12.3 but with built-in speakers | Belinea 10 19 06, 19" TFT (specification as in Brochure provided) |
| A.12.17 | 20" TFT Monitor addition | Same as A.12.4 but with built-in speakers | Not Offered |
| A.12.18 | MULTIMEDIA KIT | | |
| | Speakers | 120W (minimum) P.M.P.O. | Yes |
| | Microphone | Required | Yes |
| | Speaker cables, microphone cables | Required | Yes |
| | Power supply for speakers | integrated into speaker housing | Yes |
| A.12.19 | Installation upgrade to WindowsXP Professional | The company with the successful tender will get volume licensing key from the University to upgrade Windows XP Home to Windows XP Professional, Required | Yes |
| B. | IBM PC/COMPATIBLE - NOTEBOOK TYPE A | | NEWCYTECH |
| B.1 | GENERAL | | |
| B.1.1 | Manufacturer | (specify) | IBM |
| B.1.2 | Model | (specify) | Thinkpad T43 |
| B.1.3 | Part Number | (specify) | UC374GF [2668-74G] |
| B.2 | PROCESSOR | | |
| B.2.1 | Processor (CPU) Type | Intel Pentium M | Yes, Intel Pentium M Processor 760 |
| B.2.2 | Clock speed | 2GHz (minimum) | Yes |
| B.2.3 | L2 CPU Cache Memory | 2MB (minimum) | Yes |
| B.3 | MEMORY | | |
| B.3.1 | Memory offered (RAM) | 1GB (minimum) | Yes DDR2, PC-4200 533MHz [2 x 512] |
| B.3.2 | Make of Memory Chip | (specify) | IBM [elpida] |
| B.3.3 | RAM expandability | 2GB (minimum) on board | Yes |
| B.4 | I/O | | |
| B.4.1 | Bus architecture | PCI (with AGP graphics system support) | PCI (with PCI graphics system support) |
| B.4.2 | 2 PCMCIA Type II Slots or 1 PCMCIA Type III Slots | Required [1 PCMCIA TYPE I or 1 PCMCIA TYPE II or 1 PCMCIA TYPE III acceptable] | Yes 1 Type I/II and 1 ExpressCard/54 or 34 (as per clarification Letter 2) |
| B.4.3 | Other PCI Slots | (specify) | N/A |
| B.4.4 | Parallel Ports | 1 (minimum) | Yes |
| B.4.5 | External PS/2 or USB mouse port | Required | USB |
| B.4.6 | External PS/2 or USB keyboard port | Required | USB |
| B.4.7 | External SVGA port | Required | Yes |
| B.4.8 | Built-in Mouse | Required | Yes [stick + pad] |
| B.4.9 | USB 2.0 port | 2 (minimum) | Yes |
| B.4.10 | Swappable bay | 1 (minimum) | Yes, Ultrabay Slim |
| B.4.11 | Bluetooth module | Required | Yes |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|--------------|--|--|--|
| | | | extra fingerprint module |
| B.5 | MONITOR & GRAPHICS ADAPTER | | |
| B.5.1 | MONITOR | | |
| B.5.1.1 | Type | SXGA TFT | Yes |
| B.5.1.2 | Size | 14" (minimum) | 14.1" |
| B.5.1.3 | Resolution | 1400x1050 (minimum) | Yes |
| B.5.2 | GRAPHICS ADAPTER | | |
| B.5.2.1 | Resolution | 1400x1050 (minimum) | 2048x1536 [1400 x 1050] |
| B.5.2.2 | Bus | AGP [PCI express also acceptable] | PCI Express |
| B.5.2.3 | Memory | 32MB (minimum) | 64MB DDR2 |
| B.5.2.4 | Make & Model | (specify) | ATI Mobility RADEON x300 |
| B.5.2.5 | Drivers for Windows2000, WindowsXP, Linux | Required | Yes |
| | | | |
| B.6 | STORAGE DEVICES | | |
| B.6.1 | HARD DISK | | |
| B.6.1.1 | Make & Model | (specify) | IBM [hitachi travelstar PN 39t2525 |
| B.6.1.2 | Capacity | 60GB (minimum) | 80GB |
| B.6.1.3 | Rotational Speed | 5400 rpm (minimum) | Yes |
| B.6.2 | INTERNALCD-RW/DVD-ROM Combo drive | | |
| B.6.2.1 | Type | 24xCD write, 24xCD rewrite,8xDVD read, 24xCD read | Yes |
| B.6.2.2 | Make & Model | (specify) | IBM [hitachi lg] |
| B.6.2.3 | Hot Swappable | Required | Yes |
| | | | |
| B.7 | MULTIMEDIA KIT | | |
| B.7.1 | Sound adapter make & model | (specify) | Full-duplex audio on the system board [soundmax] |
| B.7.2 | Sound adapter type | 16-bit (minimum) sound blaster compatible | Yes |
| B.7.3 | Speakers | built-in | Yes |
| B.7.4 | Microphone | Required | Yes |
| B.7.5 | Drivers and Support for Windows2000, Windows XP, Linux | Required | Yes |
| | | | |
| B.8 | NETWORK ADAPTER and WIRELESS ADAPTER | | |
| B.8.1 | Make & Model | (specify) | Intel [broadcom nextreme] |
| B.8.2 | Bus Type | 32 bit | Yes |
| B.8.3 | Ports | RJ45 | Yes |
| B.8.4 | Drivers | TCP/IP, NDIS, Windows2000, Windows XP, Linux | Yes |
| B.8.5 | Speed | 10/100/1000Mbps/sec autosense | Yes |
| B.8.6 | Full Duplex Capability | Required | Yes |
| B.8.7 | Plug and Play Capability | Required | Yes |
| B.8.8 | Wireless Network Adapter | Integrated, 802.11b/g standard, Wi-Fi compatible | IBM 11a/b/g Wi-Fi Wireless [lan mini PCI] |
| | | | extra bluetooth |
| B.9 | FAX/MODEM | | |
| B.9.1 | Make & Model | (specify) | Integrated [IBM] |
| B.9.2 | Type | Internal (integrated not PCMCIA card) | Yes |
| B.9.3 | Baud Rate | 56Kbps | Yes |
| B.9.4 | Fax | Group 3 (minimum) | Yes |
| B.9.5 | Drivers for Windows2000, Windows XP, Linux | Required | Yes |
| B.9.6 | Compatibility | Windows2000, Windows XP, Linux, V.34, V42bis, V.90 | Yes |
| | | | |
| B.10 | VOLTAGE REQUIREMENTS | | |
| B.10.1 | Power Supply | 110-240V | Yes |
| B.10.2 | Frequency | 50-60Hz | Yes |
| B.10.3 | Wattage | (specify) | 72W |
| B.10.4 | Minimum Battery life during operation | 3.30 hrs (minimum) | 3,6 hrs |
| | | | |
| B.11 | GENERAL | | |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-------------|---|---|--|
| B.11.1 | Weight (with combo drive) | 2.5 kgs (maximum) | 2.46Kg |
| B.11.2 | Carrying case | Required | Yes |
| B.12 | SOFTWARE | | |
| B.12.1 | WindowsXP Home Edition with | Required (latest version) | Win XP Professional |
| B.12.2 | Recovery CD | Required for every 20 equipment purchased (in case full operating system will not be provided for every nr) | Yes |
| | Recovery CD must be able to reload operating system and drivers | Required | Yes |
| B.13 | STANDARDS | | |
| B.13.1 | Windows 2000/XP//Linux | Required | Yes |
| B.13.2 | IEEE 802.2 | Required | Yes |
| B.13.3 | IEEE 802.3 | Required | Yes |
| B.13.4 | IEEE 802.3u | Required | Yes |
| B.13.5 | IEEE 802.3x | Required | Yes |
| B.13.6 | IEEE 802.11b | Required | Yes |
| B.13.7 | FCC Certification | CLASS B | Yes |
| B.13.8 | ISO 9000 | Required | Yes |
| B.13.9 | CE Certification | Required | Yes |
| B.14 | OPTIONS | | |
| B.14.1 | Floppy Drive | 1.44MB/3.5" | USB Floppy Drive |
| B.14.2 | Mini Mouse | USB, optical with scroll | Yes, IBM USB, optical with scroll |
| B.14.3 | Docking Station | (specify) | Port Replicator, or Mini Docking Station or Docking Station II |
| B.14.4 | Keyboard | | |
| | 102/104 keys ELOT-1000 keyboard | Required | Yes |
| | PS/2 or USB Type direct to port (no adaptors) | Required | USB |
| | Make & Model | (specify) | IBM |
| | Manufacturer | Same manufacturer as Notebook, as B.1.1 | Yes |
| B.14.5 | 17" (minimum) TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L170 |
| | Type | Color SVGA | Yes |
| | Size | 17" | Yes |
| | Resolution | 1280x1024 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 75Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 135°/150° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |
| B.14.6 | 19" TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L191p |
| | Type | Color SVGA | Yes |
| | Size | 19" | Yes |
| | Resolution | 1280x1024 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 76Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 178°/178° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |
| B.14.7 | 20" TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L200p |
| | Type | Color SVGA | Yes |
| | Size | 20" | Yes |
| | Resolution | 1600x1200 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 75Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 176°/176° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|--------------|--|---|---|
| B.14.8 | Installation upgrade to WindowsXP Professional | The company with the successful tender will get volume licensing key from the University to upgrade Windows XP Home to Windows XP Professional, Required | Yes |
| | | | |
| C. | IBM PC/COMPATIBLE - NOTEBOOK TYPE B | | NEWCYTECH |
| C.1 | GENERAL | | |
| C.1.1 | Manufacturer | (specify) | IBM |
| C.1.2 | Model | (specify) | Thinkpad T43 |
| C.1.3 | Part Number | (specify) | UC396GF [2668-96G] |
| C.2 | PROCESSOR | | |
| C.2.1 | Processor (CPU) Type | Intel Pentium M | Yes, Intel Pentium M Processor 760 |
| C.2.2 | Clock speed | 2GHz (minimum) | Yes |
| C.2.3 | L2 CPU Cache Memory | 2MB (minimum) | Yes |
| C.3 | MEMORY | | |
| C.3.1 | Memory offered (RAM) | 1GB (minimum) | Yes, PC2-4200 DDR2 SDRAM 533MHz [2x512] |
| C.3.2 | Make of Memory Chip | (specify) | IBM [elpada] |
| C.3.3 | RAM expandability | 2GB (minimum) on board | Yes |
| C.4 | I/O | | |
| C.4.1 | Bus architecture | PCI (with PCI express graphics system support) | PCI (with PCI express graphics system support) |
| C.4.2 | Bus speed | 533MHz | Yes |
| C.4.3 | 1 Type I or II 32-bit card bus | Required | 1 Type I/II and 1 ExpressCard/54 or 34 |
| C.4.4 | Other Slots | (specify) | N/A |
| C.4.5 | Parallel Ports | 1 (minimum) | Yes |
| C.4.6 | External PS/2 or USB mouse port | Required | USB |
| C.4.7 | External PS/2 or USB keyboard port | Required | USB |
| C.4.8 | External SVGA port | Required | Yes |
| C.4.9 | Built-in Mouse | Required | Yes |
| C.4.10 | USB 2.0 port | 2 (minimum) | Yes |
| C.4.11 | Swappable bay | 1 (minimum) | Yes, Ultrabay Slim |
| C.4.12 | Bluetooth module | Required | Yes |
| | | | 2 USB 2.0, Parallel, RJ-11, RJ-45, S-Video out, AC adapter, Docking/Port Replicator, External microphone, External Display, Headphone / Line out, Infrared fingerprint module |
| C.5 | MONITOR & GRAPHICS ADAPTER | | |
| C.5.1 | MONITOR | | |
| C.5.1.1 | Type | SXGA TFT | Yes |
| C.5.1.2 | Size | 15" (minimum) [15.4 widescreen acceptable] | Yes |
| C.5.1.3 | Resolution | 1400x1050 (minimum) | Yes |
| C.5.2 | GRAPHICS ADAPTER | | |
| C.5.2.1 | Resolution | 1400x1050 (minimum) | 2048x1536 |
| C.5.2.2 | Bus | PCI express | PCI Express |
| C.5.2.3 | Memory | 64MB (minimum) | 64MB DDR2 |
| C.5.2.4 | Make & Model | (specify) | ATI Mobility RADEON x300 |
| C.5.2.5 | Drivers for Windows2000, WindowsXP, Linux | Required | Yes |
| C.6 | STORAGE DEVICES | | |
| C.6.1 | HARD DISK | | |
| C.6.1.1 | Make & Model | (specify) | IBM hitachi travelstar HT5541080G9AT00 |
| C.6.1.2 | Capacity | 60GB (minimum) | 80GB |
| C.6.1.3 | Rotational Speed | 5400 rpm (minimum) | Yes |
| C.6.2 | INTERNALCD-RW/DVD-ROM Combo drive | | |
| C.6.2.1 | Type | 24xCD write, 24xCD rewrite,8xDVD read, 24xCD read | Yes |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-------------|---|---|---|
| C.6.2.2 | Make & Model | (specify) | IBM [hitachi LG] |
| C.6.2.3 | Hot Swappable | Required | Yes |
| C.7 | MULTIMEDIA KIT | | |
| C.7.1 | Sound adapter make & model | (specify) | Yes [soundmax] |
| C.7.2 | Sound adapter type | 16-bit (minimum) sound blaster compatible | Yes |
| C.7.3 | Speakers | built-in | Yes |
| C.7.4 | Microphone | Required | Yes |
| C.7.5 | Drivers and Support for Windows2000, Windows XP, Linux | Required | Yes |
| C.8 | NETWORK ADAPTER and WIRELESS ADAPTER | | |
| C.8.1 | Make & Model | (specify) | Yes [broadcom nextreme] |
| C.8.2 | Bus Type | 32 bit | Yes |
| C.8.3 | Ports | RJ45 | Yes |
| C.8.4 | Drivers | TCP/IP, NDIS, Windows2000, Windows XP, Linux | Yes |
| C.8.5 | Speed | 10/100/1000Mbps/sec autosense | Yes |
| C.8.6 | Full Duplex Capability | Required | Yes |
| C.8.7 | Plug and Play Capability | Required | Yes |
| C.8.8 | Wireless Network Adapter | Integrated, 802.11b/g standard, Wi-Fi compatible | Integrated, IBM 11a/b/g Wi-Fi Wireless , Wi-Fi compatible Fingerprint Reader |
| C.9 | FAX/MODEM | | |
| C.9.1 | Make & Model | (specify) | Yes [IBM] |
| C.9.2 | Type | Internal (integrated not PCMCIA card) | Yes |
| C.9.3 | Baud Rate | 56Kbps | Yes |
| C.9.4 | Fax | Group 3 (minimum) | Yes |
| C.9.5 | Drivers for Windows2000, Windows XP, Linux | Required | Yes |
| C.9.6 | Compatibility | Windows2000, Windows XP, Linux, V.34, V42bis, V.90 | Yes |
| C.10 | VOLTAGE REQUIREMENTS | | |
| C.10.1 | Power Supply | 110-240V | Yes |
| C.10.2 | Frequency | 50-60Hz | Yes |
| C.10.3 | Wattage | (specify) | 72W |
| C.10.4 | Minimum Battery life during operation | 3hrs (minimum) | 3,4 hrs |
| C.11 | GENERAL | | |
| C.11.1 | Weight (with combo drive) | 3 kgs (maximum) | 2.78Kg |
| C.11.2 | Carrying case | Required | Yes |
| C.12 | SOFTWARE | | |
| C.12.1 | WindowsXP Home Edition with | Required (latest version) | Win XP Professional |
| C.12.2 | Recovery CD | Required for every 20 equipment purchased (in case full operating system will not be provided for every pc) | Yes |
| | Recovery CD must be able to reload operating system and drivers | Required | Yes |
| C.13 | STANDARDS | | |
| C.13.1 | Windows 2000/XP/Linux | Required | Yes |
| C.13.2 | IEEE 802.2 | Required | Yes |
| C.13.3 | IEEE 802.3 | Required | Yes |
| C.13.4 | IEEE 802.3u | Required | Yes |
| C.13.5 | IEEE 802.3x | Required | Yes |
| C.13.6 | IEEE 802.11b | Required | Yes |
| C.13.7 | FCC Certification | CLASS B | Yes |
| C.13.8 | ISO 9000 | Required | Yes |
| C.13.9 | CE Certification | Required | Yes |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-------------|--|---|--|
| C.14 | OPTIONS | | |
| C.14.1 | Floppy Drive | 1.44MB/3.5" | USB Floppy Drive |
| C.14.2 | Mini Mouse | USB, optical with scroll | IBM USB, optical with scroll |
| C.14.3 | Docking Station | (specify) | Port Replicator, or Mini Docking Station or Docking Station II |
| C.14.4 | Keyboard | | |
| | 102/104 keys ELOT-1000 keyboard | Required | Yes |
| | PS/2 or USB Type direct to port (no adaptors) | Required | USB |
| | Make & Model | (specify) | IBM |
| | Manufacturer | Same manufacturer as Notebook, as C.1.1 | Yes |
| C.14.5 | 17" (minimum) TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L170 |
| | Type | Color SVGA | Yes |
| | Size | 17" | Yes |
| | Resolution | 1280x1024 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 75Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 135°/150° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |
| C.14.6 | 19" TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L191p |
| | Type | Color SVGA | Yes |
| | Size | 19" | Yes |
| | Resolution | 1280x1024 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 76Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 178°/178° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |
| C.14.7 | 20" TFT Monitor addition | | |
| | Make & Model | (specify) | IBM L200p |
| | Type | Color SVGA | Yes |
| | Size | 20" | Yes |
| | Resolution | 1600x1200 (minimum) | Yes |
| | Vertical Refresh Rate | 70Hz minimum | 75Hz |
| | Viewing angles | 100/100 (deg.) minimum horizontal/vertical | 176°/176° |
| | Other features | Energy star compliant, anti-glare and anti-reflective | Yes |
| C.14.8 | Installation upgrade to WindowsXP Professional | The company with the successful tender will get volume licensing key from the University to upgrade Windows XP Home to Windows XP Professional, Required | Yes, Preloaded |
| | | | |
| | | | |
| D. | IBM PC/COMPATIBLE TOWER TYPE SERVER | | NEWCYTECH |
| D.1 | GENERAL | | |
| D.1.1 | Manufacturer | (specify) | IBM |
| D.1.2 | Model | (specify) | X226 |
| D.1.3 | Part Number | (specify) | 84886BG |
| D.1.4 | Architecture | PCI-X | Yes |
| D.1.5 | Casing | Tower Type | Yes |
| D.1.6 | Redundant Power Supply | Required | Yes, Two Power Supplies 514 W each |
| D.1.7 | Redundant Fun | Required | Yes |
| D.2 | PROCESSOR | | |
| D.2.1 | Processor (CPU) Type | INTEL XEON | Yes |
| D.2.2 | Processor Make & Model | (specify) | INTEL XEON |
| D.2.3 | Motherboard Make & Model | (specify) | IBM with Intel E7525 chipset |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|---|--|--------------------------------------|--|
| D.2.4 | Number of Processors supported | 2 (minimum) | Yes |
| D.2.5 | Number of Processors required | 1 | Yes |
| D.2.6 | Clock Speed | 3.4 GHz(minimum) | Yes |
| D.2.7 | L2 CPU Cache Memory (per processor) | 1MB(minimum) | 2MB (According to Intel's Official Benchmarks, processor with 2MB Cache offers 12-15% better performance compared to processors with 1MB Cache at the same Clock speed-relative information are offered in the Brochure's Section) |
| D.3 MEMORY | | | |
| D.3.1 | Memory offered (RAM) | 1GB (minimum) | Yes [2 x 512] |
| D.3.2 | Type and Make of Memory Chip | ECC SDRAM | DDR II ECC Memory |
| D.3.3 | RAM expandability | 8GB (minimum) on board | 16GB |
| D.3.4 | Number of memory slots available after 1GB RAM | (specify) | 4 |
| D.4 I/O | | | |
| D.4.1 | Bus speed | 800MHz | Yes |
| D.4.2 | Free PCI Slots (after the card installations) | 2 (minimum) | Two PCI-X 64-bit (100 MHz) One PCI-X 64-bit (133 MHz) Two PCI 32-bit (33 MHz) One PCI Express x16 slot (supports PCI Express x1 and x8 adapters) |
| D.4.3 | PS/2 mouse with mouse pad | Required (USB also) | USB |
| D.4.4 | Serial Ports (fast 16550 compatibility) | 1 (minimum) | 2 |
| D.4.5 | Other I/O interfaces | (specify) | Parallel, 4 USB |
| D.5 MONITOR & GRAPHICS ADAPTER | | | |
| D.5.1 MONITOR | | | |
| D.5.1.1 | Make & Model | (specify) | IBM [e74] |
| D.5.1.2 | Type | Color SVGA | Yes |
| D.5.1.3 | Size | 15" | 17" |
| D.5.1.4 | Resolution | 1024 X 768 (minimum) | Yes |
| D.5.1.5 | Low radiation | MPRII or TCO95 compliant | TCO99 compliant |
| D.5.1.6 | Anti-static, anti glare | Required | Yes |
| D.5.1.7 | Energy star compliant | Required | Yes |
| D.5.2 GRAPHICS ADAPTER | | | |
| D.5.2.1 | Resolution | 1024X768 | 2048x1536 |
| D.5.2.2 | Video Controller | SVGA, 2MB (minimum) | 16MB |
| D.5.2.3 | Bus | PCI or AGP | PCI |
| D.5.2.4 | Make & Model | (specify) | ATI RADEON 7000M |
| D.5.2.5 | Drivers for Windows2003, LINUX | Required | Yes |
| D.6 MASS STORAGE | | | |
| D.6.1 INTERNAL FLOPPY DRIVE | | | |
| D.6.1.1 | Type | 1.44MB/3.5" | Yes |
| D.6.1.2 | Make & Model | (specify) | IBM |
| D.6.2 HARD DISK | | | |
| D.6.2.1 | Make & Model | (specify) | IBM |
| D.6.2.2 | Hard disk controller | Ultra 320 SCSI | Yes, IBM ServeRAID-7e (supports RAID-0, -1) |
| D.6.2.3 | Capacity | 72GB (minimum) | 73.4GB |
| D.6.2.4 | Rotational Speed | 10000 rpm (minimum) | Yes |
| D.6.2.5 | Number of Hard Disks supported | 6 (minimum) | Yes |
| D.6.2.6 | Maximum Internal Disk capacity | (specify) | 1.8TB |
| D.6.2.7 | Number of Free Slots For Hard disks after 72GB | (specify) | 5 |
| D.6.2.8 | Hot Plug Hard Disk Drives | Required | Yes |
| D.6.3 CD-ROM | | | |
| D.6.3.1 | Type | 32x speed (minimum) [24x acceptable] | 48x |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-------------|---|---|--|
| D.6.3.2 | Make & Model | (specify) | IBM |
| D.7 | DUAL NETWORK ADAPTER | | |
| D.7.1 | Make & Model | (specify) | Yes, Broadcom 5721 Gigabit Ethernet+ IBM NetXtreme 1000T single port gigabit ethernet adapter |
| D.7.2 | BUS Type | 32 bit PCI | Yes |
| D.7.3 | Ports | RJ45 | Yes |
| D.7.4 | Drivers | TCP/IP, IPX, NDIS (Windows2003 and LINUX) | Yes |
| D.7.5 | Speed | 10/100/1000Mbps per sec autosense | Yes |
| D.7.6 | Full Duplex | Required | Yes |
| D.7.7 | Plug and Play Capability | Required | Yes |
| D.8 | KEYBOARD | | |
| D.8.1 | 102/104 keys ELOT-1000 keyboard | Required | Yes |
| D.8.2 | PS/2 Type | Required | Yes |
| D.8.3 | Make & Model | (specify) | Yes |
| D.9 | OPERATING SYSTEM | | |
| D.9.1 | No operating system | (specify) | No Operating System is provided as standard with the Server. The O/S supported are: Microsoft: Windows 2000 Server Windows 2000 Advanced Server Windows Server 2003 Standard Edition Windows Server 2003 Enterprise Edition Windows Server 2003 Web Edition Windows Small Business Edition 2003 Linux: Red Hat Enterprise Linux 3 Adv Sever Red Hat Enterprise Linux ES 3 Red Hat Enterprise Linux WS 3 |
| D.10 | STANDARDS | | |
| D.10.1 | WINDOWS 2003, WINDOWS 2000 | Required | Yes |
| D.10.2 | LINUX | Required | Yes |
| D.10.3 | IEEE 802.2 | Required | Yes |
| D.10.4 | IEEE 802.3 | Required | Yes |
| D.10.5 | IEEE 802.3u | Required | Yes |
| D.10.6 | IEEE 802.3x | Required | Yes |
| D.10.7 | FCC Certification | CLASS B | Yes |
| D.10.8 | ISO 9000 | Required | Yes |
| D.11 | OPTIONS | | |
| D.11.1 | ON-LINE UPS | | |
| D.11.1.1 | ENVIRONMENTAL | | |
| D.11.1.1.1 | Make and Model | Specify: | POWERWARE 9120 Tower Form |
| D.11.1.1.2 | Operating temperature | 0 to 40 C | YES |
| D.11.1.1.3 | Operating humidity | 30% to 90% | 10% to 90% |
| D.11.1.1.4 | Audible noise (max) | 45 db | YES |
| D.11.1.1.5 | Weight (please specify) | Specify: | 15KG |
| D.11.1.2 | INPUT CHARACTERISTICS: | | |
| D.11.1.2.1 | Phase | single with ground | YES |
| D.11.1.2.2 | Voltage | 240+/-10% | YES |
| D.11.1.2.3 | Frequency | 50Hz+/-5% | 50Hz+/-3% adjustable |
| D.11.1.3 | OUTPUT CHARACTERISTICS: | | |
| D.11.1.3.1 | Capacity to support server and monitor at full load (KVA) | (specify) | 1 KVA |
| D.11.1.3.2 | Voltage | 240V | YES |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-------------|---|---|--|
| D.11.1.3.3 | Frequency | 50Hz | YES |
| D.11.1.3.4 | Voltage Regulation (max) | +/-3% | +/-2% |
| D.11.1.3.5 | Waveform | pure sinewave | YES |
| D.11.1.3.6 | Load Power Factor | 0,7 | 0.97 |
| D.11.1.3.7 | Efficiency (min) | 0,8 | 88% |
| D.11.1.3.8 | Overload Protection | YES, Electronic | YES |
| D.11.1.3.9 | Transient Response (max) | +/-4% | YES |
| D.11.1.3.10 | Bypass transfer time | 100% uninterrupted | YES |
| D.11.1.3.11 | Surge, spike and line noise protection | in bypass and inverter | YES |
| D.11.1.3.12 | PC Power Cable | 3-prong BS type | YES |
| D.11.1.3.13 | Independent Monitor Power Cable | 3-prong BS type | YES |
| D.11.1.4 | Shutdown Software | Required | YES, LANSafe |
| D.11.2 | SCSI-3 Raid Controller | Raid 0,1,5 | Yes, Ultra 320 ServeRAID 6i |
| D.11.3 | Additional 1GB RAM | (specify) | Yes, 2x512MB DDR2 ECC |
| D.11.4 | Additional 72GB Hard Disk | (specify) | Yes, 73,4 GB Ultra 320 SCSI HPL |
| D.11.5 | Additional 3.4 GHz System Processor | (specify) | Yes, Intel Xeon 3.4 GHz 2MB Cache |
| D.11.6 | LTO Backup Device | | |
| | Compressed/Uncompressed Capacity | 200/400GB (minimum) | Yes, IBM Ultrium 200/400GB Internal plus Ultra SCSI Controller |
| D.11.7 | RedHat Linux (latest version) | Same system but section D.9.1 with RedHat Linux | Red Hat Enterprise Linux ES, Basic Edition |
| D.11.8 | DAT Backup Drive | | |
| | Make and Model | (specify) | IBM 36/72GB Dat Drive DDS/5 plus Ultra SCSI Controller |
| | Type | Internal SCSI | Yes |
| | Compressed/Uncompressed Capacity | 36/72GB (minimum) | Yes |
| D.11.9 | Hard Disk Replacement | Same as D.6.2 but with 144GB (minimum) | Yes, Replaced with 146.8GB HPL |
| D.11.10 | Additional 144GB Hard Disk | Same as D.11.9 | Yes, additional 146.8GB HPL |
| D.11.11 | Windows 2003 Server installation | The company with the successful tender will be provided with volume licensing key to install Windows 2003 Server or latest, Required | Yes |
| | | | |
| E. | IBM PC/COMPATIBLE RACK SERVER TYPE A | | MULTITECH |
| E.1 | GENERAL | | |
| E.1.1 | Manufacturer | (specify) | HP |
| E.1.2 | Model | (specify) | DL380 G4 |
| E.1.3 | Part Number | (specify) | 378737-421 |
| E.1.4 | Architecture | PCI-X | PCI-X |
| E.1.5 | Casing | Rackable standard 19" | Rackable standard 19" |
| E.1.6 | Redundant Power Supply | Required | Yes |
| E.1.7 | Redundant Fun | Required | Yes |
| E.1.8 | Type | 2U (max) | 2U |
| E.2 | PROCESSOR | | |
| E.2.1 | Processor (CPU) Type | INTEL XEON | INTEL XEON |
| E.2.2 | Processor Make & Model | (specify) | Intel XEON 3.4 GHz |
| E.2.3 | Motherboard Make & Model | (specify) | HP |
| E.2.4 | Number of Processors supported | 2 (minimum) | 2 |
| E.2.5 | Number of Processors required | 1 | 1 |
| E.2.6 | Clock Speed | 3.4 GHz(minimum) | 3.4 GHz |
| E.2.7 | L2 CPU Cache Memory (per processor) | 1MB(minimum) | 2MB |
| E.3 | MEMORY | | |
| E.3.1 | Memory offered (RAM) | 1GB (minimum) | 1 GB |
| E.3.2 | Type and Make of Memory Chip | ECC SDRAM | ECC SDRAM |
| E.3.3 | RAM expandability | 8GB (minimum) on board | 12GB on board |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|--------------|--|---|--|
| E.3.4 | Number of memory slots available after 1GB RAM | (specify) | 4 |
| E.4 | I/O | | |
| E.4.1 | Bus speed | 800MHz | 800MHz |
| E.4.2 | Free PCI Slots (after the card installations) | 1 (minimum) | 3 |
| E.4.3 | PS/2 mouse with mouse pad | Required (USB also) | PS/2 or USB mouse with mouse pad |
| E.4.4 | Serial Ports (fast 16550 compatibility) | 1 (minimum) | 1 |
| E.4.5 | Other I/O interfaces | (specify) | 1 x pointing Device, 1 x Graphics, 1 x Keyboard, 1 x external SCSI, 3 RJ-45 (1 for iLO), 3 USB (1 front, 2 back) |
| E.5 | GRAPHICS ADAPTER | | |
| E.5.1 | Resolution | 1024X768 | 1600 x 1200 |
| E.5.2 | Video Controller | SVGA, 2MB (minimum) | SVGA, 8MB |
| E.5.3 | Bus | PCI or AGP | PCI |
| E.5.4 | Make & Model | (specify) | ATI RAGE XL VIDEO CONTROLLER |
| E.5.5 | Drivers for Windows2003, LINUX | Required | Drivers for Windows2003, LINUX |
| E.6 | MASS STORAGE | | |
| E.6.1 | INTERNAL FLOPPY DRIVE | (USB acceptable) | |
| E.6.1.1 | Type | 1.44MB/3.5" | 1.44MB/3.5" |
| E.6.1.2 | Make & Model | (specify) | HP Internal Floppy Drive |
| E.6.2 | HARD DISK | | |
| E.6.2.1 | Make & Model | (specify) | HP |
| E.6.2.2 | Hard disk controller | Ultra 320 SCSI | Ultra 320 SCSI |
| E.6.2.3 | Capacity | 72GB (minimum) | 72GB |
| E.6.2.4 | Rotational Speed | 10000 rpm (minimum) | 10000 rpm |
| E.6.2.5 | Number of Hard Disks supported | 4 (minimum) | 6 |
| E.6.2.6 | Maximum Internal Disk capacity | (specify) | 1.8 TB |
| E.6.2.7 | Number of Free Slots For Hard disks after 72GB | (specify) | 5 |
| E.6.2.8 | Hot Plug Hard Disk Drives | Required | Yes |
| E.6.3 | CD-ROM | (24x acceptable also) | |
| E.6.3.1 | Type | 32x speed (minimum) [24x acceptable] | 24x speed |
| E.6.3.2 | Make & Model | (specify) | HP |
| E.7 | DUAL NETWORK ADAPTER | | [extra ethernet card, included prochure] |
| E.7.1 | Make & Model | (specify) | HP, NC7782 & NC7771 |
| E.7.2 | BUS Type | 32 bit PCI | 32 bit PCI |
| E.7.3 | Ports | RJ45 | RJ45 |
| E.7.4 | Drivers | TCP/IP, IPX, NDIS (Windows2003 and LINUX) | TCP/IP, IPX, NDIS (Windows2003 and LINUX) |
| E.7.5 | Speed | 10/100/1000Mbps per sec autosense | 10/100/1000Mbps per sec autosense |
| E.7.6 | Full Duplex | Required | Yes |
| E.7.7 | Plug and Play Capability | Required | Yes |
| E.8 | OPERATING SYSTEM | | |
| E.8.1 | No operating system | (specify) | No operating system |
| E.9 | STANDARDS | | |
| E.9.1 | WINDOWS 2003, WINDOWS 2000 | Required | Yes |
| E.9.2 | LINUX | Required | Yes |
| E.9.3 | IEEE 802.2 | Required | Yes |
| E.9.4 | IEEE 802.3 | Required | Yes |
| E.9.5 | IEEE 802.3u | Required | Yes |
| E.9.6 | IEEE 802.3x | Required | Yes |
| E.9.7 | FCC Certification | CLASS B | Yes |
| E.9.8 | ISO 9000 | Required | Yes |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-------------|---|---|---|
| E.10 | OPTIONS | | |
| E.10.1 | ON-LINE UPS | | |
| E.10.1.1 | ENVIRONMENTAL | | |
| E.10.1.1.1 | Make and Model | Specify: | Santak Electronics Co. Ltd, TITAN-2KVA - RACK |
| E.10.1.1.2 | Operating temperature | 0 to 40 C | 0 to 40 C |
| E.10.1.1.3 | Operating humidity | 30% to 90% | 30% to 90% |
| E.10.1.1.4 | Audible noise (max) | 45 db | 45 db |
| E.10.1.1.5 | Weight (please specify) | Specify: | 10.3 Kg |
| E.10.1.2 | INPUT CHARACTERISTICS: | | |
| E.10.1.2.1 | Phase | single with ground | single with ground |
| E.10.1.2.2 | Voltage | 240+/-10% | 240+/-10% |
| E.10.1.2.3 | Frequency | 50Hz+/-5% | 50Hz+/-5% |
| E.10.1.3 | OUTPUT CHARACTERISTICS: | | |
| E.10.1.3.1 | Capacity to support server and monitor at full load (KVA) | (specify) | 2KVA |
| E.10.1.3.2 | Voltage | 240V | 240V |
| E.10.1.3.3 | Frequency | 50Hz | 50Hz |
| E.10.1.3.4 | Voltage Regulation (max) | +/-3% | +/-3% |
| E.10.1.3.5 | Waveform | pure sinewave | pure sinewave |
| E.10.1.3.6 | Load Power Factor | 0,7 | 0,7 |
| E.10.1.3.7 | Efficiency (min) | 0,8 | 0,8 |
| E.10.1.3.8 | Overload Protection | YES, Electronic | YES, Electronic |
| E.10.1.3.9 | Transient Response (max) | +/-4% | +/-4% |
| E.10.1.3.10 | Bypass transfer time | 100% uninterrupted | 100% uninterrupted |
| E.10.1.3.10 | Surge, spike and line noise protection | in bypass and inverter | in bypass and inverter |
| E.10.1.3.12 | PC Power Cable | 3-prong BS type | 3-prong BS type |
| E.10.1.3.13 | Independent Monitor Power Cable | 3-prong BS type | 3-prong BS type |
| E.10.1.4 | Shutdown Software | Required | Yes |
| E.10.2 | SCSI-3 Raid Controller | Raid 0,1,5 | Embedded Smart Array 6i |
| E.10.3 | Additional 1GB RAM | (specify) | HP 1 GB RAM |
| E.10.4 | Additional 72GB Hard Disk | (specify) | HP 72GB Hard Disk |
| E.10.5 | Additional 3.4 GHz System Processor | (specify) | Intel Xeon 3.4 GHz processor |
| E.10.6 | LTO Backup Device | | HP Ultrium 460 3U rackmount |
| | Compressed/Uncompressed Capacity | 200/400GB (minimum) | 200/400GB |
| E.10.7 | RedHat Linux (latest version) | Same system but section e.9.1 with RedHat Linux | N/A |
| E.10.8 | DAT Backup Drive | | |
| | Make and Model | (specify) | HP 72GB Hot Plug Drive |
| | Type | Internal SCSI | Internal SCSI |
| | Compressed/Uncompressed Capacity | 36/72GB (minimum) | 36/72GB |
| E.10.9 | Console Switch | | |
| | Size | Maximum 2U size | 1U |
| | Ports supported | 8 system (minimum), 1 console (minimum) | 8 system, 1 console |
| | Video resolution | 1280x1024 minimum | 1280x1024 minimum |
| | Video mode support | VGA,SVGA,XGA | VGA,SVGA,XGA |
| | Power supply | 240V, 50Hz | 240V, 50Hz |
| E.10.10 | Keyboard and Monitor (console) | | |
| | Size | Maximum 2U size | 1U |
| | Monitor type | 14.1" minimum flat panel display (TFT/LCD), 1024x768 resolution | 15" flat panel display (TFT/LCD), 1024x768 resolution |
| | Keyboard type | Keyboard with integrated mouse | Keyboard with integrated mouse |
| | Ability to connect to console | Required | Yes |
| E.10.11 | Rack Console Switch | 8-port, IP type, with at least 1 user remote access capability | 16 port, IP type, with at least 1 user remote access capability |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|------------|--|---|--|
| E.10.12 | Console Switch KVM/IP adapters | required | Yes |
| E.10.13 | Integrated Keyboard/Display/Mouse Console | maximum 1U size | 1U |
| E.10.14 | RACK AND ACCESSORIES | All necessary cables and mounting hardware must be included with the rack and and/or its accessories to support 20 rack devices. Provide details on the proposed configuration. | Yes. See attached leaflet for the proposed configuration |
| | Rack Size | Minimum 40U standard 19" device rack (height approximately 2m) | 42U standard 19" device rack |
| | Sidewall compartments | Specify number and U size | 2, 42U |
| | Front Door with lock | Required | Yes |
| | Supported weight | 400kg minimum with no visible distortion | 907,18Kg |
| | Caster wheels | Required | Yes |
| E.10.15 | Power Distribution Unit | | HP 16A High Voltage Modular PDU |
| | Size | Maximum 2U size | 1U |
| | Number of power Outlets | 5 minimum | 8 |
| E.10.16 | Fully retractable Rack shelves | required | Yes |
| E.10.17 | Hard Disk Replacement | Same as E.6.2 but with 144GB (minimum) | HP 146 GB HDD |
| E.10.18 | Additional 144GB Hard Disk | Same as E.10.17 | HP 146 GB HDD |
| E.10.19 | Windows 2003 Server installation | The company with the successful tender will be provided with volume licensing key to install Windows 2003 Server or latest, Required | Yes |
| | | | |
| | | | |
| F. | IBM PC/COMPATIBLE RACK SERVER TYPE B | | MULTITECH |
| | | | |
| F.1 | GENERAL | | |
| F.1.1 | Manufacturer | (specify) | HP |
| F.1.2 | Model | (specify) | DL385 |
| F.1.3 | Part Number | (specify) | 373545-421 |
| F.1.4 | Architecture | PCI-X | PCI-X |
| F.1.5 | Casing | Rackable standard 19" | Rackable standard 19" |
| F.1.6 | Redundant Power Supply | Required | Yes |
| F.1.7 | Redundant Fun | Required | Yes |
| F.1.8 | Type | 2U (max) | 2U |
| | | | |
| F.2 | PROCESSOR | | |
| F.2.1 | Processor (CPU) Type | AMD Opteron | AMD Opteron |
| F.2.2 | Processor Make & Model | (specify) | AMD 250 (2.4GHz) Opteron |
| F.2.3 | Motherboard Make & Model | (specify) | HP |
| F.2.4 | Number of Processors supported | 2 (minimum) | 2 |
| F.2.5 | Number of Processors required | 1 | 1 |
| F.2.6 | Clock Speed | 2.2 GHz(minimum) | 2.4GHz |
| F.2.7 | L2 CPU Cache Memory (per processor) | 1MB(minimum) | 1MB |
| | | | |
| F.3 | MEMORY | | |
| F.3.1 | Memory offered (RAM) | 1GB (minimum) | 1GB |
| F.3.2 | Type and Make of Memory Chip | ECC SDRAM | ECC SDRAM |
| F.3.3 | RAM expandability | 8GB (minimum) on board | 16GB |
| F.3.4 | Number of memory slots available after 1GB RAM | (specify) | 6 |
| | | | |
| F.4 | I/O | | |
| F.4.1 | Bus speed | 800MHz | Not Applicable [Clarification Bus speed is used by Intel and not by AMD] |
| F.4.2 | Free PCI Slots (after the card installations) | 1 (minimum) | 3 |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|--------------|--|---|--|
| F.4.3 | PS/2 mouse with mouse pad | Required (USB acceptable) | PS/2 or USB mouse with mouse pad |
| F.4.4 | Serial Ports (fast 16550 compatibility) | 1 (minimum) | 1 |
| F.4.5 | Other I/O interfaces | (specify) | 1 x pointing Device, 1 x Graphics, 1 x Keyboard, 3 RJ45 (1 for iLO), 3 USB (1 front, 2 back) |
| | | | |
| F.5 | GRAPHICS ADAPTER | | |
| F.5.1 | Resolution | 1024X768 | 1600 x 1200 |
| F.5.2 | Video Controller | SVGA, 2MB (minimum) | SVGA, 8MB |
| F.5.3 | Bus | PCI or AGP | PCI |
| F.5.4 | Make & Model | (specify) | ATI RAGE XL VIDEO CONTROLLER |
| F.5.5 | Drivers for Windows2003, LINUX | Required | Drivers for Windows2003, LINUX |
| | | | |
| F.6 | MASS STORAGE | | |
| F.6.1 | INTERNAL FLOPPY DRIVE | (USB acceptable) | |
| F.6.1.1 | Type | 1.44MB/3.5" | 1.44MB/3.5" |
| F.6.1.2 | Make & Model | (specify) | HP Internal Floppy Drive |
| F.6.2 | HARD DISK | | |
| F.6.2.1 | Make & Model | (specify) | HP |
| F.6.2.2 | Hard disk controller | Ultra 320 SCSI | Ultra 320 SCSI |
| F.6.2.3 | Capacity | 72GB (minimum) | 72GB |
| F.6.2.4 | Rotational Speed | 10000 rpm (minimum) | 10000 rpm |
| F.6.2.5 | Number of Hard Disks supported | 4 (minimum) | 6 |
| F.6.2.6 | Maximum Internal Disk capacity | (specify) | 1.8TB |
| F.6.2.7 | Number of Free Slots For Hard disks after 72GB | (specify) | 5 |
| F.6.2.8 | Hot Plug Hard Disk Drives | Required | Yes |
| F.6.3 | CD-ROM | (24x acceptable) | |
| F.6.3.1 | Type | 32x speed (minimum) | 24x speed |
| F.6.3.2 | Make & Model | (specify) | HP |
| | | | |
| F.7 | DUAL NETWORK ADAPTER | | |
| F.7.1 | Make & Model | (specify) | HP, NC7782 & NC7771 |
| F.7.2 | BUS Type | 32 bit PCI | 32 bit PCI |
| F.7.3 | Ports | RJ45 | RJ45 |
| F.7.4 | Drivers | TCP/IP, IPX, NDIS (Windows2003 and LINUX) | TCP/IP, IPX, NDIS (Windows2003 and LINUX) |
| F.7.5 | Speed | 10/100/1000Mbps per sec autosense | 10/100/1000Mbps per sec autosense |
| F.7.6 | Full Duplex | Required | Yes |
| F.7.7 | Plug and Play Capability | Required | Yes |
| | | | |
| F.8 | OPERATING SYSTEM | | |
| F.8.1 | No operating system | (specify) | No operating system |
| | | | |
| F.9 | STANDARDS | | |
| F.9.1 | WINDOWS 2003, WINDOWS 2000 | Required | Yes |
| F.9.2 | LINUX | Required | Yes |
| F.9.3 | IEEE 802.2 | Required | Yes |
| F.9.4 | IEEE 802.3 | Required | Yes |
| F.9.5 | IEEE 802.3u | Required | Yes |
| F.9.6 | IEEE 802.3x | Required | Yes |
| F.9.7 | FCC Certification | CLASS B | Yes |
| F.9.8 | ISO 9000 | Required | Yes |
| | | | |
| F.10 | OPTIONS | | |
| F.10.1 | ON-LINE UPS | | |
| | | | |
| F.10.1.1 | ENVIRONMENTAL | | |
| F.10.1.1.1 | Make and Model | Specify: | Santak Electronics Co. Ltd, TITAN-2KVA - RACK |
| F.10.1.1.2 | Operating temperature | 0 to 40 C | 0 to 40 C |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-------------|---|---|---|
| F.10.1.1.3 | Operating humidity | 30% to 90% | 30% to 90% |
| F.10.1.1.4 | Audible noise (max) | 45 db | 45 db |
| F.10.1.1.5 | Weight (please specify) | Specify: | 10.3 Kg |
| F.10.1.2 | INPUT CHARACTERISTICS: | | |
| F.10.1.2.1 | Phase | single with ground | single with ground |
| F.10.1.2.2 | Voltage | 240+/-10% | 240+/-10% |
| F.10.1.2.3 | Frequency | 50Hz+/-5% | 50Hz+/-5% |
| F.10.1.3 | OUTPUT CHARACTERISTICS: | | |
| F.10.1.3.1 | Capacity to support server and monitor at full load (KVA) | (specify) | 2KVA |
| F.10.1.3.2 | Voltage | 240V | 240V |
| F.10.1.3.3 | Frequency | 50Hz | 50Hz |
| F.10.1.3.4 | Voltage Regulation (max) | +/-3% | +/-3% |
| F.10.1.3.5 | Waveform | pure sinewave | pure sinewave |
| F.10.1.3.6 | Load Power Factor | 0,7 | 0,7 |
| F.10.1.3.7 | Efficiency (min) | 0,8 | 0,8 |
| F.10.1.3.8 | Overload Protection | YES, Electronic | YES, Electronic |
| F.10.1.3.9 | Transient Response (max) | +/-4% | +/-4% |
| F.10.1.3.10 | Bypass transfer time | 100% uninterrupted | 100% uninterrupted |
| F.10.1.3.10 | Surge, spike and line noise protection | in bypass and inverter | in bypass and inverter |
| F.10.1.3.12 | PC Power Cable | 3-prong BS type | 3-prong BS type |
| F.10.1.3.13 | Independent Monitor Power Cable | 3-prong BS type | 3-prong BS type |
| F.10.1.4 | Shutdown Software | Required | Yes |
| F.10.2 | SCSI-3 Raid Controller | Raid 0,1,5 | Embedded Samrt Array 6i |
| F.10.3 | Additional 1GB RAM | (specify) | HP 1GB RAM |
| F.10.4 | Additional 72GB Hard Disk | (specify) | HP 72 GB HDD |
| F.10.5 | Additional 3.4 GHz System Processor | (specify) [replace with 2.2GHz] | AMD 2.4 GHz |
| F.10.6 | LTO Backup Device | | HP ULTRIUM 460 3U Rackmount |
| | Compressed/Uncompressed Capacity | 200/400GB (minimum) | 200/400GB |
| F.10.7 | RedHat Linux (latest version) | Same system but section F.9.1 with RedHat Linux | N/A |
| F.10.8 | DAT Backup Drive | | |
| | Make and Model | (specify) | HP 72 GB Hot Plug Tape Drive |
| | Type | Internal SCSI | Internal SCSI |
| | Compressed/Uncompressed Capacity | 36/72GB (minimum) | 36/72GB |
| F.10.9 | Console Switch | | |
| | Size | Maximum 2U size | 1U |
| | Ports supported | 8 system (minimum), 1 console (minimum) | 8 system, 1 console |
| | Video resolution | 1280x1024 minimum | 1280x1024 minimum |
| | Video mode support | VGA,SVGA,XGA | VGA,SVGA,XGA |
| | Power supply | 240V, 50Hz | 240V, 50Hz |
| F.10.10 | Keyboard and Monitor (console) | | |
| | Size | Maximum 2U size | 1U |
| | Monitor type | 14.1" minimum flat panel display (TFT/LCD), 1024x768 resolution | 15" flat panel display (TFT/LCD), 1024x768 resolution |
| | Keyboard type | Keyboard with integrated mouse | Keyboard with integrated mouse |
| | Ability to connect to console | Required | Yes |
| F.10.11 | Rack Console Switch | 8-port, IP type, with at least 1 user remote access capability | 16 port, IP type, with at least 1 user remote access capability |
| F.10.12 | Console Switch KVM/IP adapters | required | Yes |
| F.10.13 | Integrated Keyboard/Display/Mouse Console | maximum 1U size | 1U |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|------------|--|---|--|
| F.10.14 | RACK AND ACCESSORIES | All necessary cables and mounting hardware must be included with the rack and and/or its accessories to support 20 rack devices. Provide details on the proposed configuration. | Yes. See attached leaflet for the proposed configuration |
| | Rack Size | Minimum 40U standard 19" device rack (height approximately 2m) | 42U standard 19" device rack |
| | Sidewall compartments | Specify number and U size | 2, 42U |
| | Front Door with lock | Required | Yes |
| | Supported weight | 400kg minimum with no visible distortion | 907,18Kg |
| | Caster wheels | Required | Yes |
| F.10.15 | Power Distribution Unit | | HP 16A High Voltage Modular PDU |
| | Size | Maximum 2U size | 1U |
| | Number of power Outlets | 5 minimum | 8 |
| F.10.16 | Fully retractable Rack shelves | required | Yes |
| F.10.17 | Hard Disk Replacement | Same as F.6.2 but with 144GB (minimum) | HP 146 GB HDD |
| F.10.18 | Additional 144GB Hard Disk | Same as F.10.17 | HP 146 GB HDD |
| F.10.19 | Windows 2003 Server installation | The company with the successful tender will be provided with volume licensing key to install Windows 2003 Server or latest, Required | Yes |
| | | | |
| G. | BLADE SERVER AND STORAGE SOLUTION | | NEWCYTECH |
| | The solution includes Blade Chassis, Blade Servers, SAN, Backup Device, Rack and accessories. All equipment must be interconnected and work at full load | Required | Yes |
| | | | |
| G.1 | BLADE CHASSIS | | |
| G.1.1 | Manufacturer | (specify) | IBM |
| G.1.2 | Model | (specify) | IBM eServer BladeCenter™ Chassis |
| G.1.3 | Part Number | (specify) | T73XYUK |
| G.1.4 | Internal Capacity in Blade Servers, Form Factor | (specify) | 7U Rack Mountable, one Blade Chassis can accommodate up to 14 Blade Servers |
| G.1.5 | Casing | Rackable standard, should fit into standard 19" rack | Yes |
| G.1.6 | Number of Blade servers supported in 42U Rack | (specify) | 84 |
| G.1.7 | Power Supply | Redundant, Hot Pluggable | Yes, 4 (hot-swap and redundant 2000W with load balancing and failover capabilities) |
| G.1.8 | Cooling | Redundant, Hot Pluggable cooling fans | Yes, 2 hot-swap and redundant blowers standard |
| G.1.9 | Fibre Switches for SAN connectivity | Redundant, integrated, min 4 ports | Yes 2x IBM Qlogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter (all Blade Servers are connected through the Backplane to the SAN Switches. Therefore, the Blade chassis can be connected to multiple external SAN Storages for maximum performance, availability and expandability) |
| G.1.10 | Ethernet Switches | Redundant, integrated, min 4 ports | Yes 2x IBM BladeCenter™ 4-port Gigabit Ethernet Switch Module ((all Blade Servers are connected through the Backplane to the Ethernet Switch. Therefore, all 4x1GB ports are utilised at the same time for maximum performance) |
| G.1.11 | Midplane | Redundant | Yes |
| G.1.12 | Input Devices | Intergrated KVM console switch | Yes, IBM BladeCenter™ KVM/Management Module |
| G.1.13 | Integrated Floppy and DVD ROM Drive | (specify) [in rack mounted tray, also acceptable] | Yes, Integrated, DVD-ROM and diskette drive accessible from each blade server |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|------------|--|---|---|
| | | | IBM BladeCenter™ Acoustic Attenuation Module |
| G.2 | BLADE SERVER | | [<i>Clarification</i> Blade Servers are individual servers, completely independent to one another; the fact that they "share" an enclosure (along with power supplies & network connectivity) does not derive any implications regarding the OS any of the blades would potentially have. Given the fact that each blade server will have a supported OS installed, ANY combination of the supported Oses is permitted within a blade enclosure. |
| G.2.1 | Manufacturer | (specify) | IBM |
| G.2.2 | Model | (specify) | IBM HS20 |
| G.2.3 | Part Number | (specify) | X331YUK |
| G.2.4 | Architecture | PCI-X | YES |
| G.2.5 | Casing | Rackable | Yes, installed in Blade Chassis |
| | PROCESSOR | | |
| G.2.6 | Processor (CPU) Type | INTEL XEON | Yes |
| G.2.7 | Processor Make & Model | (specify) | INTEL XEON DP EMT 64T |
| G.2.8 | Motherboard Make & Model | (specify) | IBM, Intel Lindenhurst (E7520) chipset |
| G.2.9 | Number of Processors supported | 2 (minimum) | Yes |
| G.2.10 | Number of Processors required | 1 | Yes |
| G.2.11 | Clock Speed | 3.4 GHz(minimum) | Yes |
| G.2.12 | L2 CPU Cache Memory (per processor) | 1MB(minimum) | Yes |
| | MEMORY | | |
| G.2.13 | Memory offered (RAM) | 2GB (minimum) | Yes, 4x512MB |
| G.2.14 | Type and Make of Memory Chip | ECC DDR-2 SDRAM | Yes |
| G.2.15 | RAM expandability | 8GB (minimum) on board | Yes |
| G.2.16 | Number of memory slots available after 2GB RAM | (specify) | 0 |
| | I/O | | |
| G.2.17 | Bus speed | 800MHz | Yes |
| G.2.18 | Other I/O interfaces | (specify) | <ul style="list-style-type: none"> • Memory and I/O Controller (MCH) (North Bridge) • Intel PXH-D • ICH-S (South Bridge) |
| | HARD DISK | | |
| G.2.19 | Make & Model | (specify) | IBM |
| G.2.20 | Hard disk controller | Ultra 320 SCSI | YES, LSI 1020 SCSI controller with RAID 0,1 support |
| G.2.21 | Capacity | 72GB (minimum) | 73.4GB |
| G.2.22 | Rotational Speed | 10000 rpm (minimum) | YES |
| G.2.23 | Maximum Internal Disk capacity | (specify) | 146.8GB |
| G.2.24 | Non Hot Plug Hard Disk Drives | Required (non-hotplug ok) | Non Hot Pluggable (as per clarification Letter 1) |
| | DUAL NETWORK ADAPTER | | |
| G.2.25 | Make & Model | (specify) | Dual Broadcom 5704S Gb Ethernet connections with teaming and failover support |
| G.2.26 | BUS Type | 32 bit PCI | Yes |
| G.2.27 | Ports | RJ45 | Yes |
| G.2.28 | Drivers | TCP/IP, IPX, NDIS (Windows2003 and LINUX) | Yes |
| G.2.29 | Speed | 10/100/1000Mbps per sec autosense | Yes |
| G.2.30 | Full Duplex | Required | Yes |
| G.2.31 | Plug and Play Capability | Required | Yes |
| | OPERATING SYSTEM | | |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|---------|---|-------------------------|---|
| G.2.32 | No operating system | (specify) | No O/S is offered as standard, O/S supported, <ul style="list-style-type: none"> • Microsoft: <ul style="list-style-type: none"> o Windows 2000 Advanced Server (requires SP 3) o Windows 2000 Server (requires SP 3) o Windows Server 2003, Standard Edition o Windows Server 2003, Enterprise Edition o Windows Server 2003, Web Edition • Linux: <ul style="list-style-type: none"> o Red Hat Enterprise Linux AS (v.3 for AMD64/EM64T) o Red Hat Enterprise Linux AS (v.3 for x86) o Red Hat Enterprise Linux ES (v.3 for x86) o Red Hat Enterprise Linux WS (v.3 for x86) o SUSE Linux Enterprise Server 9 (32-bit and 64-bit) o SUSE Linux Enterprise Server 9 for x86 |
| | MANAGEMENT | | |
| G.2.33 | Management software | (specify) | Integrated management processor, monitoring critical components on each blade for remote and local systems management, IBM Director and Remote Deployment Manager available. IBM Director is the industry leading client/server workgroup manager. With IBM Director, IT administrators can view and track the hardware configuration of remote systems in detail and monitor the usage and performance of critical components, such as processors, disks, and memory. RDM allows for remote unattended installation of new and existing systems. RDM helps automate deployment tasks such as initial operating system installation, BIOS updates, and disposal of retired systems. All of these tasks can be done without visiting the remote system, reducing travel and labor |
| | STANDARDS | | |
| G.2.34 | WINDOWS 2003, WINDOWS 2000 | Required | Yes |
| G.2.35 | LINUX | Required | Yes |
| G.2.36 | IEEE 802.2 | Required | Yes |
| G.2.37 | IEEE 802.3 | Required | Yes |
| G.2.38 | IEEE 802.3u | Required | Yes |
| G.2.39 | IEEE 802.3x | Required | Yes |
| G.2.40 | FCC Certification | CLASS B | Yes |
| G.2.41 | ISO 9000 | Required | Yes |
| | G.3 UPS | | |
| G.3.1 | Rack mountable, must support the Blade server and Storage solution at full load | Required | IBM HV 7500 VA Rack Mountable. It is estimated that for the Blade Solution at Full load (14 Blade Servers in the Chassis with 4 x2000W in Redundant Configuration with Dual Processors and 2 Hard Drives each, Redundant KVM Modules, 2 Ethernet and 2 SAN Fibre Switches), the Tape Library, the SAN Storage, Fibre Switches, Console Cable, etc. sum up to approximately 6.5 KVA. Therefore the 7.5 KVA UPS offered cover the requirements of the solution, UPS management software integrates with IBM Director to deliver seamless systems management |
| | G.4 SAN Storage | | |
| G.4.1 | Manufacturer | (specify) | IBM |
| G.4.2 | Model | (specify) | IBM TotalStorage DS400 |
| G.4.3 | Part Number | (specify) | 17002RD |
| G.4.4 | Rack mountable | Required | Yes |
| G.4.5 | Hot Plug power supplies | Required | Yes |
| G.4.6 | Hot Plug fans | Required | Yes |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|------------|---|--|--|
| G.4.7 | Internal Storage Capacity | 5TB (minimum) [usage of more than 1 disk enclosure is acceptable] | 12TB (using 14x300GB Hard Drives) [4.2 TB internal] |
| G.4.8 | Storage Capacity Required | 2TB (minimum) [usage of 14x146GB HDDs acceptable] | 2.1 TB (7x300GB Ultra 320 SCSI Hard Drives) |
| | HARD DISK | | |
| G.4.9 | Make & Model | (specify) | IBM |
| G.4.10 | Hard disk controller | Ultra 320 SCSI | Yes |
| G.4.11 | Capacity | 146GB (minimum) | 300GB |
| G.4.12 | Rotational Speed | 10000 rpm (minimum) | Yes |
| G.4.13 | Hot Plug Hard Disk Drives | Required | Yes |
| G.4.14 | RAID Controllers | Dual RAID Controllers | Yes, Redundant |
| G.4.15 | RAID levels support | RAID 0,1,5, 1+0, 5+0 | Yes |
| G.4.16 | Fibre Channel interface | Required, Redundant | 2GB/s Interface, Redundant fiberchannel |
| | | | |
| G.5 | LTO BACKUP DEVICE | | |
| G.5.1 | Manufacturer | (specify) | IBM |
| G.5.2 | Model | (specify) | Ultrium 3582F23 Tape Library with Ultrium 2 Fibre Tape Drive [ultrium3] |
| G.5.3 | Part Number | (specify) | 18P9339 |
| G.5.4 | Rack mountable | Required | Yes |
| G.5.5 | Number of Drives | (specify) | 1 (it can be upgraded to 2) |
| G.5.6 | Number of Tape cartridges | (specify) | 24 |
| G.5.7 | Compressed Capacity | 19TB (min) | 19.2 TB using 24x800GB Tapes (offered as optional) |
| G.5.8 | Interface | 2 Gb/s Fibre Channel | Yes |
| G.5.9 | Backup Software | Required - Agents for: 1. Library Agent 2. Sun Solaris Agent 3. Linux Agent 4. Windows 2000/2003 Server Agent 5. Windows 2000/XP workstation Agent 6. Disaster Recovery Agent | Since the Tape Library will be directly attached to the SAN Storage System, you will need the following agents: For Windows Servers, one Backup Exec (Full version) and one SAN agent for each Blade Server. For Linux Servers, the Backup has to go through LAN, therefore only a Remote Agent is required. Alternatively, you can have all Servers to backup through LAN, therefore only one Remote Agent for each Windows or Linux Blade Server and one Full Version of Backup Exec for the Backup Server is required. It is also recommended that you include the Windows Central Admin. Server Option. Additionally, Disaster Recovery Option will enable fast and reliable recovery of the Systems in case of a failure or disaster. |
| G.5.10 | Operating System Support | Windows 2003 Server, Linux | Yes |
| | | | |
| G.6 | RACK AND ACCESSORIES | All necessary cables and mounting hardware must be included with the rack and and/or its accessories to support 20 rack devices. Provide details on the proposed configuration. | |
| | Rack Size | Minimum 40U standard 19" device rack (height approximately 2m) | Yes, 42U |
| | Sidewall compartments | Specify number and U size | 6, 1 U |
| | Front Door with lock | Required | Yes |
| | Supported weight | 400kg minimum with no visible distortion | Yes |
| | Caster wheels | Required | Yes |
| G.6.1 | Power Distribution Unit | | Yes |
| | Size | Maximum 2U size | 1U |
| | Number of power Outlets | 5 minimum | 7 |
| G.6.2 | Integrated Keyboard/Display/Mouse Console | maximum 1U size, must connect to KVM switch as mentioned at G.1.12 | Yes IBM 17" TFT with Integrated Keyboard Mouse |
| | | | |
| G.7 | Windows 2003 Server installation | The company with the successful tender will be provided with volume licensing key to install Windows 2003 Server or latest, Required | Yes |
| | | | |

| SECTION | DESCRIPTION | REQUIRED SPECIFICATIONS | |
|-----------|--|---------------------------------|-----------------------------------|
| H. | ACCESSORIES | | |
| H.1 | USB 2.0 flash drive 512MB | | Twinmos USB 2.0 Flash Drive 512MB |
| | System Support | Windows 2000, Windows XP, Linux | Yes |
| | LED indicator when USB flash drive is in use | Required | Yes |
| H.2 | USB 2.0 flash drive 1GB | | Twinmos USB 2.0 Flash Drive 1GB |
| | System Support | Windows 2000, Windows XP, Linux | Yes |
| | LED indicator when USB flash drive is in use | Required | Yes |
| | | | |
| | | | |
| | EXPLANATIONS | | |
| | | | |
| | changed specs | | |
| | no sample delivered | | |
| | failed spec | | |
| | clarification | | |
| | clarifications on demo | | |