

**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.****Informatics Centre**

<b>Sl. No.</b>	<b>Item Code</b>	<b>Item Description</b>
1	NB01L	Notebook - General
2	NB02L	Notebook - Lightweight Type-I
3	NB03L	Notebook - Engineering
4	NB04L	Notebook - Lightweight Type-II (Tablet cum Ultra book)
5	PC01L	PC - General
6	PC02L	Engineering PC
7	PC03L	PC - Thinclient - Fanless
8	VD01	Desktop Virtualization solution
9	TS01	Touch screen Monitor in lieu of Normal Monitor PC01L
10	TS02	Touch screen Monitor in lieu of Normal Monitor PC02L
11	LD01	LED Projectors
12	WS01L	Graphics Workstation - Type-I
13	WS02L	Graphics Workstation - Type-II
14	LJ01L	Laserjet Printer - A4 Mono Personal
15	LJ02L	Laserjet Printer - A4 Mono General
16	LJ03H	Laserjet Printer - A4 Mono High End
17	LJ04L	Laserjet Printer - A3 Mono Low End
18	LJ04H	Laserjet Printer - A3 Mono High End
19	LJ05L	Laserjet Printer - A4 Color Low End
20	LJ06L	Laserjet Printer - A4 Color General
21	LJ07L	Laserjet Printer - A3 Color
22	DJ01L	Deskjet Color Printer
23	DM01L	Dot Matrix Printer
24	DM02L	Dot Matrix Printer - Heavy Duty
25	LM01L	Line Matrix Printer
26	MF01L	MFS - A4 Mono (Print, Copy, FAX and Scan)
27	MF02L	MFS - A4 Color
28	PL01L	Plotter - A0 Low End (Ink jet)
29	PL02L	Plotter - MFS
30	PL04H	A0 LED Plotter - High
31	SC01L	Scanner - A4 Low End
32	SC02L	Scanner - A4 Color
33	SC03L	Scanner - A3 Color
34	SC04H	Scanner - A4 Color High End
35	SC05H	Scanner - A3 Color High End
36	SC06H	A0 CCD Mono Scanner
37	UP01L	Small UPS
38	UP02L	2KVA UPS
39	UP03H	5KVA UPS
40	UP04H	10KVA Online UPS
41	UP05H	2 x 10 KVA Online UPS
42	UP06H	20KVA Online UPS
43	UP08H	40 KVA Online UPS
44	UP11H	2x60 KVA Online UPS
45	ST01L	SAN Storage Low End
46	ST01H	SAN Storage High End
47	ST02L	NAS Storage Low End

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<b>Sl. No.</b>	<b>Item Code</b>	<b>Item Description</b>
48	ST03H	NAS Storage High End
49	ST04H	SAN Storage High End
50	STSW	SAN Switches
51	SR01H	Server 2-Way
52	SR02H	Blade Server
53	NS01H	Layer 2 Switch - 24 Port
54	NS02H	Layer 2 Switch - 48 Port
55	NS03H	Layer 3 Switch ( Type -I)
56	NS07H	Wireless Access Point
57	NS08H	Network Security Device
58	NS11H	Wireless Access Controller
59	LL01H	Link Load Balancer
60	PS01L	Print Server
61	RS01L	42U Server Rack
62	MS02N	42U Network Rack
63	SR03C	Blade Server Chassis
64	TL01H	Tape Library
65	POE	PoE Switch
66	SIP01	SIP Phone Type-I
67	SIP02	SIP Phone Type-II
68	MS09L	KVM Switch
69	MS10L	UTP Cable Tester
70	MS12L	Webcam
71	SV01	Server Virtualization software
72	PD01	IP Based Power Distribution Panel for Racks
73	BR01	Barcode Reader
74	BR02	Barcode Printer
75	NB01L (A1)	Notebook - General (Higher RAM)
76	NB02L (A1)	Notebook - Lightweight Type-I (Higher RAM)
77	NB03L (A1)	Notebook -Engineering (Higher RAM)
78	PC01L (A1)	PC - General (Higher RAM)
79	PC02L (A1)	Engineering PC (Higher RAM)
80	WS01L (A1)	Graphics Workstation - Type I (Higher RAM)
81	WS02L (A1)	Graphics Workstation - Type II (Higher RAM)
82	WS02L (A2)	Graphics Workstation - Type II (Higher RAM)
83	PLO4H(A1)	PLP PlotWorks Pro 7 (Latest Version)
84	SR01H (A1)	Server - 2 Way Rack (Higher HDD)
85	SR01H (A2)	Server - 2 Way Rack (Higher RAM)
86	SR02H (A1)	Blade Server (Higher RAM)
87	MS06H (A1)	Tape Library (With Fibre Ports)
88	PC01L (A2)	PC (Higher Size TFT) 19" OEM make in place of 17" OEM make
89	SW01H	Red Hat Enterprise Linux Advance Platform v5 or Equivalent Product latest with 5 years subscription and support (for updates & upgrades, telephonic / web support) from the Principal OEM (with media)
90	SW02H	Red Hat Enterprise Linux Server v5 or latest with 5 years subscription and support (for updates & upgrades, telephonic / web support) from the Principal OEM (with media)

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<b>Sl. No.</b>	<b>Item Code</b>	<b>Item Description</b>
91	SW03H	Microsoft Windows Server Standard Edition Lic/SA or Equivalent Product (Latest Version) with 5 years subscription and support (with media)
92	SW03D	Microsoft Windows Server Data Centre Edition Lic/SA or Equivalent Product (Latest Version) with 5 years subscription and support (with media)
93	SW04L	Microsoft Windows Server CAL Lic/SA (Latest Version)
94	SW06L	Microsoft System Center Configuration Manager Client Management Lic/SA (Latest Version)

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Item Name		NoteBook - General	Vendor Compliance
Item Code		NB01L	
Sl.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Processor	x86 multicore processor at 2.4 GHz or higher with 3MB Cache or higher and TDP of 35W or better.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  MobileMark2007 score of 272 or higher.  Supporting documents for the processor specification and benchmark details to be enclosed	
3	Cache	3MB Cache or Higher	
4	Chipset	Matching Chipset for the quoted Processor	
5	Graphics	Onboard Graphics support compatible with OS offered.	
6	Memory	4GB DDR3 1600 MHz SDRAM upgradeable to 8GB or higher- at least 2 to be free after populating 4GB	
7	HDD	500GB 7200rpm SATA hard drive or higher	
8	Optical Drive	Internal 8X or higher DVD+/-RW	
9	Screen	14"/14.1" high definition anti glare LED with resolution 1366 * 768 or better	
10	Keys	Spill proof/Resistant keyboard with full size keys.	
11	Pointer Device	Multi-touch Touchpad or better	
12	Mouse	OEM USB Optical Travel Mouse	
13	Audio	Integrated High definition audio with integrated speakers and volume control	
14	Webcam	Integrated HD Video Webcam & Microphone	
15	Ethernet	Integrated 10/100/1000 Mbps port	
16	Wireless & Bluetooth	Wireless (802.11g/n)   Bluetooth® 4.0	
17	Ports	4 USB Ports or more with atleast 1 USB 2.0, 1 USB 3.0. Stereo headphone/microphone combo jack, memory card reader, VGA, HDMI/DisplayPort.	
18	Slots	Minimum 3-in-1 card reader	
19	Battery	Minimum 6-cell Lithium-ion rechargeable battery capable of providing 3.5 hours or more backup in standard business environment, ACPI Compliant.	
20	Power Adapter	OEM AC Adaptor suitable for 230V supply	
21	Software	Windows 8 Professional Edition with 64bit latest service pack.Restore / Recovery CD & with OS media CD with each Laptop (in absence of OS Media CD OEM pack of OS to be supplied), a software to provide data recovery to restore user data, settings, applications and Operating System in the event of a software crash or virus infection. The latest system drivers should be available on OEM's website for the entire lease period.	
22	Carry Bag	Carry bag from OEM	
23	Weight	2.5 KG or less (inclusive of 6 Cell battery)	
24	Chassis	Business series laptop with scratch resistant hardened chassis	
25	Certification	OS Certification from Microsoft	
		For OEM : ISO 9001 (Latest version)	
		ACPI (latest version) compliant	
		ERTL / FCC - EMC class B	
		Latest version of IEC-60950-1 / IS 13252 / UL-60950	
		RoHS compliant	
		Energy Star 5.0 compliant or better	
26	Warranty	OEM warranty including battery (labour,parts,on-site) for the entire contract period	

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Item Name		Notebook - Lightweight Type -I	Vendor Compliance
Item Code		NB02L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Processor	x86 multicore processor at 1.3GHz GHz or higher with 3MB Cache or higher and TDP of 19W or below.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  MobileMark2007 score of 370 or higher.  Supporting documents for the processor specification and benchmark details to be enclosed	
3	Cache	3MB Cache or Higher	
4	Chipset	Matching Chipset for the quoted Processor	
5	Graphics	Onboard Graphics feature compatible with supplied OS	
6	Memory	4GB DDR3 1600 MHz SDRAM upgradeable to 8GB on 2 DIMM Slots or higher	
7	HDD	500GB 7200rpm SATA Hard Drive or higher	
8	Optical Drive	8X or higher DVD+/-RW	
9	Screen	13" or higher high definition anti glare LED back lit Screen	
10	Keys	Spill proof/Resistant keyboard with full size keys.	
11	Pointer Device	Multi-touch Touchpad or better	
12	Mouse	OEM USB Optical Travel Mouse	
13	Audio	Integrated High definition audio with integrated speakers and volume control	
14	Webcam	Built-In HD Webcam with Built-In Microphone	
15	Ethernet	Integrated 100/1000 Mbps port	
16	Wireless & Bluetooth	Integrated 802.11 g/n + Bluetooth 4.0	
17	Ports	3 USB Ports or more with atleast 1 USB 2.0, 1 USB 3.0 . Stereo headphone/ microphone combo jack, memory card reader, VGA, HDMI/ DisplayPort.	
18	Slots	Minimum 3-in-1 card reader	
19	Battery	Minimum 3-cell rechargeable battery capable of providing 3.5 hours or more backup in standard business environment, ACPI Compliant.	
20	Power Adapter	OEM AC Adaptor suitable for 230V supply	
21	Software	Windows 8 Professional Edition with 64bit latest service pack.Restore / Recovery CD & with OS media CD with each notebook (in absence of OS Media CD OEM pack of OS to be supplied), a software to provide data recovery to restore user data, settings, applications and Operating System in the event of a software crash or virus infection. The latest system drivers should be available on OEM's website for the entire lease period.	
22	Security	Chassis security slot on motherboard	
23	Chassis	Business series with scratch resistant hardened chassis	
24	Carry Bag	From OEM	
25	Weight	Less than 1.7kg (inclusive of battery)	
26	Certification	OS Certification from Microsoft	
		For OEM : ISO 9001 (Latest version)	
		ERTL / FCC - EMC class B	
		Latest version of IEC-60950-1 / IS 13252 / UL-60950	
		RoHS compliant	
27	Warranty	ACPI Compliant	
		Energy Star 5.0 compliant or higher	
		OEM warranty including battery (labour,parts,on-site) for the entire contract period	

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Item Name	Notebook - Engineering	Vendor Compliance
Item Code	NB03L	
S.No	Parameter / Feature	Detailed Specifications
1	Make & Model	
2	Processor	x86 multicore processor at 2.7GHz or higher with 6MB Cache or higher.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  MobileMark2007 Score of 342 or higher  Supporting documents for the processor specification and benchmark details to be enclosed.
3	Cache	6MB Cache or Higher
4	Chipset	Matching Chipset for the quoted Processor
5	Graphics	NVIDIA / AMD Professional 3D Graphics Card with 2GB GDDR3 or higher
6	Memory	8GB (2X4GB) 1600MHz DDR3 SDRAM expandable upto 16GB or higher with 2 DIMMS slots free
7	HDD	500GB 7200rpm SATA or higher
8	Optical Drive	Integrated 8x DVD RW or higher
9	Screen	15.4" / 15.6" FHD(1920x1080) Wide View Anti-Glare LED-backlit
10	Keyboard	Spill proof/Resistant keyboard with full size keys.
11	Pointer Device	Multi-touch Touchpad or better
12	Mouse	OEM USB Optical Travel Mouse
13	Audio	Integrated High definition audio with integrated speakers and volume control
14	Ethernet	100/1000 Mbps ethernet
15	Wireless	Integrated (802.11 g/n) + Bluetooth 4.0
16	Ports	4 USB Ports or more with atleast 1 USB 2.0, 1 USB 3.0. Stereo headphone/microphone combo jack, memory card reader, VGA, HDMI/DisplayPort.
17	Slots	Minimum 3-in-1 card reader
18	Battery	Minimum 6-cell Lithium-ion rechargeable battery capable of providing 3.5 hours or more backup in standard business environment, ACPI Compliant or higher.
19	Power Adapter	OEM AC Adaptor suitable for 230V supply
20	Software	Windows 8 Professional Edition with 64bit latest service pack.Restore / Recovery CD & with OS media CD with each notebook (in absence of OS Media CD OEM pack of OS to be supplied), a software to provide data recovery to restore user data, settings, applications and Operating System in the event of a software crash or virus infection. The latest system drivers should be available on OEM's website for the entire lease period.
21	Carry Bag	from OEM
	Weight	3 Kgs or Less including 9-Cell Battery
	Chassis	Business series with scratch resistant hardened chassis
22	Certification	OS Certification from Microsoft
		Certified for UGS products
		Certified for autodesk products
		Certified for 3D Modelling Softwares like PDMS
		For OEM : ISO 9001 (Latest version)
		ERTL / FCC - EMC class B
		Latest version of IEC-60950-1 / IS 13252 / UL-60950
		RoHS compliant
		ACPI Complaint
		Energy Star 5.0 compliant or better
23	Warranty	OEM warranty including battery (labour,parts,on-site) for the entire contract period

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Item Name		Notebook - Lightweight Type-II (Tablet cum Notebook)	Vendor
Item Code		NB04L	Compliance
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Form Factor	Convertible to dual mode i.e. Normal laptop and Tablet	
3	Processor	x86 multicore processor at 1.7GHz under 17W TDP or better.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  MobileMark 2007 score of 85 or higher.  Supporting documents for the processor specification and benchmark details to be enclosed.	
4	Chipset	Matching Chipset for the quoted Processor	
5	Graphics	Onboard Graphics with 512MB dedicated Video Memory or higher and support latest Direct X	
6	Memory	4GB dual channel DDR3, 1333MHz or higher	
7	Hard Drive	256GB SSD Drive or higher	
8	Screen	11.6" LED Backlit Full HD or higher.	
9	Keyboard	Spill proof/Resistant keyboard with full size keys.	
10	Touch Screen	Yes	
11	Pointer Device	touchpad	
12	Mouse	OEM USB Optical Travel Mouse	
13	Audio	Integrated High definition audio with integrated speakers and volume control	Integrated AC97
14	Audio	Integrated High definition audio with integrated speakers and volume control	
15	Wireless	802.11n	
16	Software	Windows 8 Professional Edition with 64bit latest service pack.Restore / Recovery CD & with OS media CD with each notebook (in absence of OS Media CD OEM pack of OS to be supplied), a software to provide data recovery to restore user data, settings, applications and Operating System in the event of a software crash or virus infection. The latest system drivers should be available on OEM's website for the entire lease period.	
17	USB	2 USB Ports or more with Minimum 1Port on USB 3.0	3USB
18	VGA	VGA Output: Analog RGB Mini D-Sub 15 pin VGA output should be available for external monitor / projector. If any converter / cable / attachment are required, same shall be provided.	
19	HDMI / DisplayPort	Minimum one	
20	Bluetooth	Bluetooth 4.0	
21	Webcam	Minimum 720p and 1.3Mp webcam	
22	Battery	6-Cell Lithium Ion (built-in) battery with a minimum backup time of 3.5 hours under standard conditions	
23	Power Adapter	OEM AC Adaptor suitable for 230V supply	
24	Carry Bag	OEM Carry bag	
25	Chassis	Business series with scratch resistant hardened chassis	
26	Weight	1.6kgs or lesser including the 6 Cell battery	
27	Certification	Energy Star 5.0 or better	
28	Warranty	OEM warranty including battery (labour,parts,on-site) for the entire contract period	

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Item Name		PC - General	Vendor Compliance
Item Code		PC01L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make &		
2	Processor	X86 Multicore processors at 3.3 GHz or higher with SPEC_INT Rate 2006 of 75 (testing with max. RAM 8GB) or higher with 4MB Cache or higher.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  Supporting documents for the processor specification and benchmark details to be enclosed.	
3	Motherboard	OEM Motherboard	
4	Chipset	Matching Chipset for the quoted Processor	
5	RAM	4GB DDR3 1600MHz Memory with support upto 16GB on 2 DIMM slots or higher with 2 DIMM slots free	
6	HDD	500GB 7200 RPM 3.5" SATA Hard Drive with SMART (Self-Monitoring, Analysis and Reporting Technology) feature or higher	
7	Optical Drive	16X or more OEM DVD +/-RW Drive	
8	Monitor	OEM make 17" 4:3 / 5:4 aspect ratio, TCO 3 / 5 & Energy Star compliant.	
9	Graphics	latest Onboard Graphics feature	
10	Keyboard	Minimum 104 keys (Same make as PC) with Rupee Symbol	
11	Mouse	2/3 Button Optical Scroll Mouse (Same make as PC)	
12	Audio	Integrated High Definition audio with internal speakers and volume control	
13	Ethernet	Integrated (on-board) 100/1000Mbps RJ45 port with WOL, PXE (or equivalent), ASF (Alert Standard Format) OS independent software to monitor & analyse network connection.	
14	PCI Slots	Minimum 2 PCI-E slots	
15	Ports	Front: Two ports of USB 2.0 or higher, a headphone output and a microphone jack Rear: Six USB Ports with min. two USB 3.0 ports, RJ-45 network interface and 3.5mm audio in/out jacks, one VGA port, one parallel port (on board or PCI).	
16	Software	Windows 8 Professional 64 bit (with roll back to 32 bit and downgrade option to Windows 7) with latest service pack, Restore / Recovery CD & with OS media CD with each PC (in absence of OS Media CD OEM pack of OS to be supplied), a software to provide data recovery to restore user data, settings, applications and Operating System in the event of a software crash or virus infection. The latest system drivers should be available on OEM's website for the entire lease period.	
17	Form	Small Form Factor / Micro Tower Form Factor	
18	Diagnostic	OEM's Diagnostic tool for hardware diagnostics	
19	Security	Removable media boot control, Serial, Parallel & USB Interface Control, Power-On Password, Setup Password, should give alert on management console and desktop on tampering the system. Should come with integrated Trusted Platform Module (TPM) 1.2 Security Chip. Chassis with Locking feature.	
20	Certificatio	OS Certification from Microsoft	
		For OEM : ISO 9001 (Latest version)	
		RoHS compliant	
		Energy Star 5.0 compliant or higher	
21	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		Engineering - PC	Vendor Compliance
Item Code		PC02L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Processor	X86 Multicore processors at 3.5GHz or higher with SPEC_INT Rate 2006 of 78 (testing with max. RAM 32GB) or higher with 6MB Cache or higher.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  Supporting documents for the processor specification and benchmark details to be enclosed.	
3	Chipset	Matching Chipset for the quoted Processor	
4	RAM	8 GB DDR3 <b>1600MHz</b> SDRAM Memory with support upto 16 GB or higher with 2 DIMM slots free	
5	HDD	500GB 7200 RPM 3.5" SATA Hard Drive with pre-failure Alert feature or higher	
6	Optical Drive	16X or more OEM DVD +/-RW Drive	
7	Graphics Card	Professional Graphics Card 3D (NVIDIA or AMD) with 2 GB DDR3 Memory or more	
8	Monitor	OEM make 19" 4:3 / 5:4 aspect ratio,TCO 3 /5 & Energy Star compliant or higher	
9	Keyboard	Minimum 104 keys (Same make as PC) with Rupee Symbol	
10	Mouse	2/3 Button Optical Scroll Mouse (Same make as PC)	
11	Audio	Integrated High Definition audio with internal speakers and volume control	
12	Ethernet	Integrated (on-board) 100/1000Mbps RJ45 port with WOL, PXE (or equivalent) & ASF (Alert Standard Format) OS independent software to monitor & analyse network connection	
13	PCI Slots	Minimum 2 PCI-E slots	
14	Ports	Front: Two ports of USB 2.0 or higher, a headphone output and a microphone jack Rear: Six USB Ports with min. two USB 3.0 ports, RJ-45 network interface and 3.5mm audio in/out jacks, one VGA port.	
15	Software	Windows 8 Professional 64 bit (with roll back to 32 bit and downgrade option to Windows 7) with latest service pack, Restore / Recovery CD & with OS media CD with each PC (in absence of OS Media CD OEM pack of OS to be supplied), a software to provide data recovery to restore user data, settings, applications and Operating System in the event of a software crash or virus infection. The latest system drivers should be available on OEM's website for the entire lease period.	
16	Form Factor	Small Form Factor / Micro/ Mini Tower Form Factor	
17	Diagnostic Tool / Software	Diagnostic tool for hardware diagnostics	
19	Security	Removable media boot control, Serial, Parallel & USB Interface Control, Power-On Password, Setup Password, should give alert on management console and desktop on tampering the system. Should come with integrated Trusted Platform Module (TPM)1.2 Security Chip. Chassis Locking feature.	
20	Certifications	OS Certification from Microsoft For OEM : ISO 9001 (Latest version) RoHS compliant Energy Star 5.0 compliant or higher	
21	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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Item Name		PC - Thinclient - Fanless	Vendor Compliance
Item Code		PC03L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Processor	x86 multicore processor at 1.7GHz under 17W TDP or better.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  MobileMark 2007 score of 85 or higher.  Supporting documents for the processor specification and benchmark details to be enclosed.	
3	Firmware Features	Latest MS Internet Explorer , HTML, JAVA JSP support , Javascript, XML, Adobe Flash, Active X, Sun JRE, Media Player, Citrix Web client	
4	RAM	2GB DDR3 RAM or higher	
5	HDD	Flash (boot drive) Memory 4GB or Higher	
6	Monitor	17" TFT Monitor with 4:3 / 5:4 aspect ratio, TCO compliant	
7	Keyboard	Minimum 104 keys	
8	Mouse	2/3 Button Optical Scroll Mouse	
9	Audio	Standard audio ports	
10	Ethernet	Integrated (on-board) 100/1000 Mbps RJ45 port	
11	Ports	4 USB (Ver 2.0), VGA	
12	Software	Windows 7 embedded or Latest	
13	Preloaded Management Software	Remote Management Agent	
14	Server Software Support	Citrix XenApp, Citrix Presentation Server, Citrix XenDesktop, VMWare View, Windows Terminal Server, Microsoft Hyper-V, RDP, ICA, Terminal Emulation, HDX	
15	Multimedia	Multimedia Acceleration, Flash Redirection, Bidirectional Sound	
16	Compliance	Energy Star 5.0 compliant or higher	
17	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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<b>DESKTOP VIRTUALISATION SOLUTION</b>		<b>Vendor Compliance</b>
<b>Item Code :VD01</b>		
<b>SI No</b>	<b>Detailed Specifications</b>	
	<b>Solution for 100 Virtual Desktops with Required licenses (each having atleast 2 vCPUs, 2 GB RAM and 50 GB storage on average) including matching server, storage and Network infrastructure</b>	
1	Should support 3D applications and graphics using Hardware accelerated and non-hardware accelerated options along with support for shared access to Physical GPU	
2	Should support Microsoft Lync with audio and video conferencing features	
3	Should support Large View Clusters with upto 32 physical hypervisor hosts	
4	Should support Multi VLAN support withing the same Virtual Desktop Pool	
5	Should enables an integrated VOIP and desktop experience for the end-user with an architecture to provide optimized performance for both the desktop and unified communication.	
6	Should enable end to end monitoring of the desktop environment	
7	should provide radius 2 factor authentication support for additional vendor authentication vendors	
8	Should offer clients for Windows/Mac OS X/Android/ Linux based devices.	
9	Should deliver a seamless end-user experience regardless of network reliability such as detecting interruptions and automatically reconnecting the session	
10	Should allow WMI based tools to collect multiple session statistics for monitoring, trending and troubleshooting end-user support issues.	
11	Should have a single management console (web based preferred) for managing the following: Provisioning desktop pools and individual desktops, Editing existing Virtual Desktops and pools, Desktop Image creation, maintenance, and deployment, manage connections to physical PCs, blades, terminal server session, set user entitlements of desktops and assignment of applications, offline & online virtual desktop management.	
12	Should fully integrate with Microsoft Active Directory for all authentication requirements without making any changes to Active Directory schema	
13	Should have the ability to deliver, manage and update all of your Windows desktops and applications from a central location	
14	Should have the provision to delegate administrative authority using role-based management to scale IT resources	

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<b>DESKTOP VIRTUALISATION SOLUTION</b>		<b>Vendor Compliance</b>
<b>Item Code :VD01</b>		
<b>SI No</b>	<b>Detailed Specifications</b>	
15	Should provision new desktops or groups of desktops with granular policy enforcement	
16	Should have the ability to apply and enforce all existing security policies for that virtual desktop	
17	Should support integrated snapshot-based virtual machine deployment and management for optimizing storage requirements for virtual desktops	
18	Should have the ability to push updates and patches out to any number of virtual desktops in minutes without affecting user settings, data or preferences	
19	Should support image encryption during distribution	
20	Should have the ability to make Desktop Assignments including;- Manual Assignment – One desktop per user , Auto Assignment – Assign one desktop per user from a pool of desktops, same desktop on subsequent logons, Dynamic Assignment - Assign one desktop per user from a pool of desktops, different desktop on subsequent logons.	
21	Should support temporary and permanent desktop assignments	
22	Should provide bi-directional USB redirection from both thin client devices and conventional desktop PC's	
23	Should be able to replicate connection settings and broker configuration data automatically so that in the event of server failure, other servers can continue to operate alone.	
24	Should have the ability to offload boot storms and antivirus storms related peak IOPS from Storage to Host based Content Read Caching mechanism	
25	Enable a seamless end-user experience across sessions by maintaining user persona synchronization of either a physical or virtual local user profile with the remote user profile stored in the location designated	
26	Should provide option for multiple Remote display protocols.	
27	Should have the ability to access locally-attach USB devices from within the image (e.g., USB flash drives and printers) can be controlled by the administrator.	
28	Should support full flash based application support with windows multimedia redirection Across all devices iPAD, andriod etc.	
29	Should Provide features such as storage optimization and dynamic provisioning required for enterprise VDI deployments.	
30	Should have the ability to print from virtual desktops to local devices without compatibility issues, bandwidth restraints or complex user setup	

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**Informatics Centre**

<b>DESKTOP VIRTUALISATION SOLUTION</b>		<b>Vendor Compliance</b>
<b>Item Code :VD01</b>		
<b>SI No</b>	<b>Detailed Specifications</b>	
31	Should provide agentless application virtualization capabilities that can be deployed, managed and updated independently from the underlying operating system.	
32	Should have the ability to run multiple applications or multiple versions of the same applications on users' virtual desktops without conflict	
33	Should streamline and accelerate antivirus and anti-malware deployment.	
34	Should improve virtual machine performance by offloading activities such as antivirus and anti-malware scans etc from virtual machines.	
35	Should have the ability to prevent antivirus storms and prevent bottlenecks associated with multiple simultaneous antivirus and anti-malware scans and updates.	
36	Should satisfy audit requirements with detailed logging of antivirus and anti-malware activities	
37	Should be based on industry-standard syslog format	
38	Provide automated fail over, load balancing and back up recovery to ensure high availability.	
39	Should provide offline capabilities where users can save an image in cache on a PC running on a virtualization layer on top of a host operating system and use applications when disconnected from the network	
40	The above solution should support Thin Clients offered under item code : PC03L of this tender	

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Item Name		Touch screen Monitor in lieu of Normal Monitor PC01L	Vendor Compliance
Item Code			
S.No.	Parameter / Feature	Detailed Specifications	
1	<b>Make &amp; Model</b>		
2	Viewable image size (diagonal)	21.5 inches	
4	Horizontal	18 inches or higher	
5	Vertical	10 inches or higher	
6	Maximum resolution	Full HD 1920 x 1080 at 60 Hz	
7	Aspect ratio	16:9	
8	Pixel pitch	0.248 x 0.248 mm or higher	
9	Brightness (typical)	250 cd/m2 or higher	
10	Color gamut (typical)	70% or higher	
12	Contrast ratio (typical)	1000:1 (typical) or higher	
14	Viewing angle (typical)	170°/160° or higher	
15	(vertical/horizontal)		
16	Response time (typical)	12 ms or lower	
18	Touch points	10 touches, certified for Windows 8®1	
19	Backlight	LED	

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Item Name		Touch screen Monitor in lieu of Normal Monitor PC02L	Vendor Compliance
Item Code		TS02	
S.N o.	Parameter / Feature	Detailed Specifications	
1	<b>Make &amp; Model</b>		
2	Viewable image size (diagonal)	21.5 inches	
4	Horizontal	18 inches or higher	
5	Vertical	10 inches or higher	
6	Maximum resolution	Full HD 1920 x 1080 at 60 Hz	
7	Aspect ratio	16:9	
8	Pixel pitch	0.248 x 0.248 mm or higher	
9	Brightness (typical)	250 cd/m2 or higher	
10	Color gamut (typical)	70% or higher	
12	Contrast ratio (typical)	1000:1 (typical) or higher	
14	Viewing angle (typical)	170°/160° or higher	
15	(vertical/horizontal)		
16	Response time (typical)	12 ms or lower	
18	Touch points	10 touches, certified for Windows 8®1	
19	Backlight	LED	
	Inputs	DVI, Headphone, VGA, USB	

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Item Name		LED Projector	Vendor Compliance
Item Code		LD01	
S.No.	Parameter / Feature	Detailed Specifications	
1	Projection Sytem	DLP	
2	Native Resolution	XGA(1024 x768) or better	
3	Brightness	2500 ANSI Lumens and above	
4	Contrast ratio	1500:1 and above	
5	Projection zoom lens	2 X optical ZOOM or higher	
6	Light source	LED/Laser hybrid	
7	Screen size	15 inch- 300 inch,	
8	Projection Range	min. 0.8 to 5m or higher	
9	Video Signal	Input HDMI/VGA/USB/S Video/ Component In(Y, Pb, Pr)	
10	Weight	<= 4 Kg	
11	Audio	Yes	
12	Input/output terminals	HDMI, VGA,USB Type A(PC- less display, Wireless), 3.5mm composite video/stereo audio in	
	Power supply	AC 100 to 240V, 50/60 Hz	
14	Power Consumption	< 270 W	
	Operating Environment	0 -50°c	
	Wireless Connectivity	Wirless Connection Software with USB Donggle which is compatiable for wirless presentation	
15	Accessories	AC power cord x 1, VGA cable x 1,remote control x1,Battery x2, User's Guide(CD-ROM) x1, Carring case x1, Wireless dongle x1. Required ceiling mounting kit to be supplied.	
	Warranty	OEM Warranty (labour, parts, on-site) for the entire contract period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		Graphics Workstation - Type I	Vendor Compliance
Item Code		WS01L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Processor	x86 Multicore processors at 3.2GHz or higher with SPEC CPU Rate 2006 of 151 or higher (60% of SPEC Int Rate base2006 plus 40% of SPEC fp Rate base2006 scores - tested with 32GB RAM) with 8MB Cache or higher.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  Supporting documents for the processor specification and benchmark details to be enclosed.	
3	Chipset & Motherboard	Matching Workstation Class Chipset & Motherboard for the quoted Processor	
4	RAM	1x8GB DDR3 RDIMM Memory, 1600 MHz, ECC expandable to 32 GB with 4 dimm slots or more	
5	HDD	2 TB 7.2 K RPM SATA Hard Drive with SMART (Self-Monitoring, Analysis and Reporting Technology) feature or more	
6	Optical Drive	16X or more OEM DVD +/- R/W SATA Drive	
7	Graphics Card	Professional Graphics Card 3D (NVIDIA or AMD) with 2 GB DDR3 Memory	
8	Monitor	OEM make 21" 4:3 / 5:4 aspect ratio, minimum resolution 1600 x 1200, TCO 3 / 5 & Energy Star compliant or better	
9	Keyboard	OEM Keyboard with 104 key (with rupee symbol)	
10	Mouse	OEM 2/3 button USB optical mouse	
11	Audio	Integrated Audio with Internal speakers	
12	Ethernet	Integrated (on-board) 100/1000Mbps RJ45 port with WOL, PXE (or equivalent), ASF (Alert Standard Format) OS independent software to monitor & analyse network connection.	
13	PCI Slots	Min. 4 (PCI Express and PCI Express x16) Slots	
14	Ports	Minimum 8USB ports with 2 nos USB (3.0), VGA/DVI, HDMI / DisplayPort , Speaker, Microphone and Headphone	
15	Software	Windows 8 Professional 64 bit (with roll back to 32 bit and downgrade option to Windows 7) with latest service pack, Restore / Recovery CD & with OS media CD with each PC (in absence of OS Media CD OEM pack of OS to be supplied), a software to provide data recovery to restore user data, settings, applications and Operating System in the event of a software crash or virus infection. The latest system drivers should be available on OEM's website for the entire lease period. Should be able to support Red Hat Linux also.	
16	Diagnostic Tool / Software	Diagnostic tool for hardware diagnostics	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		Graphics Workstation - Type I	Vendor Compliance
Item Code		WS01L	
S.No.	Parameter / Feature	Detailed Specifications	
17	Security	Removable media boot control, USB Interface Control, Power-On Password, Setup Password, should give alert on management console and desktop on tampering the system. Should come with integrated Trusted Platform Module (TPM)1.2 Security Chip. Chassis with Locking feature.	
18	Certifications (For whole workstation)	OS Certification from Microsoft	
		Certified for Siemens PLM Software	
		Certified for autodesk products	
		Certified for 3D Modelling Softwares, PDMS	
		ERTL / FCC - EMC class B	
		Latest version of IEC-60950-1 / IS 13252 / UL-60950	
		Energy Star 5.0 compliant or better	
	RoHS compliant		
19	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		Graphics Workstation - Type II	Vendor Compliance
Item Code		WS02L	
S.N o.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Processor	x86 Multicore processors at 2.7GHz or higher with SPEC CPU Rate 2006 of 275 or higher (60% of SPEC Int Rate base2006 plus 40% of SPEC fp Rate base2006 scores - tested with 64GB RAM) with 15MB Cache or higher.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  Supporting documents for the processor specification and benchmark details to be enclosed.	
3	Chipset & Motherboard	Matching Workstation Class Chipset & Motherboard for the quoted Processor	
4	RAM	1X16GB DDR3 RDIMM Memory, 1600MHz, ECC upgradeable to 128 GB with 4 dimm slots or more	
5	HDD	2x 900GB 10000 RPM SAS Hard Drive (RAID1)	
6	Optical Drive	16X or more OEM DVD+/-RW SATA	
7	Graphics Card	Professional Graphics Card 3D (NVIDIA or AMD) with 2 GB DDR3 Memory of higher	
8	Monitor	OEM make 21" 4:3 / 5:4 aspect ratio, minimum resolution 1600 x 1200, TCO 3 /5 & Energy Star compliant.	
9	Keyboard	OEM Keyboard with 104 key (with rupee symbol)	
10	Mouse	OEM 2/3 button USB optical mouse	
11	Audio	Integrated Audio with Internal speakers	
12	Ethernet	Integrated 100/1000 Mbps RJ45 port with WOL	
13	Bays/Slots	Minimum 4 bays, 5 (PCI Express and PCI Express x16) Slots	
14	Ports	8 USB ports with minimum 2 USB (3.0), VGA/DVi, HDMI / DisplayPort, Speaker, Microphone and Headphone.	
15	Software	Windows 8 Professional 64 bit (with roll back to 32 bit and downgrade option to Windows 7) with latest service pack, Restore / Recovery CD & with OS media CD with each PC (in absence of OS Media CD OEM pack of OS to be supplied), a software to provide data recovery to restore user data, settings, applications and Operating System in the event of a software crash or virus infection. The latest system drivers should be available on OEM's website for the entire lease period. Should be able to support Red Hat Linux also.	
16	Diagnostic Tool / Software	Diagnostic tool for hardware diagnostics	

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Item Name		Graphics Workstation - Type II	Vendor Compliance
Item Code		WS02L	
S.No.	Parameter / Feature	Detailed Specifications	
18	Security	Removable media boot control, USB Interface Control, Power-On Password, Setup Password, should give alert on management console and desktop on tampering the system. Should come with integrated Trusted Platform Module (TPM)1.2 Security Chip. Chassis with Locking feature.	
19	Certifications (For whole workstation)	OS Certification from Microsoft	
		UGS has been taken over by Siemens PLM Software	
		Certified for autodesk products	
		Certified for 3D Modelling Softwares, PDMS	
		Certified for Siemens PLM Software	
		Latest version of IEC-60950-1 / IS 13252 / UL-60950	
		Energy Star 5.0 compliant or higher	
		RoHS compliant	
20	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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<b>Item Name</b>		<b>Laserjet Printer - A4 Mono Personal</b>	Vendor Compliance
<b>Item Code</b>		<b>LJ01L</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	
1	Make & Model		
2	Print Speed	24 ppm(A4, normal) or higher	
	Duplex Printing	Required, Automatic	
3	Connectivity	Minimum USB 2.0	
4	Print Resolution	600 x 600 dpi or higher	
5	Media Size	A4, A5, letter, executive, legal	
6	Paper Trays	One or more	
7	RAM	8 MB or higher	
8	Duty Cycle	8000 Pages per month	
9	OS Compatibility	Windows XP, Vista, Windows7, Windows 8	
10	Compliance	Energy Star compliant	
11	Cartridge technology	Integrated drum and toner	
12	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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Item Name		Laserjet Printer - A4 Mono General	Vendor Compliance
Item Code		LJ02L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed	30 ppm( A4, normal) or higher	
3	Duplex Printing	Required, Automatic	
4	Connectivity	Ethernet LAN, USB	
5	Print Resolution	600 x 600 dpi or higher	
6	Media Size	A4, A5, letter, executive, legal	
7	Paper Trays	2 Trays or more - including one Multipurpose Tray	
8	RAM	64MB or higher	
9	Duty Cycle	30,000 Pages per month	
10	Print Language Support	PCL 6, PostScript 3 / PostScript 3 Emulation	
11	Catridge technology	Integrated drum and toner	
12	OS Compatibility	Windows XP,Vista,Windows7, Windows 8	
13	Management	The printer should be remotely manageabe through a standard web browser.	
14	Compliance	Energy Star compliant	
15	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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**Informatics Centre**

Item Name		Laserjet Printer - A4 Mono High End	Vendor Compliance
Item Code		LJ03H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed	43 ppm( A4, normal) or higher	
3	Duplex Printing	Required, Automatic	
4	Connectivity	Ethernet LAN, USB	
5	Print Resolution	1200 dpi or higher	
6	Media Size	A4, A5, letter, executive, legal	
7	Paper Trays	2 Trays or more - including one Multipurpose Tray	
8	RAM	128MB or higher	
9	Duty Cycle	1,75,000 Pages per month	
10	Print Language Support	PCL 6, PostScript 3 / PostScript 3 Emulation	
11	Cartridge technology	Integrated drum and toner	
12	OS Compatibility	Windows XP, Vista, Windows7, Windows 8	
13	Management	The printer should be remotely manageable through a standard web browser.	
14	Compliance	Energy Star compliant	
15	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		Laserjet Printer - A3 Mono Low End	Vendor Compliance
Item Code		LJ04L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed	35 ppm (A4 or letter, normal), 15 PPM (A3, Normal) or higher	
3	Duplex Printing	Required , Automatic	
4	Connectivity	Ethernet LAN, USB	
5	Print Resolution	600 x 600 dpi or higher	
6	Media Size	A3, A4, A5, letter, executive, legal	
7	Media Type	Paper (plain, preprinted, letterhead, prepunched, bond, color, card stock, rough, recycled), envelopes, transparencies, labels	
8	Paper Trays	3 Trays or more - including one Multipurpose Tray	
9	RAM	128 MB or higher	
10	Duty Cycle	65,000 Pages per month or higher	
11	Catridge technology	Integrated drum and toner	
12	Print Language Support	PCL 5e, PCL 6, PostScript 3 / PostScript 3 Emulation	
13	OS Compatibility	Windows XP, Vista, Windows 7, Windows 8	
14	Management	The printer should be remotely manageabe through a standard web browser.	
15	Compliance	Energy Star compliant	
16	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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Item Name		Laserjet Printer - A3 Mono High End	Vendor Compliance
Item Code		LJ04H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed	40 ppm (A4, normal), 20 PPM (A3, Normal) or higher	
3	Duplex Printing	Required, Automatic	
4	Connectivity	Ethernet LAN, USB	
5	Print Resolution	600 x 600 dpi or higher	
6	Media Size	A3, A4, A5, letter, executive, legal	
7	Media Type	Paper (plain, preprinted, letterhead, prepunched, bond, color, card stock, rough, recycled), envelopes, transparencies, labels	
8	Paper Trays	3 Trays or more - including one Multipurpose Tray	
9	RAM	128 MB or higher	
10	Duty Cycle	1,00,000 Pages per month or higher	
11	Catridge technology	Integrated drum and toner	
12	Print Language Support	PCL 5e, PCL 6, PostScript 3 / PostScript 3 Emulation	
13	OS Compatibility	Windows XP, Vista, Windows7, Windows 8	
14	Management	The printer should be remotely manageabe through a standard web browser.	
15	Compliance	Energy Star compliant	
16	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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Item Name		Laserjet Printer - A4 Color Low End	Vendor Compliance
Item Code		LJ05L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed (Color)	20 ppm (A4, normal) or higher	
3	Duplex Printing	Required, Automatic	
4	Connectivity	Ethernet LAN, USB	
5	Print Resolution	600 x 600 dpi or higher	
6	Media Size	A4, A5, letter, executive, legal	
7	Paper Trays	3 Trays or more - including one Multipurpose Tray	
8	RAM	128 MB or higher	
9	Duty Cycle	25,000 Pages per month or higher	
10	Print Language Support	PCL 5e, PCL 5c, PCL 6, PostScript 3 / PostScript 3 Emulation	
11	Catridge technology	Integrated drum and toner	
12	OS Compatibility	Windows XP,Vista,Windows7, Windows 8	
13	Management	The printer should be remotely manageabe through a standard web browser.	
14	Compliance	Energy Star compliant	
15	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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Item Name		Laserjet Printer - A4 Color General	Vendor Compliance
Item Code		LJ06L	
S.N o.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed (Color)	30 ppm (A4, normal) or higher	
3	Duplex Printing	Required, Automatic	
4	Connectivity	Ethernet LAN, USB	
5	Print Resolution	600 x 600 dpi or higher	
6	Media Size	A4, A5, letter, executive, legal	
7	Paper Trays	2 Trays or more - including one Multipurpose Tray	
8	RAM	256MB or higher	
9	Duty Cycle	50,000 Pages per month or higher	
10	Print Language Support	PCL 5e, PCL 5c, PCL 6, PostScript 3 / PostScript 3 Emulation	
11	Cartridge technology	Integrated drum and toner	
12	OS Compatibility	Windows XP, Vista, Windows 7, Windows 8	
13	Management	The printer should be remotely manageable through a standard web browser.	
14	Compliance	Energy Star compliant	
15	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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**Informatics Centre**

Item Name		Laserjet Printer - A3 Color	Vendor Compliance
Item Code		LJ07L	
S.No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed(Color)	25 ppm (A4, normal) & 12 ppm ( A3, normal) or higher.	
3	Duplex Printing	Required	
4	Connectivity	Ethernet LAN	
5	Print Resolution	600 x 600 dpi or higher	
6	Media Size	A3, A4, A5, letter, executive, legal	
7	Media Type	Paper (plain, preprinted, letterhead, prepunched, bond, color, card stock, rough, recycled), envelopes, transparencies, labels	
8	Paper Trays	2 Trays or more - including one Multipurpose Tray	
9	RAM	128MB or higher	
10	Duty Cycle	75,000 Pages per month or higher	
11	Catridge technology	Integrated drum and toner	
12	Print Language Support	PCL 5e, PCL 5c, PCL 6, PostScript 3 / PostScript 3 Emulation	
13	OS Compatibility	Windows XP, Vista, Windows7, Windows 8	
14	Management	The printer should be remotely manageable through a standard web browser.	
15	Compliance	Energy Star compliant	
16	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		Deskjet Color Printer	Vendor Compliance
Item Code		DJ01L	
S.No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed (color)	20 ppm (draft) or higher	
3	Duplex Printing	Required	
4	Connectivity	USB 2.0, USB 3.0	
5	Print Resolution	1200 x 1200 dpi or higher	
6	Media Size	A4, A5, letter, executive, legal	
7	Media Type	Paper (plain, inkjet, photo), envelopes, transparencies, labels, greeting cards	
8	Paper Trays	One (1) or more	
9	RAM	16MB or higher	
10	Duty Cycle	5000 Pages or higher	
11	Print Language Support	PCL 3 or equivalent	
12	OS Compatibility	Windows XP, Vista, Windows 7, Windows 8	
13	Compliance	Energy Star compliant	
14	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		Dot Matrix Printer	Vendor Compliance
Item Code		DM01L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed at 10 cpi	Minimum 400CPS(High-speed draft) and Minimum 100CPS (LQ)	
3	Printing Method	24 Pin impact dot matrix	
4	Print Direction	Bidirectional	
5	Character size	Minimum at 10cpi 136 maximum printed characters	
6	Character set	PC 437, Italics	
7	Paper width and length	Single sheet min 182 to 364 mm; continuous sheet 101 to 406mm	
8	Input Buffer	Minimum 64 KB	
9	Connectivity	Should be connectable to parallel/USB ports of devices	
10	OS Compatibility	Windows XP,Vista,Windows 7, Windows 8, Redhat Linux.	
11	Power and Data cables	Each Printer is to be provided with Power cable and data cable	
12	Indian Language printing support	Should support Unicode and should be able to print in English & Hindi.	
13	Ribbon life	3 million characters or more	
14	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		Dot Matrix Printer - Heavy Duty	Vendor Compliance
Item Code		DM02L	
S.N o.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed at 10 cpi	Minimum 550CPS(High-speed draft) and Minimum 100CPS (LQ)	
3	Printing Method	24 Pin impact dot matrix	
4	Print Direction	Bidirectional with logic	
5	Workload	Min 2000 pages per day	
6	Throughput (Draft Letter)	Min 600 pages per hour	
7	Character size	Minimum at 10cpi 136 maximum printed characters	
8	Character set	PC 437, Italics	
9	Paper width and length	Single sheet min 182 to 364 mm; continuous sheet 101 to 406mm	
10	Input Buffer	Minimum 64 KB	
11	Connectivity	Should be connectable to parallel/USB ports of devices	
12	OS Compatibility	Windows XP,Vista,Windows 7, Windows 8, Redhat Linux	
13	Power and Data cables	Each Printer is to be provided with Power cable and data cable	
14	Indian Language printing support	Should support Unicode and should be able to print in English & Devnagari Hindi.	
15	Ribbon life	20 million characters or more	
16	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		Line Matrix Printer	Vendor Compliance
Item Code		LM01L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print speed (Draft)	Minimum 2000 lines per minute	
3	Print speed (DP, Uppercase)	1500 lines per minute or higher	
4	Printing method	Line Impact, 136 Column	
5	Connectivity (Interface) Required	Serial, Parallel , Ethernet	
6	OS Compatibility	Windows XP, Vista, Windows 7, Windows 8, Redhat Linux, AIX	
7	Paper handling	Paper motion detection , paper out detection.	
8	Form Loop Control	Form loop control mechanism to be provided for pre-printed stationery.	
9	Ribbon Life	Minimum 75 million characters	
10	Noise Level	55dB(A) or less	
11	Network Interface	10/100Mbps Ethernet Interface	
12	Remote Management Software	Should come with a web based management software to manage the printer remotely.	
13	Cabinet	Should come with a quietised cabinet	
14	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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<b>Item Name</b>	<b>Item Name</b>	<b>MFS - A4 Mono Laser</b>	<b>Vendor Compliance</b>
<b>Item Code</b>	<b>Item Code</b>	<b>MF01L</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	
1	Make & Model		
2	Functionality	<b>Print, Copy, FAX and Scan</b>	
3	Print and Copy Speed	18 ppm (A4) or higher	
4	Connectivity	Ethernet LAN,USB	
5	Print Resolution	600 x 600 dpi	
6	Media Size	A4, A5, letter, executive, legal	
7	Paper Trays	One (1) or more	
8	Scan Technology	flatbed, ADF	
9	RAM	64 MB	
10	Duty Cycle	5000 pages per month	
11	Print Language Support	PCL 5e, PCL 6, PostScript level 3 emulation or latest / Host-based	
12	OS Compatibility	Windows XP, Vista, Windows 7, Windows 8	
13	Management	The printer should be remotely manageabe through a standard web browser.	
14	Compliance	Energy Star compliant	
15	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		MFS - A4 Color Laser	Vendor Compliance
Item Code		MF02L	
S.No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Functionality	<b>Print, Copy and Scan</b>	
3	Print and Copy Speed	20 ppm Mono & Color or higher	
4	Connectivity	Ethernet LAN, USB	
5	Print Resolution	600 x 600 dpi or higher	
6	Media Size	A4, A5, letter, executive, legal	
7	Paper Trays	One (1) or more	
8	Scan Technology	CCD Scanner, 1200 x 1200 dpi optical resolution	
9	RAM	256 MB	
10	Duty Cycle	25000 pages or higher	
11	Print Language Support	PCL 5e, PCL 6, PostScript level 3 emulation	
12	OS Compatibility	Windows XP, Vista, Windows 7, Windows 8,	
13	Management	The printer should be remotely manageabe through a standard web browser.	
14	Compliance	Energy Star compliant	
15	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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Item Name		Plotter - A0 Low End (Ink Jet)	Vendor Compliance
Item Code		PL01L	
S.No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Print Speed	85 sq. ft. per hour (image fast mode) or higher	
3	Media Size	42 inch wide sheet or roll	
4	Print Resolution, Black & color	600 x 600 dpi or higher	
5	Print length	150 ft	
6	Print language support	HP PCL 3-GUI, Adobe PostScript 5 via s/w Rip or True Adobe Post script 3 compatibility , HP GL/2 RTL	
7	Memory	32 MB (OEM) or higher	
8	Connectivity	IEEE 1284-compliant bidirectional parallel / USB 2.0, Fast Ethernet 10/100/1000 Base-TX	
9	Media handling / document finishing	Single sheet feed, roll feed, automatic cutter	
10	Type faces	Pl. specify	
11	Operating System Support	Microsoft Windows XP, Vista, Windows 2003, Windows 7, Windows 8, Windows 2008	
12	Media for Drivers	All necessary drivers required should be given in CD media.	
13	AutoCAD Support	Drivers to print from AutoCAD 2002 and Higher version to be provided.	
14	Certifications	Latest Version of IEC-60950-1 / IS 13252 / UL-60950	
15	Compliance	Energy Star compliant	
16	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period	

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Item Name		Plotter - MFS	Vendor Compliance
Item Code		PL02L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Compliance	Energy Star compliant	
	<b>PRINTER</b>		
3	Print Speed	Min 4 A0 per minute or 10 A1 per minute	
4	Resolution	400 DPI or higher	
5	Electronic Collation	Required	
6	Auto Roll Switching	Required	
7	Job Accounting	Required	
8	Paper Handling	3 rolls or more	
9	Media Cutter	Automatic Cutter	
10	Print output Size	914mm X 15m	
	<b>CONTROLLER</b>		
11	Connectivity Required	IEEE 1284 compliant bi-directional parallel / USB 2.0, USB 3.0 , 10/100/1000 Base-T Fast Ethernet	
12	RAM	512 MB or higher (OEM original)	
13	HDD	Min 18 GB or Higher	
14	Remote Management Software (Plotter and Scanner)	Should come with a remote management software to monitor & manage the system.	
15	OS Compatibility	Windows XP, Vista, Windows 2003, Windows 7, Windows 8	
16	Drivers	Windows XP, Windows 2003, Windows 7, Windows 8; Embedded webserver file submitter. AutoCAD: 2005, 2008, 2009, 2010 and latest versions for Windows ; ADOBE Acrobat 6.0 and latest versions	
17	Print Language	TIFF 6.0, CALS/G4, HP-GL/2, HP RTL	
18	Adobe Postscript5 with PDF	Required	
19	Scanning Speed	4 A0 per minute	
20	Scanning Resolution	400 DPI or higher	
21	Max Scan Length	36" x 15m	
22	Scan Media thickness	1mm or upto 13mm	

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Item Name		Plotter - MFS	Vendor Compliance
Item Code		PL02L	
S.No.	Parameter / Feature	Detailed Specifications	
23	Con-currency (Printing, Scans)	Required	
24	Scan preview station	Using External monitor (17") OR Using Client Machine (PC to be provided as integral part of the solution)	
25	Centering and Deskewing	Required	
27	Zoom Options	25% TILL 400% ADJUSTABLE IN 1% AND 0.1% STEPS	
28	Set Collation / Job Program	Copying and Printing	
	<b>Software</b>		
29	Scanned Image Editing	Required	
30	Raster to Vector Conversion (Semi & Fully Automatic)	Required	
31	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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Item Name		A0 sizePlotter (LED) - High	Vendor Compliance
Item Code		PL04H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Compliance	Energy Star compliant	
	<b>PRINTER</b>		
3	Print Speed	Min 9.6 meters per minute	
4	Resolution	600 DPI or higher	
5	Electronic Collation	Required	
6	Auto Roll Switching	Required	
7	Job Accounting	Required	
8	Paper Handling	4 rolls or more	
9	Media Cutter	Automatic Cutter	
10	Print output Size	914mm X 15m	
	<b>CONTROLLER</b>		
11	Connectivity Required	IEEE 1284 compliant bi-directional parallel / USB 2.0 , 10/100 Base-T Fast Ethernet	
12	RAM	1 GB or higher (OEM original)	
13	HDD	Min 160 GB or Higher	
14	Remote Management Software (Plotter and Scanner)	Should come with a remote management software to monitor & manage the system.	
15	OS Compatibility	Windows XP,Vista,Windows 7, Windows 8, Win Ser 2003,2007, 2008 (32bit & 64bit)	
16	Drivers	Windows XP,Vista,Windows 7, Windows 8, Win Ser 2003,2007, 2008 (32bit & 64bit); Embedded webserver file submitter. AutoCAD latest version for Windows ; ADOBE Acrobat latest	
17	Print Language	TIFF 6.0, CALS/G4, HP-GL/2, HP RTL	
18	Adobe Postscript with PDF	Required	
19	Warranty	OEM comprehensive warranty (labour,parts,on-site) for the entire contract period	
20	Rodent Proofing	OEM certificate for Rodent Proofing	
21	Essentials	The quoted Model should be compatible with latest PLP Plotworks Software	
<b>Note : Cost of PLP Plotworks software should be mentioned separately as optional item</b>			

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		Scanner - A4 low end	Vendor Compliance
Item Code		SC01L	
S.N o.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Type	A4 Color Flatbed Scanner	
3	Hardware Resolution	4800 x 4800 dpi	
4	Software	Scanning Software, OCR software to be provided.	
5	OS Compatibility	32 bit & 64 bit versions of Windows XP, Vista, Windows 7, Windows 8	
6	Interface	Should have USB 2.0 or higher with requisite cables.	
7	Compliance	Energy Star compliant	
8	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		Scanner - A4 Color	Vendor Compliance
Item Code		SC02L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Type	A4 Color Flatbed Scanner	
3	ADF speed	25 ppm / 50 ipm	
4	Hardware Resolution	600 x 600 dpi	
5	Software	Scanning Software, OCR software to be provided.	
6	OS Compatibility	32 bit & 64 bit versions of Windows XP, Vista, Windows 7, Windows 8	
7	Interface	USB 2.0/SCSI or higher with requisite cables. In case of SCSI, compatible SCSI card should also be provided.	
8	Scan to PDF	Scan to searchable PDF facility should be available.	
9	Compliance	Energy Star compliant	
11	ADF capacity	100 sheet or higher	
12	Warranty	OEM warranty (labour/parts/on-site) for the entire contract period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		Scanner - A3 Color	Vendor Compliance
Item Code		SC03L	
S.N o.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Type	A3 Color Flatbed Scanner	
3	Hardware Resolution	1200x1200 dpi	
4	Speed	10 msec/line or higher	
5	Transparency Adapter	Should come with transparency adapter to scan transparencies, slides, positive and negative films	
6	Software	Scanning Software, OCR software to be provided.	
7	Scan Modes	Color Mode: 42 bits/pixel, Grayscale Mode:14 bits/pixel, Linear Mode: 1 bit/pixel	
8	OS Compatibility	32 bit & 64 bit versions of Windows XP, Vista, Windows 7, Windows 8	
9	Compliance	Energy Star compliant	
10	Interface	USB 2.0/SCSI or higher with requisite cables. In case of SCSI, compatible SCSI card should also be provided.	
11	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**

**Informatics Centre**

Item Name		Scanner - A4 Color High End	Vendor Compliance
Item Code		SC04H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Scanner Type	A4 Flatbed Color Scanner	
3	Image Sensor Type	CCD( Charge Coupled Device)	
4	Feed	Manual & ADF Ready with paper tray/stacker/chute	
5	ADF Capacity	100 pages or higher	
6	Duplex	Should be duplex ready.	
7	Optical Resolution	600dpi or higher	
8	Output Resolution	600dpi or higher	
9	Scanning Speed at 200DPI(B & W , PORTRAIT)	40 ppm (80 ipm in duplex mode) or higher	
10	Scanning Speed at 200DPI(Color, PORTRAIT)	15 ppm (30 ipm in duplex mode) or higher	
11	Document Size	A4, Legal, Letter	
12	Interface	USB 2.0/SCSI or higher with requisite cables. In case of SCSI, compatible SCSI card should also be provided.	
13	OCR Software	Integrated OCR Abbyy Finereader or equivalent latest version to be provided	
14	OS Compatibility	32 bit & 64 bit versions of Windows XP, Vista, Windows 7, Windows 8	
15	Daily Duty Cycle	4000 documents per day	
16	Scan to PDF	Scan to PDF required.	
17	Compliance	Energy Star compliant	
18	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**

**Informatics Centre**

<b>Item Name</b>		<b>Scanner - A3 Color High End</b>	<b>Vendor Compliance</b>
<b>Item Code</b>		<b>SC05H</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	
1	Make & Model		
2	Scanner Type	A3 Flatbed Color Scanner	
3	Image Sensor Type	CCD( Charge Coupled Device)	
4	Feed	Manual & ADF Ready with paper tray/chute/stacker	
5	ADF Capacity	200 pages or higher	
6	Duplex	Should be duplex ready.	
7	Optical Resolution	600dpi or higher	
8	Output Resolution	600dpi or higher (color, grayscale, binary)	
9	Scanning Speed at 200DPI(COLOR, PORTRAIT)	40 ppm (80 ipm in duplex )or higher	
10	Scanning Speed at 200DPI(B & W , PORTRAIT)	50 ppm (100 ipm in duplex ) or higher	
11	Document Size	A8 to A3	
12	Interface	USB 2.0/SCSI or higher with requisite cables. In case of SCSI, compatible SCSI card should also be provided.	
13	OCR Software	Integrated OCR Abbyy Finereader or equivalent latest version to be provided	
14	OS Compatibility	32 bit & 64 bit versions of Windows XP, Vista, Windows 7, Windows 8	
15	Daily Duty Cycle	5000 documents per day	
16	Scan to PDF	Scan to PDF required.	
17	Compliance	Energy Star compliant	
18	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**

**Informatics Centre**

Item Name		A0 CCD Mono Scanner	Vendor Compliance
Item Code		SC06H	
Sl.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model - Please Specify		
2	Optical Resolution	1200 dpi	
3	Maximum Resolution	9600 dpi	
4	Scanning width	42"	
5	Media Thickness	Upto 2mm	
6	Accuracy	$\pm 0.1\% \pm 1$ pixel	
7	Data Capture (mono)	16-bit	
8	Speed Monochrome: 200 dpi, 8 bit	12" per sec.	
9	Interface: USB 2.0 & Ethernet	Yes	
10	illumination	2D LED light system	
11	Digital Image sensors	4 Quadri-linear CCD Cameras	
12	Rodent Proofing	OEM certificate for Rodent Proofing	
13	Software	Scanning Software to be included to manage Scan, Copy, Print and support for standard formats	
14	Warranty	OEM comprehensive warranty (labour,parts,on- site) for the entire contract period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		Small UPS	Vendor Compliance
Item Code		UP01L	
S.N o.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Rating	800 VA or above	
3	Technology	Line-Interactive	
4	Nominal Input Voltage	230V single phase	
5	Input Voltage Range	160V AC to 275V AC	
6	Input Frequency	50 Hz +/- 3 Hz	
7	Nominal Output Voltage	230V AC +/- 5%	
8	Output Frequency	50 Hz +/-1 Hz	
9	Output power capacity	Min. 560 watts	
10	Automatic Voltage Regulation	Automatic Voltage Regulation to be provided	
11	Transfer time	< 6ms	
12	Overload capability	110% for 60 minutes, 150% for 5 minutes	
13	Protection	Surge, brownout, sag, short circuit, etc protection required.	
14	Battery Type	Sealed, Maintenance-free, Internally mounted.	
15	Battery make	Panasonic / Rocket /CSB/Global Yuasa	
16	Communication Port	RS232C or USB Port & necessary communication cables to be provided	
17	Backup	Min. 20 minutes on single PC load	
18	Power Management Software	The UPS should have Power Management Software to view & monitor UPS status, backup time & shutdown scheduling for Windows XP, Vista, Windows 2003, Windows 7, Windows 8 & Red Hat Linux systems	
19	Battery Refresh	The Vendor shall replace all the batteries after every 2.5 years, also replace batteries on failure.	
20	Compliance	Latest Version of IEC/EN 62040 or Equivalent	
21	Warranty	OEM onsite, labour, parts warranty for the entire lease period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		2KVA UPS	Vendor Compliance
Item Code		UP02L	
S.No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Rating	2KVA	
3	Technology	Line Interactive	
4	Nominal Input Voltage	230V single phase	
5	Input Voltage Tolerance	170V to 275V	
6	Input Frequency	50 Hz +/- 1 Hz	
7	Nominal Output Voltage	230 V AC +/- 5%	
8	Output Frequency	50 Hz +/- 1 Hz	
9	Output power factor	0.7 or higher	
10	Automatic Voltage Regulation	Required	
11	EMI/RFI Protection	Required	
12	Overall Efficiency	>90%	
13	Overload capability	110% for 5 minutes;	
14	Indicators	LCD/LED Display (on mains, on battery, replace battery, overload, etc), Input & output voltage,frequency, battery voltage	
15	Cold start	Required	
16	Battery Type	Sealed, Maintenance-free, Internally mounted or with proper enclosure	
17	Battery Make	Panasonic / Rocket /CSB/Global Yuasa	
18	Backup	Min. 30 minutes on full load	
19	Battery Refresh	The Vendor shall replace all the batteries after every 2.5 years, also replace batteries on failure.	
20	Communication Port	RS232C port & necessary communication cables to be provided	
21	Power Management Software	The UPS has Power Management Software to view & monitor UPS status, backup time, battery status, temperature & shutdown scheduling for Windows XP ,Vista,Windows 2003, Windows 7, Windows 8 & Red Hat Linux systems.	
22	Certifications	Latest Version of IEC/EN 62040 or Equivalent	
23	Warranty	OEM onsite,labour,parts warranty for the entire lease period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		5KVA UPS	Vendor Compliance
Item Code		UP03H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Rating	5KVA	
3	Technology	True Online, Double Conversion with PWM Technology & IGBT based Inverter	
4	Nominal Input Voltage	230V single phase	
5	Input Voltage Range	160V AC to 275V AC	
6	Input Frequency	50 Hz +/- 3 Hz	
7	Input Power Factor	> 0.9	
8	Nominal Output Voltage	230 Vac +/- 2%	
9	Output Frequency	50 Hz +/- 1 Hz	
10	Output power factor	0.7 or higher	
11	Overall efficiency	> 85%	
12	Overload capability	110% for 60 minutes	
13	THD	<5%	
14	Battery Type	Sealed, maintenance-free	
15	Battery Make	Panasonic / Rocket /CSB/Global Yuasa	
16	Desired Backup	Min. 60 minutes backup on full load	
17	Cold Start	Cold start on 100% load	
18	Communication Port	RS232 or USB port & necessary communication cables to be provided	
19	SNMP Card	Should come with an SNMP Card for connecting UPS to Ethernet LAN to monitor and manage the UPS with a standard Web browser, while simultaneously providing shutdown & restart for multiple windows, Linux & Unix computer systems over LAN	
20	Power Management Software	The UPS must have Power Management Software to view & monitor UPS status, backup time & shutdown scheduling for Windows XP, Vista, 2003, Windows 2003, Windows 7, Windows 8 & Red Hat Linux systems	
21	Battery Refresh	The Vendor shall replace all the batteries after every 2.5 years, also replace batteries on failure.	
22	Compliance	Latest Version of IEC/EN 62040 or Equivalent	
23	Warranty	OEM onsite, labour, parts warranty for the entire lease period.	
24	Indicators	LCD/LED Display (on mains, on battery, replace battery, overload, etc), Input & output voltage, frequency, battery voltage	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		10KVA Online UPS	Vendor Compliance
Item Code		UP04H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	System Configuration	10 KVA	
3	Technology	True Online, Double Conversion with PWM Technology & IGBT based Inverter	
4	Input Source	Mains/Local DG Set Compatibility	
5	Input Voltage	415V AC 3 phase, 4 wires	
6	Input Voltage Tolerance	± 15%	
7	Input Frequency	50 Hz	
8	Input Frequency Tolerance	45 HZ TO 55 HZ	
9	Input Power factor at nominal voltage and full load	>0.9	
10	Total Harmonic Distortion at 100% NonLinear Load	< 5%	
11	Output Voltage	230 Volts Single Phase	
12	Output Voltage Regulation	± 1% - For 100% static load. THDU <3% between phase to neutral for 100% non-linear load	
13	Output Power Factor	0.8 or higher	
14	Over Load Rating	110% for 60 minutes, 125% for 10 minutes, 150% for 60 seconds	
15	Inverter Efficiency	> 89%	
16	Overall efficiency	> 85%	
17	Static Bypass switch	A Built-in static transfer switch shall be provided as an integral part of the UPS. The Static switch shall be a bi-directional naturally committed high-speed static (SCR type) device rated to carry full load current continuously.	
18	Manual Bypass switch	The UPS should have a Built-in Maintenance Bypass Isolator to directly connect the load to the input AC power source, bypassing the rectifier, inverter and static transfer switch.	
19	Battery type	Sealed Maintenance Free with a separate Battery Rack	
20	Battery make	Panasonic / Rocket /CSB/Global Yuasa	
21	Backup	Min. 60 minutes backup on full load	

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**Informatics Centre**

Item Name		10KVA Online UPS	Vendor Compliance
Item Code		UP04H	
S.No.	Parameter / Feature	Detailed Specifications	
22	Battery management	The UPS should have Battery Management feature for: Periodic Battery Test Controlling Charging Time and Current Increase in Battery Life Protection : Battery low Cut-off without draining current	
23	LCD Panel	The UPS should have LCD/LED panel for measuring Output voltages, Output currents and Frequency, Battery Voltage and charging / discharging current, display status of the battery capacity and backup time left and event logging.	
24	RS232 interface	RS232 or USB port & necessary communication cables to be provided	
25	Power Management Software	The UPS should have Power management software and interface cable, providing complete power monitoring and control capabilities to system administrators. It should Safely shutdown & restart multiple Windows & Linux clients over LAN, analyze power conditions with voltage logging, Should support Linux & Windows (XP,2003,Vista,Windows 2003, Windows 7, Windows 8 ) operating systems.	
26	SNMP Card	Should come with an SNMP Card for connecting UPS to Ethernet LAN to monitor and manage the UPS with a standard Web browser, while simultaneously providing shutdown & restart for multiple windows, Linux & Unix computer systems over LAN.	
27	Synchronization	The UPS should come with hardware / software required for Synchronization between the outputs of two or more such independent UPS systems.	
28	Battery Refresh	The Vendor shall replace all the batteries after every 2.5 years, also replace batteries on failure.	
29	Compliance	Latest Version of IEC/EN 62040 or Equivalent	
30	Warranty	OEM onsite,labour,parts warranty for the entire lease period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		<b>2 x 10 KVA Online UPS</b>	Vendor Compliance
Item Code		<b>UP05H</b>	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	System Configuration	2x10 KVA Online UPS in parallel redundant equal load sharing Mode. One UPS should be capable of taking 100% load instataneously in case other UPS fails. The parallel redundancy equal load sharing feature should be an inbuilt feature of the UPS, and should not be provided through some external parallel redundancy kit.	
3	Technology	True Online, Double Conversion with PWM Technology & IGBT based Inverter	
4	Input Source	Mains/Local DG Set Compatibility	
5	Input Voltage	415V AC 3 phase, 4 wires	
6	Input Voltage Tolerance	± 15%	
7	Input Frequency	50 Hz	
8	Input Frequency Tolerance	45 HZ TO 55 HZ	
9	Input Power factor at nominal voltage and full load	>0.9	
10	Total Harmonic Distortion at 100% NonLinear Load	< %5	
11	Output Voltage	230 Volts Single Phase	
12	Output Voltage Regulation	± 1% - For 100% static load. THDU <3% between phase to neutral for 100% non-linear load	
13	Output Power Factor	0.8 or higher	
14	Over Load Rating	110% for 10 minutes, 125% for 01 minutes, 150% for 30 seconds	
15	Inverter Efficiency	> 89%	
16	Overall efficiency	> 85%	
17	Static Bypass switch	A Built-in static transfer switch shall be provided as an integral part of the UPS. The Static switch shall be a bi-directional naturally committed high-speed static (SCR type) device rated to carry full load current continuously.	
18	Manual Bypass switch	The UPS should have a Built-in Maintenance Bypass Isolator to directly connect the load to the input AC power source, bypassing the rectifier, inverter and static transfer switch.	
19	Battery type	Two independent Sealed Maintenance Free battery banks with a separate Battery Rack	
20	Battery make	Panasonic / Rocket /CSB/Global Yuasa	
21	Backup	Min. 60 minutes backup on full load on each battery bank	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
**Informatics Centre**

Item Name		2 x 10 KVA Online UPS	Vendor Compliance
Item Code		UP05H	
S.N o.	Parameter / Feature	Detailed Specifications	
22	Battery management	The UPS should have Battery Management feature for: Periodic Battery Test Controlling Charging Time and Current Increase in Battery Life Protection : Battery low Cut-off without draining current	
23	LCD Panel	The UPS should have LCD/LED panel for measuring Output voltages, Output currents and Frequency, Battery Voltage and charging / discharging current, display status of the battery capacity and backup time left and event logging	
24	RS232 interface	RS232 interface to be provided	
25	Power Management Software	The UPS should have Power management software and interface cable, providing complete power monitoring and control capabilities to system administrators. It should Safely shutdown & restart multiple Windows & Linux clients over LAN, analyze power conditions with voltage logging, Should support Linux & Windows (XP,2003,Vista,Windows 2003, Windows 7, Windows 8 ) operating systems.	
26	SNMP Card	Should come with an SNMP Card for connecting UPS to Ethernet LAN to monitor and manage the UPS with a standard Web browser, while simultaneously providing shutdown & restart for multiple windows, Linux & Unix computer systems over LAN.	
27	Synchronization	The UPS should come with hardware/software required to provide Synchronization capability between the outputs of two or more independent UPS systems.	
28	Battery Refresh	The Vendor shall replace all the batteries after every 2.5 years, also replace batteries on failure.	
29	Compliance	Latest Version of IEC/EN 62040 or Equivalent	
30	Warranty	OEM onsite,labour,parts warranty for the entire lease period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.****Informatics Centre**

Item Name		20KVA Online UPS	Vendor Compliance
Item Code		UP06H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	System Configuration	20 KVA	
3	Technology	True Online, Double Conversion with PWM Technology & IGBT based Inverter	
4	Input Source	Mains/Local DG Set Compatibility	
5	Input Voltage	415V AC 3 phase, 4 wires	
6	Input Voltage Tolerance	± 15%	
7	Input Frequency	50 Hz	
8	Input Frequency Tolerance	45 HZ TO 55 HZ	
9	Input Power factor at nominal voltage and full load	>0.9	
10	Total Harmonic Distortion at 100% NonLinear Load	< 5%	
11	Output Voltage	230 Volts Single Phase	
12	Output Voltage Regulation	± 1% - For 100% static load. THDU <3% between phase to neutral for 100% non-linear load	
13	Output Power Factor	0.8 or higher	
14	Over Load Rating	110% for 60 minutes, 125% for 10 minutes, 150% for 60 seconds	
15	Inverter Efficiency	> 89%	
16	Overall efficiency	> 85%	
17	Static Bypass switch	A Built-in static transfer switch shall be provided as an integral part of the UPS. The Static switch shall be a bi-directional naturally committed high-speed static (SCR type) device rated to carry full load current continuously.	
18	Manual Bypass switch	The UPS should have a Built-in Maintenance Bypass Isolator to directly connect the load to the input AC power source, bypassing the rectifier, inverter and static transfer switch.	
19	Battery type	Sealed Maintenance Free with a separate Battery Rack	
20	Battery make	Panasonic / Rocket /CSB/Global Yuasa	
21	Backup	Min. 60 minutes backup on full load	
22	Battery management	The UPS should have Battery Management feature for: Periodic Battery Test Controlling Charging Time and Current Increase in Battery Life Protection : Battery low Cut-off without draining current	
23	LCD Panel	The UPS should have LCD panel for measuring Output voltages, Output currents and Frequency, Battery Voltage and charging / discharging current, display status of the battery capacity and backup time left and event logging.	
24	RS232 interface	RS232 or USB port & necessary communication cables to be provided	

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Item Name		20KVA Online UPS	Vendor Compliance
Item Code		UP06H	
S.No.	Parameter / Feature	Detailed Specifications	
25	Power Management Software	The UPS should have Power management software and interface cable, providing complete power monitoring and control capabilities to system administrators. It should Safely shutdown & restart multiple Windows & Linux clients over LAN, analyze power conditions with voltage logging, Should support Linux & Windows (XP,2003,Vista,Windows 2003, Windows 7, Windows 8 ) operating systems.	
26	SNMP Card	Should come with an SNMP Card for connecting UPS to Ethernet LAN to monitor and manage the UPS with a standard Web browser, while simultaneously providing shutdown & restart for multiple windows, Linux & Unix computer systems over LAN.	
27	Synchronization	The UPS should come with hardware / software required for Synchronization between the outputs of two or more such independent UPS systems.	
28	Battery Refresh	The Vendor shall replace all the batteries after every 2.5 years, also replace batteries on failure.	
29	Compliance	Latest Version of IEC/EN 62040 or Equivalent	
30	Warranty	OEM onsite,labour,parts warranty for the entire lease period.	

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Item Name		40 KVA Online UPS	Vendor Compliance
Item Code		UP08H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	System Configuration	40 KVA Online UPS	
3	Technology	True On-line, double conversion type	
4	Input Source	Mains/Local DG Set Compatibility	
5	Input Voltage	415 VAC 3 phase, 4 wires	
6	Input Voltage Tolerance	± 15%	
7	Input Frequency	50 Hz	
8	Input Frequency Tolerance	45 HZ TO 55 HZ	
9	Input Power Factor at nominal voltage and full load	>0.9	
10	Total Harmonic Distortion at 100% NonLinear Load	< %5	
11	Output Voltage	415 VAC 3 phase, 4 wires	
12	Output Voltage Regulation	± 1% for 100% static load , ± 1% for 100% balanced load, ± 1% for 100% un-balanced load. THDU < 3% between Phase to Neutral for 100% non-linear load	
13	Output Power Factor	0.8 or higher	
14	Over Load Rating	110% for 10 minutes, 125% for 01 minutes 150% for 30 seconds	
15	Inverter Efficiency	> 89%	
16	Overall efficiency	> 85%	
17	Static Bypass switch	A Built-in static transfer switch shall be provided as an integral part of the UPS. The Static switch shall be a bi-directional naturally committed high-speed static (SCR type) device rated to carry full load current continuously.	
18	Manual Bypass switch	The UPS should have a Built-in Maintenance Bypass Isolator to directly connect the load to the input AC power source, bypassing the rectifier, inverter and static transfer switch.	
19	Battery type	Sealed Maintenance Free with a separate Battery Rack	
20	Battery make	Panasonic / Rocket /CSB/Global Yuasa	
21	Backup	Min. 60 minutes backup on full load	

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Item Name		40 KVA Online UPS	Vendor Compliance
Item Code		UP08H	
S.No.	Parameter / Feature	Detailed Specifications	
22	Battery management	The UPS should have Battery Management feature for: Periodic Battery Test Controlling Charging Time and Current Increase in Battery Life Protection : Battery low Cut-off without draining current	
23	LCD Panel	The UPS should have LCD panel for measuring Output voltages, Output currents and Frequency, Battery Voltage and charging / discharging current, display status of the battery capacity and backup time left and event logging.	
24	RS232 interface	RS232 interface to be provided	
25	Power Management Software	The UPS should have Power management software and interface cable, providing complete power monitoring and control capabilities to system administrators. It should Safely shutdown & restart multiple Windows & Linux clients over LAN, analyze power conditions with voltage logging, Should support Linux & Windows (XP,2003,Vista,Windows 7, Windows 8) operating systems.	
26	SNMP Card	Should come with an SNMP Card for connecting UPS to Ethernet LAN to monitor and manage the UPS with a standard Web browser, while simultaneously providing shutdown & restart for multiple windows, Linux & Unix computer systems over LAN.	
27	Synchronization	The UPS should come with hardware/software required to provide Synchronization capability between the outputs of two or more independent UPS systems.	
28	Battery Refresh	The Vendor shall replace all the batteries after every 2.5 years, also replace batteries on failure.	
29	Compliance	Latest Version of IEC/EN 62040 or Equivalent	
30	Warranty	OEM onsite,labour,parts warranty for the entire lease period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.****Informatics Centre**

Item Name		2x60 KVA Online UPS	Vendor Compliance
Item Code		UP11H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	System Configuration	2x60 KVA Online UPS in parallel redundant equal load sharing Mode. One UPS should be capable of taking 100% load instataneously in case other UPS fails. The parallel redundancy equal load sharing feature should be an inbuilt feature of the UPS, and should not be provided through some external parallel redundancy kit.	
3	Technology	True On-line, double conversion type	
4	Input Source	Mains/Local DG Set Compatibility	
5	Input Voltage	415 VAC 3 phase, 4 wires	
6	Input Voltage Tolerance	± 15%	
7	Input Frequency	50 Hz	
8	Input Frequency Tolerance	45 HZ TO 55 HZ	
9	Input Power Factor at nominal voltage and full load	>0.9	
10	Total Harmonic Distortion at 100% NonLinear Load	< %5	
11	Output Voltage	415 VAC 3 phase, 4 wires	
12	Output Voltage Regulation	± 1% for 100% static load , ± 1% for 100% balanced load, ± 1% for 100% un-balanced load. THDU < 3% between Phase to Neutral for 100% non-linear load	
13	Output Power Factor	0.8 or higher	
14	Over Load Rating	110% for 10 minutes, 125% for 01 minutes 150% for 30 seconds	
15	Inverter Efficiency	> 89%	
16	Overall efficiency	> 85%	
17	Static Bypass Switch	A Built-in static transfer switch shall be provided as an integral part of the UPS. The Static switch shall be a bi-directional naturally committed high-speed static (SCR type) device rated to carry full load current continuously.	
18	Manual Bypass Switch	The UPS should have a Built-in Maintenance Bypass Isolator to directly connect the load to the input AC power source, bypassing the rectifier, inverter and static transfer switch.	
19	Battery type	Two independent Sealed Maintenance Free battery banks with a separate Battery Rack	
20	Battery make	Panasonic / Rocket /CSB/Global Yuasa	
21	Backup	Min. 60 minutes backup on full load on each battery bank	
22	Battery management	The UPS should havce Battery Management feature for: Periodic Battery Test Controlling Charging Time and Current Increase in Battery Life Protection : Battery low Cut-off without draining current	
23	LCD Panel	The UPS should have LCD panel for measuring Output voltages, Output currents and Frequency, Battery Voltage and charging / discharging current, display status of the battery capacity and backup time left and event logging.	
24	RS232 interface	RS232 interface to be provided	
25	Power Management Software	The UPS should have Power management software and interface cable, providing complete power monitoring and control capabilities to system administrators. It should Safely shutdown & restart multiple Windows & Linux clients over LAN, analyze power conditions with voltage logging, Should support Linux & Windows (XP,2003,Vista,Windows 2003, Windows 7, Windows 8 ) operating systems.	
26	SNMP Card	Should come with an SNMP Card for connecting UPS to Ethernet LAN to monitor and manage the UPS with a standard Web browser, while simultaneously providing shutdown & restart for multiple windows, Linux & Unix computer systems over LAN.	

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Item Name		2x60 KVA Online UPS	Vendor Compliance
Item Code		UP11H	
S.No.	Parameter / Feature	Detailed Specifications	
27	Synchronization	The UPS should come with hardware/software required to provide Synchronization capability between the outputs of two or more independent UPS systems.	
28	Battery Refresh	The Vendor shall replace all the batteries after every 2.5 years, also replace batteries on failure.	
29	Compliance	Latest Version of IEC/EN 62040 or Equivalent	
30	Warranty	OEM onsite,labour,parts warranty for the entire lease period.	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.****Informatics Centre**

Item Name		SAN Storage - Low End	Vendor Compliance
Item Code		ST01L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Storage	The offered storage system should be compatible with multi-vendor heterogeneous servers and operating systems	
3	Storage Capacity Required	24 Nos. of 300GB, 10K or higher FC HDDs to be provided with provision of hot spare configuration in the same array.	
4	Storage Scalability	Should be scalable to 20 TB with 300GB HDDs	
5	RAID support	RAID 1, 5 or 6	
6	Controller	Dual controllers (fully redundant with support for automatic failover)	
7	Cache per Controller	4 GB or higher Cache per controller	
8	Fibre Channel HBA's	14 Nos. of 8 Gbps FC Single port HBAs to be provided (Windows, Linux compatible)	
9	Fibre Channel Cable	20 Nos. of 10m LC-LC Multi-Mode Fibre Channel Cables to be provided.	
10	Muti-pathing software	Required	
11	Power Supply	Redundant Hot Pluggable Power Supplies.	
12	Front End / Back End Ports	4 nos of 8 Gbps or higher Front End ports per Controller. 2 nos or more backend ports and all ports should be 4 Gbps. or higher	
13	OS Support	Support for Windows 2008 or Latest, RHEL 5 or ABOVE	
14	Fiber switch	2 No.s of 16 - port 8Gbps or higher fiber SAN Switches compatible with the storage solution. Switches should be fully populated with fiber modules with required trunking licenses.	
15	Mounting	Rack mountable with necessary rack mounting kit and accessories	
16	Management Software	Software for storage management, RAID configuration, LUN creations, Storage Health monitoring, Alerting, partitioning etc. to be provided.	
17	Licence	Licensed for full storage capacity for connectivity with minimum 14 hosts	
18	Availability	99.5 % or higher	
19	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		SAN Storage High End	Vendor Compliance
Item Code		ST01H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Storage	The offered storage system should be compatible with multi-vendor heterogeneous servers and operating systems	
3	Storage Capacity Required	24Nos. of 600GB, 10K or higher SAS HDDs to be provided with provision of hot spare configuration in the same array.	
4	Storage Scalability	Should be scalable to 30 TB with 600GB HDDs	
5	RAID support	RAID 1, 5 or 6	
6	Controller	Dual controllers (fully redundant with support for automatic failover)	
7	Cache per Controller	4 GB or higher Cache per controller	
8	Fibre Channel HBA's	14 Nos. of 8 Gbps FC Single port HBAs to be provided (Windows, Linux compatible)	
9	Fibre Channel Cable	20 (14 + 4+2) Nos. of 10m LC-LC Multi-Mode Fibre Channel Cables to be provided including 4 no for connectivity between SAN Storage and Fiber Switch.	
10	Muti-pathing software	Required	
11	Power Supply	Redundant Hot Pluggable Power Supplies.	
12	Front End / Back End Ports	4 nos of 8 Gbps or higher Front End ports per Controller. 2 nos or more backend ports and all ports should be 4 Gbps. or higher	
13	OS Support	Support for Windows 2008 or Latest, RHEL 5 or ABOVE	
14	Fiber switch	2 No.s of 16 - port 8Gbps or higher fiber SAN Switches compatible with the storage solution. Switches should be fully populated with fiber modules with required trunking licenses.	
15	Mounting	Rack mountable with necessary rack mounting kit and accessories	
16	Management Software	Software for storage management, RAID configuration, LUN creations, Storage Health monitoring, Alerting, partitioning etc. to be provided.	
17	Licence	Licensed for full storage capacity for connectivity with minimum 14 hosts	
18	Availability	99.5 % or higher	
19	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		NAS Storage Low end	Vendor Compliance
Item Code		ST02L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Rack mount	Should be rack mount. Field install Rack mount kit to be provided.	
3	Processor	2 Nos. of x86 Multicore processors at 2.5GHz or higher with SPEC CPU Rate 2006 of 260 or higher (60% of SPEC Int Rate base2006 plus 40% of SPEC fp Rate base2006 scores - tested with 128GB RAM) with 15MB Cache or higher. The quoted processor should be from latest available reliable series released in the year 2012 or later.  Supporting documents for the processor specification and benchmark details to be enclosed.	
4	RAM	6 GB DDR3 expandable to 8 GB or higher	
6	Hard Drives	Minimum 8x600GB 10K rpm hot pluggable SAS HDDs. Minimum 2 x 300GB with RAID1 configuration for OS.	
7	HDD Bays (Internal & External )	At least 12 bays (OEM Make) to be provided.	
8	Scalability	Minimum 7TB with 600GB HDD	
9	Network Connectivity	2 10/100/1000 auto sensing NICs	
10	RAID Controller	2 Nos. of RAID Controllors supporting RAID 0, RAID 1 & RAID 5 each with 256MB battery backed cache or higher	
11	Network support	TCP/IP, FTP, CIFS, HTTP 1.1, NFS	
12	Power Suply & Fans	Redundant & hot pluggable	
13	Fault Recovery	Quick restore CD for disaster recovery	
14	Network Client Types Support	Should support Windows XP, Vista, 7, 8, UNIX & Redhat Linux	
15	Manageability	Should come with management software to manage the storage allocation, etc.	
16	Backup device	Should come with LTO 5 Ultrium drive with 10 nos. of 1.5 TB capacity tapes and necessary backup software with SAS/SCSI Adaptor & Cable to be provided to connect LTO to NAS box. 2 Cleaning Cartridges to be provided also.	
17	Operating System	Microsoft Windows 2012 Storage Server ( NAS optimized ) or latest including powered OS drivers	
18	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name	NAS Storage High end		Vendor Compliance
Item Code	ST03H		
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Rack mount	Should be rack mount	
3	Processor	2 Nos. of x86 Multicore processors at 2.5GHz or higher with SPEC CPU Rate 2006 of 260 or higher (60% of SPEC Int Rate base2006 plus 40% of SPEC fp Rate base2006 scores - tested with 256GB RAM) with 15MB Cache or higher.  The quoted processor should be from latest available reliable series released in the year 2012 or later.  Supporting documents for the processor specification and benchmark details to be enclosed.	
4	RAM	8GB DDR3 expandable to 16 GB	
5	Hard Drives	Minimum 12x900GB 10K rpm hot pluggable SAS HDDs.	
6	HDD Bays (Internal & External )	At least 16 bays (OEM Make) to be provided.	
7	Scalability	Minimum 14TB with 900GB HDD	
8	Network Connectivity	2 10/100/1000 auto sensing NICs	
9	RAID Controller	2 Nos. of RAID Controllors supporting RAID 0, RAID 1 & RAID 5 each with 256MB battery backed cache or higher	
10	Network support	TCP/IP, FTP, CIFS, HTTP 1.1, NFS	
11	Power Suply & Fans	Redundant & hot pluggable	
12	Fault Recovery	Quick restore CD for disaster recovery	
13	Network Client Types Support	Should support Windows XP, Vista, 7, 8, UNIX & Redhat Linux	
14	Manageability	Should come with management software to manage the storage allocation, etc.	
15	Backup dev	Should come with LTO 5 Ultrium drive with 10 nos. of 1.5 TB capacity tapes and necessary backup software with SAS/SCSI Adaptor & Cable to be provided to connect LTO to NAS box. 2 Cleaning Cartridges to be provided also.	
16	Operating System	Microsoft Windows 2012 Storage Server ( NAS optimized ) or latest including powered OS drivers	
17	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		SAN Storage - High End	Vendor Compliance
Item Code		ST04H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Storage	The offered storage system should be compatible with multi-vendor heterogeneous servers and operating systems	
3	Storage Capacity Required	20TB usable capacity in RAID 5 with 900GB, 10 K RPM SAS Drives to be provided. Additional 2 HDDs to be provided as hot spare.	
4	Storage Scalability	Should be scalable to 50 TB with 900GB 10 K RPM SAS HDD	
5	RAID support	RAID 1, 5, 6 and 10	
6	Controller	Dual controllers (fully redundant with support for automatic failover)	
7	Cache per Controller	8 GB or higher Cache per controller	
8	Muti-pathing software	Required	
9	Power Supply	Redundant Hot Pluggable Power Supplies.	
10	Front End / Back End Ports	2 nos. of 4 Gbps or higher Front End FC ports per Controller and 2 no. of 10Gig iSCSI ports per controller. ALL backend ports should be 6 Gbps or higher	
11	Protocol support	CIFS, NFS, iSCSI	
12	OS Support	Support for Windows 2003, 2008, 2012, Linux, Unix, SOLARIS or Latest	
13	Mounting	Rack mountable with necessary rack mounting kit and accessories	
14	Management Software	Software for storage management, RAID configuration, LUN creations, Storage Health monitoring, Alerting, partitioning . browser-based GUI providing an easy-to-use remote and multi-array single management console etc. to be provided.	
15	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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<b>Item Name</b>		<b>SAN Switches</b>	<b>Vendor Compliance</b>
<b>Item Code</b>		<b>STSW</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	
1	Make & Model		
2	Fiber switch	2 No.s of 16 - port 8Gbps or higher FC SAN Switches compatible with the storage solution with 16 SFPs activated/populated	
3	Fibre Channel HBAs	16 Nos. of 8 Gbps FC HBAs with two ports each (windows, Linux Compatible)	
4	Fibre Channel Cable	32 Nos. of 10m LC-LC Multi-Mode Fibre Channel Cables to be provided	
5	Mounting	Rack mountable with necessary rack mounting kit and accessories	
6	Licensing	All the required SFPs and license for the required port configurations has to be provided. Trunk License & VSAN Licenses shall be included	

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Item Name	Server 2-Way		Vendor Compliance
Item Code	SR01H		
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Mounting	Rack Models	
3	Height	Max 2U	
4	Processor	2 Nos. of x86 Multicore processors at 2.5GHz or higher with SPEC CPU Rate 2006 of 260 or higher (60% of SPEC Int Rate base2006 plus 40% of SPEC fp Rate base2006 scores - tested with 128GB RAM) with 15MB Cache or higher. The quoted processor should be from latest available reliable series released in the year 2012 or later.  Supporting documents for the processor specification and benchmark details to be enclosed.	
5	No. of Processors	2 Processors Populated	
6	Chip Set	Matching Chipset for the quoted Processor	
7	CPU Cache	12 MB Cache or Higher	
8	RAM	Configured with 24GB DDR 3-1333 expandable up to 64GB	
9	Extension slots	Total 5 or more PCI/PCI-e type slots. With Min 4 to be free for future expansion	
10	HDD	6X 600GB 10k or higher SAS hot-plug HDD or better, Disk bays capacity for 8 SAS hot pluggable SAS drives or greater. Should support PCIe SSD. SAS-RAID Controller with 512MB BBW cache and should support RAID 0, 1, 1+0, 5. Up to 8 HDDs	
11	Internal HDD bays	8 or more hot plug drive bays	
12	DVDROM	8x or higher DVD-CDRW Combo Drive	
13	Raid Controller	Integrated 8 port hot-swap SAS controller	
14	LAN Card	2 Nos. of separate 10/100/1000 Ethernet Cards each with 2 ports (with at least 1 card on board)	
15	Power Supply	Should come with Hot Pluggable & Redundant Power Supply	
16	Fans	Hot pluggable redundant fans	
18	OS compatibility	Red Hat Linux Advanced Server latest version (with server virtualization capability) , MS Windows 2012 server (with server virtualization capability)	
19	Certifications	For OEM : ISO 9001 (Latest version)	
		ERTL/FCC-EMC Class A or Class B	
		Latest version of IEC-60950-1 / IS 13252 / UL-60950	
		ACPI (Latest Version) compliant	
		RoHS compliant	
20	Management	Server OEM Browser based Management Software for Monitoring, Managing and Configuring Servers. The management support Query based monitoring of the server components. Support for heterogeneous operating environments - Microsoft Windows , Linux.	
21	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		Blade Server	Vendor Compliance
Item Code		SR02H	
S.No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Mounting	Form Factor of BLADE Chassis	
3	Processor	2 Nos. of x86 Multicore processors at 2.5GHz or higher with SPEC CPU Rate 2006 of 260 or higher (60% of SPEC Int Rate base2006 plus 40% of SPEC fp Rate base2006 scores - tested with 256GB RAM) with 15MB Cache or higher. The quoted processor should be from latest available reliable series released in the year 2012 or later.  Supporting documents for the processor specification and benchmark details to be enclosed.	
4	No. of Processors	2 Processors Populated	
5	Chipset	Matching Chipset for the quoted Processor	
6	CPU Cache	12 MB Cache or Higher	
7	Memory	Configured with 24GB DDR 3-1333 scalable up to 64 GB	
8	PCI Expansion slots	2 x PCIe MEZZ card slots ( One Slot populated with FC MEZZ card) supporting Ethernet, FC adapters.	
9	HDD	2 x 600GB hot Pluggable SAS 10K RPM or higher	
10	Internal HDD bays	2 hot pluggable drive bays or higher	
11	Raid Controller	Integrated hardware SAS RAID controller supporting RAID 0,1	
12	NIC	NIC Embedded 2 No.s Multifunction Gigabit Network Adapters each with 2 ports with TCP/IP Offload Engine + 1 dedicated port for remote management	
13	Management	Server OEM Browser based Management Software for Monitoring, Managing and Configuring Servers. The management support Query based monitoring of the server components. Support for heterogeneous operating environments - Microsoft Windows , Linux.	
14	OS compatibility	Red Hat Linux Advanced Server latest version (with server virtualization capability) , MS Windows 2012 server (with server virtualization capability)	
15	Certifications	For OEM : ISO 9001 (Latest version)	
		ERTL/FCC-EMC Class A or Class B	
		Latest version of IEC-60950-1 / IS 13252 / UL-60950	
		ACPI (Latest Version) compliant	
		RoHS compliant	
16	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		Layer 2 Switch - 24 ports	Vendor Compliance
Item Code		NS01H	
S.No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Ports	The offered switch should have following ports	
		24 Nos of 10/100/1000Mbps Ethernet ports	
		4 Nos. of 1Gig. Slots for SFP based modules - populated with 2 Nos. of 1GB SFPs	
3	Forwarding Bandwidth	42Gbps or more	
4	Throughput	36Mbps or more for 64 Bytes Packets	
5	Standards & Protocol Support	The Switch should support following standards	
		& protocols:	
		1) 802.1Q VLAN	
		2) 802.1p Priority & DSCP	
		3) 802.1D Spanning Tree Protocol	
		4) 802.1w (Rapid Spanning Tree Protocol)	
		5) 802.1s (Multiple Spanning Tree Protocol)	
		6) 802.3x Flow Control	
		7) 802.1x Authentication	
		8) VLAN Trunking Protocol or Equivalent to reduce administrative burden of configuring VLANs on multiple switches	
		9) IGMP	
		10) Dynamic trunking Protocol (DTP) or Equivalent	
		11) RADIUS	
		12) 802.3ad Port/Link Aggregation for All ports	
		13) DHCP Server & DHCP Relay	
		14) DHCP Snooping to filter untrusted DHCP messages	
		15) Simple Network Time Protocol	
		16) SPAN	
		17) SSH & SCP	
		18) SNMP v1, SNMP v2c & SNMP v3	
		19) Telnet & TFTP	
		20) Ipv6	
		21) IEEE 802.1ab (LLDP)	
6	Security & Performance Features required	1) Support for fast convergence features like PortFast/UplinkFast or Equivalent.	

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Item Name		Layer 2 Switch - 24 ports	Vendor Compliance
Item Code		NS01H	
S.No	Parameter / Feature	Detailed Specifications	
		2) Support for broadcast/multicast storm control to prevent degradation of switch performance from faulty end stations	
		3) Minimum no Of MAC Addresses 8000	
		4) Should support MAC Address Filtering based on source and destination address	
		5) Switch should support rate limiting ( bandwidth control). Rate limiting should be supported on the Ingress or Egress of any port without sacrificing additional ports	
		6) Should support multicasting	
		7) Should support Port mirroring	
7	Stacking support	Should support stacking of up to 4 switches	
	Jumbo Frame	jumbo frames support up to 9K Bytes	
	VLAN support	1) Port based VLAN	
		2) Voice VLAN for spreading and prioritising VoIP traffic	
		3) Should support minimum 250 active VLANs	
8	Software	The offered switch should have the latest operating system supporting all the above features, standards & protocols.	
9	Sustainability	Should be able to move switch ports to low power state when not in use	
10	Manageability	Should be manageable through a standard web browser & command line Interface. USB for file backup & distribution	
11	Environmental Features	Shall provide support for RoHS	
		Shall have features to improve energy efficiency like variable-speed fans, shutoff unused ports etc	
		Operating temperature of 0°C to 40°C	
		Safety and Emission standards including UL 60950-1; IEC 60950-1; EN 55022 Class A	
12	Warranty and Support	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name	Layer 2 Switch - 48 Ports	Vendor Compliance
Item Code	NS02H	
S. No / Feature	Detailed Specifications	
1	Make & Model	
2	Ports	
	The offered switch should have following ports	
	48 Nos of 10/100/1000Mbps Ethernet ports	
	4 Nos. of 1Gig. Slots for SFP based modules - populated with 4 Nos. of 1GB SFPs	
3	Forwarding Bandwidth	
	42 Gbps or more	
4	Throughput	
	36 Mpps or More for 64 Bytes Packets	
5	Standards & Protocol Support	
	The Switch should support following standards	
	& protocols:	
	1) 802.1Q VLAN	
	2) 802.1p Priority & DSCP	
	3) 802.1D Spanning Tree Protocol	
	4) 802.1w (Rapid Spanning Tree Protocol)	
	5) 802.1s (Multiple Spanning Tree Protocol)	
	6) 802.3x Flow Control	
	7) 802.1x Authentication	
	8) VLAN Trunking Protocol or Equivalent to reduce administrative burden of configuring VLANs on multiple switches	
	9) IGMP	
	10) Dynamic trunking Protocol (DTP) or Equivalent	
	11) RADIUS	
	12) 802.3ad Port/Link Aggregation for All ports	
	13) DHCP Server & DHCP Relay	
	14) DHCP Snooping to filter untrusted DHCP messages	
	15) Simple Network Time Protocol	
	16) SPAN	
	17) SSH & SCP	
	18) SNMP v1, SNMP v2c & SNMP v3	
	19) Telnet & TFTP	
	20) Ipv6	
	21) IEEE 802.1ab (LLDP)	
6	Security & Performance Features required	
	1) Support for fast convergence features like PortFast/UplinkFast or Equivalent.	
	2) Support for broadcast/multicast storm control to prevent degradation of switch performance from faulty end stations	
	3) Minimum no Of MAC Addresses 8000	

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Item Name		Layer 2 Switch - 48 Ports	Vendor Compliance
Item Code		NS02H	
S. No	Parameter / Feature	Detailed Specifications	
		4) Should support MAC Address Filtering based on source and destination address	
		5) Switch should support rate limiting ( bandwidth control). Rate limiting should be supported on the Ingress or Egress of any port without sacrificing additional ports	
		6) Should support multicasting	
		7) Should support Port mirroring	
7	Stacking support	Should support stacking of up to 4 switches	
	Jumbo Frame	jumbo frames support up to 9K Bytes	
	VLAN support	1) Port based VLAN	
		2) Voice VLAN for spreading and prioritising VoIP traffic	
		3) Should support minimum 250 active VLANs	
8	Software	The offered switch should have the latest operating system supporting all the above features, standards & protocols.	
9	Sustainability	Should be able to move switch ports to low power state when not in use	
10	Manageability	Should be manageable through a standard web browser & command line Interface. USB for file backup & distribution.	
11	Environmental Features	Shall provide support for RoHS.	
		Shall have features to improve energy efficiency like variable-speed fans, shutoff unused ports etc	
		Operating temperature of 0°C to 40°C	
		Safety and Emission standards including UL 60950-1; IEC 60950-1; EN 55022 Class A	
12	Warranty and Support	OEM onsite , labour, parts warranty for the entire lease period	

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<b>Item Name</b>		<b>Layer 3 Switch (Type -I)</b>	<b>Vendor Compliance</b>
<b>Item Code</b>		<b>NS03H</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	
1	Make & Model		
2	Ports	The offered switch should have following ports: 24 Nos. of 10/100/1000Mbps Ethernet ports 4 Nos. of 1Gig. Slots for SFP based modules - populated with 2 Nos. of 1GB SFPs	
		The Switch should have an upgradability option to support 2 Nos. of 10G Ethernet ports	
3	Forwarding Bandwidth	68 Gbps or more	
4	Throughput	60 Mpps or More for 64 Bytes Packets	
5	Standards & Protocol Support	The switch should support following standards & protocols: 1) 802.1Q VLAN 2) 802.1p Priority & DSCP 3) 802.1D Spanning Tree Protocol 4) 802.1w (Rapid Spanning Tree Protocol) 5) 802.1s (Multiple Spanning Tree protocol) 6) 802.3x Flow Control 7) 802.1x Authentication 8) VLAN Trunking Protocol or Equivalent to reduce administrative burden of configuring VLANs on multiple switches 9) IGMP 10) RADIUS 11) 802.3ad Port/Link Aggregation for All Ports 12) 802.1AE 13) Simple Network Time Protocol (SNTP) 14) SPAN 15) SSH 16) SNMP v1, SNMP v2c & SNMP v3 17) Telnet & TFTP 18) IPv6	

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<b>Item Name</b>		<b>Layer 3 Switch (Type -I)</b>	<b>Vendor Compliance</b>
<b>Item Code</b>		<b>NS03H</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	
6	Security & Performance Features Required	1) Support for fast convergence features like PortFast/UplinkFast or equivalent 2) Support for broadcast/multicast storm control to prevent degradation of switch performance from faulty end stations 3) Minimum no. of MAC Addresses 10000 4) Should Support MAC Address Filtering based on source and destination address 5) Switch should support rate limiting (bandwidth control). Rate limiting should be supported on the Ingress or Egress of any port without sacrificing additional ports. 6) Should support multicasting 7) Should support port mirroring feature for monitoring network traffic of a particular port/VLAN/group of ports/entire switch. 8) Should support standard, extended, port based, time based ACL 9) Should support policy based traffic Classification	
	Jumbo Frame	Jumbo Frames support up to 9K Bytes	
	VLAN Support	1) Port & Subnet Based VLAN 2) Voice VLAN for separating and prioritising VoIP traffic 3) Should support minimum 1000 active VLANs	
6	IP Routing Support	Should support RIPv1, RIPv2, OSPF, OSPF V3, BGP4, Inter-VLAN routing, IPv6, VRF etc. Should support minimum 10000 route entries	
9	Software	The offered switch should have the latest operating system supporting all the above features, standards & protocols.	
10	Power	Should have dual redundant power supplies	
11	Manageability	Should be manageable through a standard web browser & command line interface. Should have port for Out of band management	
11	Environmental Features	Shall provide support for RoHS.	
		Operating temperature of 0°C to 40°C	
		Safety and Emission standards including UL 60950-1; IEC 60950-1; EN 55022 Class A	

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<b>Item Name</b>		<b>Layer 3 Switch (Type -I)</b>	<b>Vendor Compliance</b>
<b>Item Code</b>		<b>NS03H</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	
	Warranty and Support	OEM onsite, labour, parts warranty for the entire lease period	

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Item Name		Wireless Access Point	Vendor Compliance
Item Code		NS07H	
S.No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Wireless Standard	Should be IEEE 802.11a/b/g/n compliant.	
3	Data Transfer Rate	Should provide minimum 200 Mbps data transfer rate.	
4	No. of Channels Supported	Should support minimum 20 non-overlapping channels	
5	Uplink	Autosensing 10/100/1000 Base-T Ethernet	
6	Mode of Operation	Should have the capability of operating in autonomous mode and in centralized controller based environment.	
7	Software	Should come with the latest operating system.	
8	Management	Should support Secure Shell (SSH) Protocol, Secure HTTP (HTTPS), Trivial File Transfer Protocol (TFTP), FTP, Telnet, console port, SNMP MIB I and MIB II	
9	Authentication	Should support the following standards for 802.1x authentication: Protected EAP/EAP-MSCHAPv2, EAP-FAST, EAP-TLS	
10	IPv6	Should fully support IPv6	
11	RF Management	Should provide RF management to automatically adjust Access Point power and channel settings to overcome interference and signal coverage problems.	
12	Encryption	Should support AES, TKIP, WPA , WPA2 encryption algorithms.	
13	Power	Should have PoE feature and should also have a provision of external power supply.	
14	WiFi Certification	Wi-Fi Protected Access (WPA) and WPA 2, 802.1x authentication.	
15	Antenna	Should come with minimum 4 antenna for different frequency bands to provide extended range	
16	Warranty	OEM onsite, labour, parts warranty for the entire lease period	

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Item Name		Network Security Device	Vendor Compliance
Item Code		NS08H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	System	Should provide firewall, SSL & IPSEC VPN & intrusion prevention features in a single device.	
3	Ports	The device should have following integrated ports: Min. 4 Nos. of 100/1000 BASE-T Ethernet ports	
4	VLAN Interfaces (802.1q)	100 or higher	
5	RAM	512 MB DDR or higher	
6	Flash Memory	64 MB or higher	
7	Routing	RIPv1/v2, OSPF, Static Routes, Multicast and must support for both IPv4 and IPv6	
8	Throughput	400Mbps or higher	
9	High availability Support	Should have support for Active/Active and Active/passive stateful failover	
10	Maximum Connections	1,00,000 or higher	
11	Application inspection & protection	Should provide application inspection services for applications like HTTP, FTP, SNMP, DNS, SMTP, NFS, LDAP, SIP, SCCP etc. Should be able to block popular peer-to-peer applications like Kaaza, bit torrent, Instant Messaging applications like Yahoo messenger, MSN Messenger etc. Should support TCP stream reassembly and analysis, TCP traffic normalization, TCP packet checksum verification.	
12	New Connections per second	20,000 or higher	
13	Transparent Firewall	Should provide layer 2 transparent firewalling functionality	
14	Access Control	Should support time based access list to control the usage of applications and resources based on time parameters.	
15	NAT Modes	Should support Static NAT, Dynamic NAT, PAT, etc.	
16	Encryption Standards	Should provide DES, 3DES, AES (128, 192, 256 bit) encryption. (Any licences if required should be supplied along with device).	
17	Authentication Standards	Should provide MD-5 & SHA-1 authentication	
18	IPSec VPN Services	Should provide Site-to-Site and Remote Access IPSec VPN services. Should come with minimum 500 IPSec VPN licenses.( min 10 no of SSL licences)	
19	SSL VPN Services	Should provide Remote Access SSL based VPN services from day one.	
20	VPN Throughput	200 Mbps or higher	
21	Intrusion Prevention	Should come with integrated intrusion prevention features based on attack signature database of at least 1500 signatures and support for online automatic signature & variant updation for entire lease period.	
22	Attack Protection Features	Should be able to inspect and protect against all the major attacks based on protocols like TCP,UDP and ICMP. Should protect the network from known and unknown network and application layer attacks, Reconnaissance attacks, DoS attacks, DDOS attacks, malwares, worms, viruses, Trojan horses, spywares etc. Should also provide protection from ping sweep, port scanning, SQL Injection, Cross Site Scripting and Brute Force attacks.	

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Item Name		Network Security Device	Vendor Compliance
Item Code		NS08H	
S.No.	Parameter / Feature	Detailed Specifications	
23	Action Response	Should be able to respond to attacks in the following ways: 1) Generate an alarm 2) Log the alarm event 3) Record the session to an IP session log 4) Reset TCP connections 5) Deny network access	
24	Intrusion Prevention System Operation Modes	The intrusion prevention system should be able to operate in inline mode and in promiscuous mode for traffic inspection.	
25	Management & Monitoring	Should be configurable using CLI, GUI interface and central management software. Should support SNMP, SSH, Telnet, HTTP(s)	
26	Operating System	The offered device should have the latest operating system supporting all the above features, standards & protocols.	
27	Warranty	OEM onsite, labour, parts warranty for the entire lease period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		Wireless Access Controller	Vendor Compliance
Item Code		NS11H	
S. No	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Access Point Support	Should be able to support upto 25 access points with an option to upgrade the same controller to support 250 access points	
3	Wireless Standard	Should be IEEE 802.11a/b/g/n compliant.	
4	Data Transfer Rate	Wire speed for 802.11n networks	
5	Uplink	Autosensing 1000 Base-T Ethernet	
6	Software	Should come with the latest operating system.	
7	Management	Should support SNMP V1, V2c, V3, SNTp, TFTP. Should support web-based (http/https) and CLI (telnet, ssh, serial port) management. It should have Real-time RF Management with Real-time monitoring and analysis	
8	Security	Should support security standards like: 802.11i (WPA2), WPA, WEP, 802.1X with multiple Extensible Authentication Protocol (EAP) types, including Protected EAP (PEAP), EAP with Transport Layer Security (EAP-TLS), EAP with Tunneled TLS (EAP-TTLS), IPSec, Web Authentication. Should have proven security for any enterprise environment with Integrated wireless intrusion protection, including rogue location and containment Integrated with AAA services. Should support line-rate encryption between access points and controllers	
9	IPv6	Should fully support IPv6	
10	Guest Access	Should provide centralized secure guest access provisioning and administration.	
11	WiFi Certification	Wi-Fi Protected Access (WPA) and WPA 2	
12	Redundancy	Should have features to avoid Single Point of Failure by ensuring Access Point Redundancy. In case of failure of an access point, other access points should automatically increase their power settings to ensure the coverage is maintained, resulting in self-healing networks.	
13	Sustainability	Should be able turn off access point radios to reduce power consumption during off peak hours.	
14	High Availability	Should support redundant power supply for continuous operations	

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15	Warranty	OEM onsite, labour, parts warranty for the entire lease period	
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**Informatics Centre**

Item Name		Link Load Balancer	Vendor Compliance
Item Code		LL01H	
S.N o.	Parameter / Feature	Detailed Specifications	
1	Architecture	High performance CPU based Appliance	
		should have 8x10/100/1000 Mbps copper ports + 2 SFP ports - 2 SFP Ports populated.	
		Should have minimum 4GB RAM	
		Support for 8M Concurrent L4 TCP connections	
		should have minimum 4Gbps of throughput and should have provision to be upgraded to 6Gbps L7 throughput without changing the hardware	
		Should support Dynamic routing protocols like OSPF, RIP1, RIP2	
2	Load Balancing Features	Minimum support for 10 internet links	
		Should provide Load balancing for inbound & outbound traffic	
		Selection of shortest path to dest based on load/Hops/response time	
		Should support load balancing algorithms	
		a) Least amount of Bytes	
		b) Least number of users/session.	
		c) Cyclic.	
		d) weighted Cyclic	
		e) SNMP Parameters, like router CPU utilisation etc	
		Should support Static NAT & Dynamic NAT	
		In case of link failure device should detect it in not more than 30 seconds	
	Should support port mirroring		
	Should support port aggregation		
3	Link Management Feature	Should able to redirect traffic based on Source/Destination IP & port	
		Should have an option to define inbound/outbound Kbps limit of throughput of any given link	
		Should provide details of client routed to each link with IP & port details	
4	Health Monitoring	Shall provide individual health check for each link	
		Should do health check on protocols like HTTP, SMTP, POP3, DNS, Ping, FTP etc	
		Should provide AND , OR mechanism between health check	
5	Redundancy	Should Support VRRP	
		Should support transparent failover between 2 devices	

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Item Name		Link Load Balancer	Vendor Compliance
Item Code		LL01H	
S.N o.	Parameter / Feature	Detailed Specifications	
6	Support for Bandwidth Managment support for future requirement	Should support bandwidth management based on any L3-L7 information	
		Should support CBQ, WRR, RED mechanism for QoS	
		Should support Minimum & Maximum bandwidth allocation limit for traffic shaping	
		Should support Two-Way bandwidth management	
		Should support traffic classification on the basis of layer-3 to layer-7 information	
		Should able to classify & limit P2P bandwidth & protocol like Kazaa, Bit-Torrent, eDonkey, etc	
		Should also support to define bandwidth per session in any gven policy defined on source/destination/application	
		Appliance should provide full ipv6 support from day 1.	
7	Device Management & Reporting	Should provide GUI interface for configuration & reporting	
		Should provide HTTP / HTTPS interface management	
		Should provide SSH / Telnet / CLI interface	
		Should support SNMP V1, V2c, V3	
8	Warranty	OEM onsite, labour, parts warranty for the entire lease period	

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<b>Item Name</b>		<b>Print Server</b>	<b>Vendor Compliance</b>
<b>Item Code</b>		<b>PS01L</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	
1	Make & Model		
2	Network Interface	100/1000 Mbps Ethernet Interface with autosensing dual speed minimum TCP/IP support	
3	Ports	2 parallel and 1 USB	
4	Bidirectional communication	Should have Bidirectional communication	
5	Remote management	Should have Telnet support	
6	OS Compatibility	Windows XP, Vista, 7, 8, Redhat Linux	
7	Warranty	OEM onsite, labour, parts warranty for the entire lease period	

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**Bharat Heavy Electricals Limited , Ramachandrapuram, Hyderabad.**  
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Item Name		42U Server Rack	Vendor Compliance
Item Code		RS01L	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Mounting	Floor Standing	
3	Height	42 U	
4	Dimensions (Width X Depth )	800 x 1000 mm	
5	Doors	Lockable front door of perforated steel & lockable vented rear door of steel. Perforation on front and rear doors should be minimum 80%.	
6	Side Panels	Side Panels with Slam Latches and Key Locks	
7	Top & Bottom Covers	Top & Bottom Covers with cable entry gland plates	
8	Stationary Shelves	3 No. of Stationary Shelves	
9	Sliding Rotary Keyboard Tray	1 No. of 19" Sliding Keyboard Tray	
10	Equipment Mounting Angles	One pair of Equipment Mounting Angles to provide 19" mounting positions	
11	Cooling Fans	Min. 4 Nos. of Cooling Fans ( 230VAC, 90 CFM) in top mounted Fan Housing Unit	
12	Mounting Hardware Packet	Captive Mounting Hardware (10 Pkts )	
13	PDU	Min. Two independent & redundant vertical or horizontal power strips each containing 10 Nos. of 5/15A IEC320 C14 & 2 normal type sockets, a fuse, indicator lamp and 15A Switch, nema type connector (plug- socket set)	
14	Cable Management accessories	Two horizontal , two vertical cable managers & two vertical Cable Channels with cabling loops	
15	Castors	4 castors with foot operated brakes	
16	Earthing Kit	Copper earthing kit (bars, straps, continuity kit, etc) to be provided.	
17	Color	Preferred Graphite black	
18	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		42U Network Rack	Vendor Compliance
Item Code		MS02N	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Mounting	Floor Standing	
3	Height	42 U	
4	Dimensions (Width X Depth )	800 x 1000 mm	
5	Doors	Lockable front door of toughened tinted glass & lockable vented rear door of steel	
6	Side Panels	Side Panels with Slam Latches and Key Locks	
7	Top & Bottom Covers	Top & Bottom Covers with cable entry gland plates	
8	Stationary Shelves	3 No. of Stationary Shelves	
9	Sliding Rotary Keyboard Tray	1 No. of 19" Sliding Keyboard Tray	
10	Equipment Mounting Angles	One pair of Equipment Mounting Angles to provide 19" mounting positions	
11	Cooling Fans	Min. 4 Nos. of Cooling Fans ( 230VAC, 90 CFM) in top mounted Fan Housing Unit	
12	Mounting Hardware Packet	Captive Mounting Hardware (10 Pkts )	
13	PDU	Min. Two independent & redundant vertical or horizontal power strips each containing 10 Nos. of 5/15A IEC320 C14 & 2 normal type sockets, a fuse, indicator lamp and 15A Switch, nema type connector (plug- socket set)	
14	Cable Management accessories	Two horizontal , two vertical cable managers & two vertical Cable Channels with cabling loops	
15	Castors	4 castors with foot operated brakes	
16	Earthing Kit	Copper earthing kit (bars, straps, continuity kit, etc) to be provided.	
17	Color	Preferred Graphite black	
18	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		Blade Server Chassis	Vendor Compliance
Item Code		SR03C	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Form Factor	Upto 10 U Form factor per chassis with all redundancy features (Hard Drives, Power, Cable Management). Min. 14 Half height Blades are to be supported.	
3	Power Supplies & Fans	The chassis should be fully populated with redundant hot-swap power supplies & fans.	
4	Processor Support	The enclosure offered should support Intel or AMD processor based Blade servers within the same enclosure.	
5	Management Software	Should come with web based management software for inventory control, power management, remote image based OS deployment and Performance Management	
6	Ethernet Switches	Should come with two hot swappable redundant compatible ethernet switches, each having at least 4 gigabit ethernet uplink ports and adequate internal gigabit ethernet ports to support fully populated chassis. In addition to 4 uplink ports, each switch should come with at least 1 (one) 10 Gbps external port. It should have provision to configure VLANs.	
7	SAN Connectivity	Necessary redundant Fibre Pass Through Units to be configured to enable connectivity to the external SAN switch for the Blade servers required to be on the SAN	
8	KVM/CD/USB	To be enabled Virtually over IP for Remote Access or Provided Locally	
9	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		Tape Library	Vendor Compliance
Item Code		TL01H	
S.No.	Parameter / Feature	Detailed Specifications	
1	Make & Model		
2	Drives	Should have 2 Fibre LTO Gen 5 drives or higher	
3	Cartridge Slots	Should have minimum 48 cartridge slots.	
4	Bar Code Reader	Should have internal bar code reader to label and identify the data tapes.	
5	Mounting	Should be rack mount.	
6	Connectivity	Should come with two nos. of FC/SAS/SCSI ports & necessary cards & cables for connecting with backup server	
7	Management	Should come with a web management software to monitor and manage the library remotely through a standard web browser.	
8	Backup Software	A backup software such as (Tivoli / Veritas / Legato / Data Protector/ Backbone ) capable of taking back up of minimum 16 servers including 4 Oracle Database Servers, should be provided. The backup software should be able to take LAN based backup of linux, unix and windows based servers. Include licence for backup on disc upto 1 TB	
9	Data Cartridges	Should come with 48 data cartridges of 1.5 TB capacity (uncompressed) and 2 cleaning cartridges.	
10	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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**Informatics Centre**

Item Name		POE Switch	Vendor Compliance
Item Code		POE	
S.No.	Parameter / Feature	Detailed Specifications	
	Access switches shall be used to connect desktops/IP Phones/workstations / peripherals etc. The Access switch shall have minimum 2No. 1Gbps singlemode fibre ports populated and 24 No. 10/100/1000 Mbps active PoE ( IEEE 802.3 af) copper ports.		
<b>Hardware &amp; Performance Requirements</b>			
1	Architecture	Fixed Configuration Layer2 1U Switch. Forwarding bandwidth of 52 Gbps and Switch forwarding rate of 35 Mpps	
2	Rack mounting	19" inch rack mountable. Rack mount kit to be provided along with the switch	
3	Flash & Memory	The switch should have enough Memory (Flash and/or any other) to hold the latest Software Release. The Memory should be large enough to support fully populated ports, all features of switch and parameters like MAC Address Table, VLANs etc .at their peak values as claimed in the Data Sheets of the Switch.	
4	Stacking	The Switch should support OPTIONAL Stacking module/ports and should support stacking bandwidth of 20 Gbps.	
5	No. of 10/100/1000 Ports	The Switch should have minimum 24 nos. 10/100/1000BaseTX ports	
6	No of 1G fibre Ports	The switch should have 2 numbers of 1G SM fibre ports.	
7	Type of Ports	Autosensing, Autonegotiating, Auto-MDIX on all UTP ports with minimum 802.3af compliant	
<b>Connectivity &amp; Filtering</b>			
8	802.3ad	Should support Industry Standard Port/Link Aggregation for all Ports	
9	Jumbo Frames	Jumbo Frames support up to 9K Bytes	
10	Storm Control	Support for broadcast/multicast storm control to prevent degradation of switch performance from faulty end stations	
<b>Layer 2 Functionality</b>			
11	802.1Q	Should support 802.1Q protocol	
12	Type of VLANs	Should support port based VLANs	

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Item Name		POE Switch	Vendor Compliance
Item Code		POE	
S.No.	Parameter / Feature	Detailed Specifications	
13	Voice VLAN	Should Support Voice VLAN for separating and prioritising VoIP traffic	
14	VLAN Trunking Protocol or Equivalent	Should support VTP or equivalent protocol to reduce administrative burden of configuring VLANs on multiple switches	
15	No. of VLAN	Should support minimum 255 active VLANs	
16	MAC Addresses	No. of MAC Address Supported: 8000	
17	IPv6	Should support IPv6 as per RFC 2460 and IPv6 Neighbour Discovery	
18	Power Over Ethernet	The Switch should support 802.3af compliant end devices	
<b>Security Features</b>			
19	MAC Address Filtering	Should Support MAC Address Filtering based on source and destination address	
20	DHCP Snooping	Should support DHCP Snooping to filter untrusted DHCP messages	
21	802.1X	Should support 802.1x Network Security and Authentication	
22	802.1x with VLAN Assignment/ Guest VLAN	Should support 802.1x with VLAN Assignment/Guest VLAN features	
23	RADIUS	Should have support for RADIUS	
<b>Network Protocols</b>			
24	STP	Should Support Spanning Tree Protocol, Rapid Spanning Tree Protocol, Multiple Spanning Tree Protocol	
<b>Quality of Service</b>			
25	QoS Scheduling	Should support QoS scheduling	
26	Queue per port	Should support minimum 4 queues per port	
27	Rate Limiting	Switch should support rate limiting (bandwidth control). Rate limiting should be supported on the Ingress or Egress of any port without sacrificing additional ports.	
<b>Multicasting</b>			
28	Multicast	Should support IPv4 Multicasting	
29	IGMP	Should Support IGMP v1, v2	
<b>Management</b>			

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Item Name		POE Switch	Vendor Compliance
Item Code		POE	
S.No.	Parameter / Feature	Detailed Specifications	
30	Network monitoring/management	Switch should be manageable through NMS on per port/switch basis with common interface for all manageable devices on the network. Should Support syslog, SNMP, RMON, SSH, telnet, web management	
31	Port Mirroring	Should support port mirroring feature for monitoring network traffic of a particular port/VLAN/group of ports/entire switch.	
<b>Software</b>			
32	Software Version	Version of software for supplied switch should be latest release to support all required features	
33	Software Updates	Software updates should be bundled for the entire contract period	
<b>IEEE Standards Compliance</b>			
34	IEEE Standards	Ethernet: IEEE 802.3, 10BASE-T	
		Fast Ethernet: IEEE 802.3u, 100BASE-TX, 100BASE-FX	
		Gigabit Ethernet: IEEE 802.3z, IEEE 802.3ab, 1000BASE-X (mini-GBIC/SFP), 1000BASE-SX, 1000BASE-LX/LH	
		IEEE 802.1D Spanning-Tree Protocol	
		IEEE 802.1S & 1W for Rapid Spanning tree convergence	
		IEEE 802.1p CoS Prioritization	
		IEEE 802.3x Flow Control	
		IEEE 802.3ad Link Aggregation	
		IEEE 802.1Q VLAN	
		IEEE 802.1x Authentication	
		IEEE 802.1ab	
		IEEE 802.3af	
35	Warranty	OEM onsite , labour , parts warranty for the entire lease period	

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<b>Item Name</b>	<b>SIP Phone Type - I</b>	<b>Vendor Compliance</b>
<b>Item Code</b>	<b>SIP01</b>	
	<b>Make &amp; Model :</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	
1	Graphical display, minimum 2 line with back light	
2	Minimum 2 dedicated line/call appearance.	
3	Dual 10/100 Mbps switched Ethernet ports (LAN and PC ports) - Power over Ethernet IEEE 802.3af	
4	Hard key for Speaker, Mute, Volume Up and Volume Down	
5	Call list with 10 latest incoming, outgoing and missed calls	
6	Different ring signals for different calling lines (internal / external)	
7	Hands-free operation with full-duplex voice support	
8	Media and signaling encryption via TLS and SRTP	
9	IEEE 802.1x	
10	XML/WML push and browser support	
11	Warranty : OEM onsite , labour , parts warranty for the entire lease period	

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<b>Item Name</b>	<b>SIP Phone Type - II</b>	<b>Vendor Compliance</b>
<b>Item Code</b>	<b>SIP02</b>	
	<b>Make &amp; Model :</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	
1	Graphical colour display, minimum 4 lines or 4"	
2	Minimum 2 dedicated line/call appearance Keys	
3	Dual 10/100 Mbps switched Ethernet ports (LAN and PC ports) - Power over Ethernet IEEE 802.3af	
4	Hard key for Speaker, Mute, Volume Up and Volume Down	
5	4 No. context-sensitive programmable keys	
6	Boss/Secretary busy status indication	
7	Call list with 10 latest incoming, outgoing and missed calls	
8	Distinct LEDs for voicemail indication	
9	Different ring signals for different calling lines (internal / external)	
10	Hands-free operation with full-duplex voice support	
11	Media and signaling encryption via TLS and SRTP	
12	Bluetooth headset support	
13	IEEE 802.1x	
14	XML/WML push and browser support	
15	Power save mode	
16	Warranty : OEM onsite , labour , parts warranty for the entire lease period	

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Item Name		Miscellaneous	Make & Model
Item Code		MS09L-12L	
Item Code	Item Name	Detailed Specifications	
MS09L	KVM Switch	A 16 port rack mount TCP/IP Enabled KVM switch with integrated LCD monitor, keyboard and mouse (touchpad) and min. 8 ft. length cables for connecting 16 servers. Should comes with necessary rack rails. - Should provide 2 concurrent access thru ip sessions and one local user - KVM should provide inband and outband access - Should controll from BIOS Level access. - All necessary computer interface modules has to be supplied suitable for the available servers including HDMI,DVI,DP VGA, suiting the existing and new servers in the datacenter.	
MS10L	UTP Cable Tester	UTP Cable Tester with length measurement feature - - Should be able to measure length of all 4 pairs - Should be able show wiremap - Should be able to detect Opens, Shorts, Reversed pairs, Swapped pairs, Split pair faults. - Should come with necessary attachments/Carrying case/Batteries/cables, etc. Make Fluke / AMP	
MS12L	Webcam	720p video & 2 MP Still photos Built-In Microphone. Video up to 30 Frames Per Second. USB 2.0 port or higher. Plug and Play Easily attachable to notebooks and desktops. Automatic audio control. Broad IM Compatibility. Windows 8, 7, Vista, XP compatible	

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Item Name		SERVER VIRTUALISATION SOLUTION	Vendor Compliance
Item Code		SV01	
S.No.	Parameter/Feature	Detailed Specifications	
	Liscence for <b>HYPERVISOR + VM MANAGEMENT SERVER WITH CLIENT/WEB GUI</b>	<b>Assuming Pack of 2 physical Hosts each with 2 Octacore processors + 256 GB RAM supporting Clustering &amp; High Availability</b>	
1	minimum cores/host	4	
2	Minimum Hosts / Cluster	32	
3	Minimum RAM/Host	24 GB	
4	Maximum vCPUs/VM	32 or more	
5	maximum RAM/VM	64 GB or higher	
6	NICs/VM	2 or more	
7	Maximum size of VM Disk	512 GB or more	
8	Architecture	X86 & x64	
9	Virtualisation Type	Bare metal with full virtualisation	
10	Guest OS	Ms Windows all Versions + Linux/ Unix versions (RHEL, Cent OS, Openfiler, SUSE Linux, Ubuntu)	
11	Migration	Virtual machine live migration Storage live migration	
12	Thin provisioning	Virtual disks do not take up all of their allowed space upon creation	
13	Hot add VM RAM, Disk	Add more memory and disk storage to running VM (Guest OS and application must support feature)	
14	Hot add VM vCPUs and NIC s	Add more vCPU s and NI C to running VM. (Guest OS and application must support feature)	
15	Shared resource pools	CPU , memory, and storage resources are to be aggregated and managed at the cluster level	
16	Optimized device drivers:	Guest device drivers are to be optimized for virtualization resulting in high performance network and disk operations	
17	Broad range of host server	Must support latest Intel Xeon and AMD chipsets	

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Item Name		SERVER VIRTUALISATION SOLUTION	Vendor Compliance
Item Code		SV01	
S.No.	Parameter/Feature	Detailed Specifications	
18	System scheduler	Cluster policies to automatically distribute workload evenly across cluster host servers	
19	Power saver	During off-peak hours, concentrate VMs on fewer hosts to save power	
20	Storage load balancing	Automatically balance storage I/O and storage capacity	
21	Storage	<ul style="list-style-type: none"> <li>Shared storage: SAN, NAS, iSCSI, eSATA, FC, SSD &amp; FCoE Support</li> </ul>	
		<ul style="list-style-type: none"> <li>Device support: All storage hardware</li> </ul>	
		<ul style="list-style-type: none"> <li>Storage multipathing: Redundant path to storage for fault tolerance and enhanced performance</li> </ul>	
		<ul style="list-style-type: none"> <li>Local disk support</li> </ul>	
22	HA ( High Availability	<ul style="list-style-type: none"> <li>Virtual machine restart in case of guest failure</li> </ul>	
		<ul style="list-style-type: none"> <li>Prioritize restart order allowing most critical VMs to be restarted first</li> </ul>	
		<ul style="list-style-type: none"> <li>No single point of failure</li> </ul>	
		<ul style="list-style-type: none"> <li>Maintenance Mode</li> </ul>	
		<ul style="list-style-type: none"> <li>Automatic fail over to standby management server in the event of failure to primary</li> </ul>	
23	Templates	Virtual machines can be deployed from master installations	
24	Virtualisation Type	Full	
25	Live VM snapshots	To facilitate Backup of a a running VM	
26	VM snapshots	To facilitate Roll back patches and upgrades	
27	Import/Export of VMs	In Standard OVF format	
28	VM conversion	Tools that convert VMs from other formats to native format	
29	VM backup	Must support third party back up tools	
	Administration	<ul style="list-style-type: none"> <li>Single-view for centralized control</li> </ul>	
		<ul style="list-style-type: none"> <li>Host and VM system monitoring and management</li> </ul>	
		<ul style="list-style-type: none"> <li>administrative access to users for creating/running VMs and managing</li> </ul>	
		<ul style="list-style-type: none"> <li>environment through a portal</li> </ul>	

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Item Name		SERVER VIRTUALISATION SOLUTION	Vendor Compliance
Item Code		SV01	
S.No.	Parameter/Feature	Detailed Specifications	
30		<ul style="list-style-type: none"> <li>Granular, inheritable, directory-based security roles to all actions and objects</li> </ul>	
		<ul style="list-style-type: none"> <li>Choice of Microsoft Active Directory or IPA for user authentication</li> </ul>	
		<ul style="list-style-type: none"> <li>access to virtual machines using secure graphical console</li> </ul>	
		<ul style="list-style-type: none"> <li>Remote network boot via PXE (Pre-boot Execution Environment)</li> </ul>	
		<ul style="list-style-type: none"> <li>Customisable Reporting of historic usage, trending, and quality of service</li> </ul>	
		<ul style="list-style-type: none"> <li>Alerts and notifications: Errors and warnings immediately reported to administrators via email</li> </ul>	
		<ul style="list-style-type: none"> <li>Logging: Support remote logging and crash analysis</li> </ul>	
		<ul style="list-style-type: none"> <li>monitor and report VM health and status</li> </ul>	
31	Integration, Automation, and Customization	<ul style="list-style-type: none"> <li>API : Programmatic access to all management commands</li> </ul>	
		<ul style="list-style-type: none"> <li>Scripting and Automation of management commands</li> </ul>	
32	Security	<ul style="list-style-type: none"> <li>Kernel level</li> </ul>	
		<ul style="list-style-type: none"> <li>Small hypervisor footprint minimizing attack surface</li> </ul>	
33	Networking	<ul style="list-style-type: none"> <li>Device support: All network hardware and interfaces</li> </ul>	
		<ul style="list-style-type: none"> <li>vLAN s: Support for virtual LAN s inside the virtual infrastructure</li> </ul>	
		<ul style="list-style-type: none"> <li>Network offload: Offload virtual networking and network IO to compatible NI C hardware</li> </ul>	
		<ul style="list-style-type: none"> <li>Jumbo frames</li> </ul>	
34	Support	Support for all the above components should be from OEM	

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Item Name		IP BASED POWER DISTRIBUTION UNIT	
Item Code		PD01	
S.No.	Parameter / Feature	Detailed Specifications	Vendor Compliance
1	Make & Model		
2	Features	Provide local & remote monitoring to the aggregate current being drawn on each PDU	
		True RMS current monitoring to allow users to receive the most accurate current reading	
		IP addressable remote control and monitoring anywhere through IP dongle or IP KVM switch	
		Support daisy chain connection to maximum 16 intelligent PDUs	
		Web-base GUI management software to allow real time monitoring at anytime and anywhere	
		Alert users to the event by E-mail and take action before the power overload by using InfraPower Manager GUI and IP dongle	
		Outlet naming, passwords, secure web server and password protection	
		Wide range of input and output connections allows users to adapt to different power requirements	
2	No of Output sockets	12 or more	
3	Output Sockets	IEC320 C14	
4	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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<b>Item Name</b>		<b>BAR CODE READER</b>	
<b>Item Code</b>		<b>BR01</b>	
<b>S.No.</b>	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	<b>Vendor Compliance</b>
1	Type	Should be able to read 1D and 2D barcodes, Omnidirectional	
2	Light source	LEDs	
3	Nominal working distance	Depth of Field	
4	Print contrast	25% minimum reflectance	
5	Roll (tilt)	± 180°	
6	Pitch	± 40°	
7	Skew	± 40°	
8	Decode symbologies	All Symbologies compatible with printer	
9	Interface/Connection	USB	
10	Operating Systems	Windows XP, Windows 7, Windows 8	
11	Certifications	CE, FCC	
12	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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Item Name		BAR CODE PRINTER	
Item Code		BR02	
S.No	Parameter / Feature	Detailed Specifications	Vendor Compliance
1	Make & Model		
2	Memory	16 MB DRAM; 8 MB Flash or higher	
3	Print width	4.09" (104 mm) maximum	
4	Print length	157" (3,988 mm)	
5	Max. Print Speed	10" (254 mm) per second or higher	
6	Media Sensors	Transmissive	
		Reflective	
7	Electrical	Universal power supply with factor correction 90-264 VAC	
		48-63 Hz	
8	Agency approvals	IEC 60950-1 EN 55022 Class B, EN 55024, EN 61000-3-2, EN 61000-3-3	
	Communication		
9	Interface Capabilities	Standard high speed RS-232C/422/485 serial interface	
		RS232 DB9 to DB25 adaptor	
		Centronics IEEE 1284 bi-directional parallel	
		ZebraNet Wireless Print Server (optional)	
		ZebraNet 10/100 Print Server (internal/external option)	
10	Core programming languages	ZPL, ZPL II, EPL, XML	
11	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period	

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	<b>Item Name</b>	<b>Add-ons</b>		
<b>SI No</b>	<b>Item Code</b>	<b>Description</b>	<b>Additional Requirement / Part / Configuration</b>	<b>Vendor Compliance</b>
1	NB01L (A1)	Notebook - General (Higher RAM)	8 GB in lieu of 4 GB	
2	NB02L (A1)	Notebook - Lightweight Type-I (Higher RAM)	8 GB in lieu of 4 GB	
3	NB03L (A1)	Notebook -Engineering (Higher RAM)	16 GB in lieu of 8 GB	
4	PC01L (A1)	PC - General (Higher RAM)	8 GB in lieu of 4 GB	
5	PC02L (A1)	Engineering PC (Higher RAM)	16 GB in lieu of 8 GB	
6	WS01L (A1)	Graphics Workstation - Type I (Higher RAM)	16 GB in lieu of 8 GB	
7	WS02L (A1)	Graphics Workstation - Type II (Higher RAM)	32 GB in lieu of 16 GB	
8	WS02L (A2)	Graphics Workstation - Type II (Higher RAM)	64 GB in lieu of 16 GB	
9	PL04H(A1)	PLP PlotWorks Pro 7 (Latest Version)	Compatible to the supplied Plotter <b>Note : This option is to be used along with Item No. PL04H only</b>	
10	SR01H (A1)	Server - 2 Way Rack (Higher HDD)	6 x 600GB in lieu of 6 x 300 GB	
11	SR01H (A2)	Server - 2 Way Rack (Higher RAM)	64 GB in lieu of 24 GB	
12	SR02H (A1)	Blade Server (Higher RAM)	48 GB in lieu of 24 GB	
13	MS06H (A1)	Tape Library (With Fibre Ports)	2 Nos. of 4Gbps FC ports in place of SAS/SCSI ports & SAN based backup software licenses for 2 Oracle, 2 Windows & 2 Linux Servers	

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	<b>Item Name</b>	<b>Add-ons</b>		
<b>SI No</b>	<b>Item Code</b>	<b>Description</b>	<b>Additional Requirement / Part / Configuration</b>	<b>Vendor Compliance</b>
14	PC01L (A2)	PC (Higher Size TFT) 19" OEM make in place of 17" OEM make	19" TFT (OEM make) with Aspect ratio 5:4 and min. resolution of 1280*1024 TCO 05 compliant in lieu of 17" TFT (OEM make) with Aspect ratio 5:4 and min. resolution of 1280*1024 TCO 05 compliant	
15	SW01H	Red Hat Enterprise Linux Advance Platform v5 or Equivalent Product latest with 5 years subscription and support (for updates & upgrades, telephonic / web support) from the Principal OEM (with media)		
16	SW02H	Red Hat Enterprise Linux Server v5 or latest with 5 years subscription and support (for updates & upgrades, telephonic / web support) from the Principal OEM (with media)		
17	SW03H	Microsoft Windows Server Standard Edition Lic/SA or Equivalent Product (Latest Version) with 5 years subscription and support (with media)		
18	SW03D	Microsoft Windows Server Data Centre Edition Lic/SA or Equivalent Product (Latest Version) with 5 years subscription and support (with media)		
19	SW04L	Microsoft Windows Server CAL Lic/SA (Latest Version)		
20	SW06L	Microsoft System Center Configuration Manager Client Management Lic/SA (Latest Version)		

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