

TECHNICAL SPECIFICATION

Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad

Informatics Centre

List of Item for Corporate Rate Contract - 2014

Sl. No.	Item Code	Item Description
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

LOI - Rate Contract 2014

HYD/RCIT/LEASE/2014

Dated:31-12-2014

Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad**Informatics Centre**

Sl. No.	Item Code	Item Description
47	ST02L	NAS Storage Low End
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	PL04H(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 for Virtual Datacenters (x86 64bit), 2 sockets, unlimited virtual with 5 year Standard support from principle OEM.

**LOI - Rate Contract 2014****HYD/RCIT/LEASE/2014****Dated:31-12-2014**

Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad

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Sl. No.	Item Code	Item Description
90	SW02H	Red Hat Enterprise Linux Server (x86 64bit), 2 sockets, physical or 2 virtual nodes or latest with 5 year Standard support from Principle OEM.
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	
Item Code	NB01L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP 440 G1
2	Processor	Intel® Core™ i5-4200M or latest at 2.4 GHz or higher with 3MB Cache or higher and TDP of 35W or better. MobileMark2007 Performance Qualification score of 272 or higher.
3	Cache	3MB Cache or Higher
4	Chipset	HM 87 chipset
5	Graphics	Onboard Graphics support compatible with OS offered.
6	Memory	4GB DDR3 1600 MHz SDRAM upgradeable to 8GB or higher atleast one 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	<u>OS Certification from Microsoft</u> <u>For OEM : ISO 9001 (Latest version)</u> <u>ACPI (latest version) compliant</u> <u>ERTL / FCC - EMC class B</u> <u>Latest version of IEC-60950-1 / IS 13252 / UL-60950</u> <u>RoHS compliant</u> <u>Energy Star 5.0 compliant or better</u>
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	
Item Code	NB02L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP 430 G1
2	Processor	Intel® Core™ i5-4200U or latest multicore processor at 1.3GHz GHz or higher with 3MB Cache or higher and TDP of 22W or below. MobileMark2007 Performance Qualification score of 250 or higher.
3	Cache	3MB Cache or Higher
4	Chipset	Integrated Chipset
5	Graphics	Onboard Graphics feature compatible with supplied OS
6	Memory	4GB DDR3 1600 MHz SDRAM upgradeable to 8GB or higher
7	HDD	500GB 7200rpm SATA Hard Drive or higher
8	Optical Drive	8X or higher DVD+/-RW (External)
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	<u>OS Certification from Microsoft</u> <u>For OEM : ISO 9001 (Latest version)</u> <u>ERTL / FCC - EMC class B</u> <u>Latest version of IEC-60950-1 / IS 13252 / UL-60950</u> <u>RoHS compliant</u> <u>ACPI Compliant</u> <u>Energy Star 5.0 compliant or higher</u>
27	Warranty	OEM warranty including battery (labour,parts,on-site) for the entire contract period



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Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad
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Item Name		Notebook - Engineering
Item Code		NB03L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP zbook 15
2	Processor	Intel® Core™ i7-4800MQ or latest multicore processor at 2.7GHz or higher with 6MB Cache or higher. MobileMark2007 Performance Qualification Score of 342 or higher
3	Cache	6MB Cache or Higher
4	Chipset	Intel® QM87
5	Graphics	Nvidia K1100M 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/Internal 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 & Bluetooth	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

Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad
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	Item Name	PC - General
	Item Code	PC01L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP 600 G1 SFF
2	Processor	Intel® Core™ i3 4330 or latest Multicore processors at 3.3 GHz or higher with SPEC_INT Rate 2006 (base) of 75 (testing with max. RAM 8GB) or higher with 4MB Cache or higher.
3	Motherboard	OEM Motherboard
4	Chipset	Intel® Q85
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	8X or more OEM DVD +/-RW Drive
8	Monitor	HP ProDisplay P17A LED 17" 4:3 / 5:4 aspect ratio, TCO 3 / 5 & Energy Star compliant.
9	Graphics	Intel HD Graphics 4600
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	YES (1) PCI Express x16 and (3) PCI Express x1
15	Ports	YES ADD PARALLEL PORT FRONT: (2) USB 3.0 ports, (2) USB 2.0 ports, 3.5mm headphone output and microphone jack REAR: (2) USB 3.0 ports; (4) USB 2.0 ports (1) VGA (1) RJ-45
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 Factor	Small Form Factor
18	Diagnostic	OEM's Diagnostic tool for hardware diagnostics
19	Security	SOLENOID LOCK HOOD/Sensor - 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	Certification	<u>OS Certification from Microsoft</u> <u>For OEM : ISO 9001 (Latest version)</u> <u>RoHS compliant</u> <u>Energy Star 5.0 compliant or higher</u>
21	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period

Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad
Informatics Centre

Item Name		Notebook - Lightweight Type-II (Tablet cum Notebook)
Item Code		NB04L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Pro X2-410
2	Form Factor	Convertible to dual mode i.e. Normal laptop and Tablet
3	Processor	Intel® Core™ i5-4202Y or latest multicore processor at 1.7GHz under 17W TDP or better. MobileMark 2007 Performance Qualification score of 85 or higher.
4	Chipset	Integrated Chipset
5	Graphics	Onboard Graphics/Integrated 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 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
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
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
22	Battery	Minimum 3-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 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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Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad
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Item Name	Engineering - PC	
Item Code	PC02L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Z230
2	Processor	Intel® Core™ i3 4330 or latest Multicore processors at 3.3 GHz or higher with SPEC_INT Rate 2006 (base) of 75 (testing with max. RAM 8GB) or higher with 4MB Cache or higher.
3	Chipset	Intel® C226
4	RAM	8 GB DDR3 1600MHz 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 1 GB DDR3 Memory or more
8	Monitor	HP Pro Display P19A 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	YES (1) PCI Express x16 and (3) PCI Express x1
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	Diagnostic tool for hardware diagnostics
18	Security	SOLENOID LOCK HOOD/Sensor - 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.
19	Certification	<u>OS Certification from Microsoft</u> <u>For OEM : ISO 9001 (Latest version)</u> <u>RoHS compliant</u> <u>Energy Star 5.0 compliant or higher</u>
20	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period



Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad
Informatics Centre

Item Name	PC - Thinclient - Fanless	
Item Code	PC03L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP t505
2	Processor	Intel® Core™ multicore processor Atom D525 or latest Dual Core 1.7 GHz processor or higher with Integrated Graphics Engine and Memory Controller at 17W TDP or better. MobileMark 2007 score of 85 or higher.
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	2 GB 1333 MHz DDR3 RAM
5	HDD	Flash (boot drive) Memory 8GB or Higher
6	Monitor	HP ProDisplay P17A 17" TFT Monitor with 4:3 / 5:4 aspect ratio, TCO compliant
7	Keyboard	Minimum 104 keys
8	Mouse	HP 2 button optical Scroll Mouse
9	Audio	Internal amplified speaker 1/8-inch mini-jack, 24-bit stereo, 192-kHz sample rate, 1/8-inch microphone mini-jack, 20-bit stereo, 96-kHz sample rate
10	Ethernet	Integrated (on-board)100/1000 Mbps RJ45 port
11	Ports	4 USB 2.0 ports, VGA Video, 4 Serial Ports. 3 configurable and 1 standard
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	Mulimedia	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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DESKTOP VIRTUALISATION SOLUTION	
Item Code :VD01	
SI No	Detailed Specifications
	<p>Solution for 100 Virtual Desktops (Windows 7 /Windows 8) with Required licenses (each having atleast 2 vCPUs, 2 GB RAM and 50 GB storage on average) including matching server, storage and Network infrastructure <u>and solution should have 32 physical cores in four sockets and storage on SAS HDDs with a max 4 Virtual Desktops per core. Each physical CPU should have 2.6GHz or higher</u></p> <p>Software BOM :</p> <p>1).VMware Horizon Advanced Edition: 100 Pack (Named Users) – 1 Quantity</p> <p>2).VMware vCenter Operations Manager for View: 100 Concurrent User Pack – 1 Quantity</p>
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
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.

DESKTOP VIRTUALISATION SOLUTION	
Item Code :VD01	
Sl No	Detailed Specifications
28	Should support full flash based application support with windows multimedia redirection Across all devices iPad, android 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
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	<p>The above solution should support Thin Clients offered under item code : PC03L of this tender</p> <p><u>Hardware Details for above Solution :-</u></p> <p>RACK Server 3 Nos. (DL 380p):</p> <p>Processor: 2x E5 2650 V2 or higher</p> <p>RAM : 192GB</p> <p>HDD : 1x400GB SSD & 4x1TB NL-SAS</p> <p>NIC : 8 x 1Gig Ports</p> <p>Switches - 2Nos - 16 Port 1Gig Switches.</p>



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Item Name		Touch screen Monitor in lieu of
		Normal Monitor PC01L
Item Code		TS01
S.No	Parameter/Feature	Details Specification
1	Make & Model	Dell P2314T
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	16:09
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
Item Code		TS02
S.No	Parameter/Feature	Details Specification
1	Make & Model	Dell P2314T
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	16:09
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
20	Inputs	DVI, Headphone, VGA, USB



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Item Name		LED Projector
Item Code		LD01
S.No.	Parameter / Feature	Detailed Specifications
1	Projection System	DLP - Make: Casio XJ-M256
2	Native Resolution	XGA(1024 x768) or better
3	Brightness	3000 Lumens
4	Contrast ratio	1500:1 and above
5	Projection zoom lens	1.5Xoptical ZOOM or higher
6	Light source	LED/Laser hybrid
7	Screen size	18 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
	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	5 -35°c
	Wireless Connectivity	Wireless Connection Software with USB Donggle which is compatible for wireless presentation
15	Accessories	AC power cord x1, VGA cable x1, remote control x1, Battery x2, User's Guide(CD-ROM) x1, Carrying case x1, Wireless dongle x1. Required ceiling mounting kit to be supplied.
16	Warranty	OEM Warranty (labour, parts, on-site) for the entire contract period. Warranty on Lamp will be 10,000 working hours or entire contract whichever ever is early



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Item Name	Graphics Workstation - Type I	
Item Code	WS01L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Z230
2	Processor	Intel® Core™ E5-1620v2 or latest Multicore processors at 3.2GHz or higher with SPEC CPU Rate (base) 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.
3	Chipset & Motherboard	Intel® C226
4	RAM	2x4GB DDR3 DIMM 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
7	Graphics Card	Professional Graphics Card 3D Nvidia Quadro K2000 with 2 GB DDR3 Memory
8	Monitor	HP Model E241i 24" 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)
13	PCI Slots	Min. 4 (PCI Express and PCI Express x16) Slots
14	Ports	Minimum 8 USB 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
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)	<u>OS Certification from Microsoft</u> <u>Certified for Siemens PLM Software</u> <u>Certified for autodesk products</u> <u>Certified for 3D Modelling Softwares, PDMS</u> <u>ERTL / FCC - EMC class B</u> <u>Latest version of IEC-60950-1 / IS 13252 / UL-60950</u> <u>Energy Star 5.0 compliant or better</u> <u>RoHS compliant</u>
19	Warranty	OEM warranty (labour, parts, on-site) for the entire contract period

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c		Graphics Workstation - Type II
Item Code		WS02L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Z420
2	Processor	Intel® Xeon™ E5-1660v2 or latest 3.2 GHz or higher with SPEC CPU Rate 2006 (base) 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.
3	Chipset & Motherboard	Intel® C602
4	RAM	2X8GB DDR3 DIMM 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 Quadro K2000 with 2 GB DDR3 Memory of higher
8	Monitor	HP Model E2411 24" 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)
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
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
20	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period



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Item Name		Laserjet Printer - A4 Mono Personal
Item Code		LJ01L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP LaserJet M202 dw
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	Two Trays or more with one multipurpose tray
7	RAM	16MB 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,onsite) for the entire contract period



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Item Name		Laserjet Printer - A4 Mono General
Item Code		U02L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP LaserJet 401dne
2	Print Speed	32 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	Cartridge 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,onsite) for the entire contract period

Item Name	Laserjet Printer - A4 Mono High End	
Item Code	LJ03H	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP LaserJet M601dn
2	Print Speed	42 ppm(A4, normal) or higher
3	Duplex Printing	Required, Automatic
4	Connectivity	Ethernet LAN, USB
5	Print Resolution	1200 x 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	100,000 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 manageabe through a standard web browser.
14	Compliance	Energy Star compliant
15	Warranty	OEM warranty (labour,parts,onsite) for the entire contract period



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Item Name	Laserjet Printer - A3 Mono Low End	
Item Code	LJ04L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP LaserJet Pro M706n Printer with HP LaserJet Duplex Printing Accessory (A3E46A) + 500 Sheet Tray Accessory
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	128MB or higher
10	Duty Cycle	65,000 Pages per month or higher
11	Cartridge 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,onsite) for the entire contract period



Item Name	Laserjet Printer - A3 Mono High End	
Item Code	LJ04H	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP LJ M712dn
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	128MB or higher
10	Duty Cycle	1,00,000 Pages per month or higher
11	Cartridge 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,onsite) for the entire contract period

Item Name	Laserjet Printer - A4 Color Low End	
Item Code	LJ05L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Color LaserJet M451dn
2	Print Speed	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	2 Trays or more - including one Multipurpose Tray
8	RAM	128MB 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	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,onsite) for the entire contract period



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Item Name		Laserjet Printer - A4 Color
Item Code		LJ06L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP LaserJet Ent M551dn
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	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,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,onsite) for the entire contract period



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Item Code	LJ07L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Color LaserJet Enterprise M750dn (D3L09A)
2	Print Speed	25 ppm (A4, normal) & 12 ppm (A3, normal) or higher.
3	Duplex Printing	Required, Automatic
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	65,000 Pages per month or higher
11	Cartridge 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,onsite) for the entire contract period



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Item Name		Deskjet Color Printer
Item Code		DJ01L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP OfficeJet Pro 8100 ePrinter
2	Print Speed	30ppm (draft) or higher
3	Duplex Printing	Required
4	Connectivity	USB 2.0
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	Duty Cycle	7000 Pages or higher
10	Print Language Support	PCL or equivalent
11	OS Compatibility	Windows XP,Vista,Windows7, Windows 8
12	Compliance	Energy Star compliant
13	Warranty	OEM warranty (labour,parts,onsite) for the entire contract period



	Item Name	Dot Matrix Printer
	Item Code	DM01L
Sr. No.	Feature/Parameter	Details Specification
1	Make & Model	WeP LQDSI 5235
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 and 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 Power and Data cables
12	Indian Language printing	Should support Unicode and should be able to print in English & Hindi.
13	Ribbon Life	3 million characters or more
14	support	OEM warranty (labour,parts,on-site) for the entire contract period



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	Item Name	Dot Matrix Printer
	Item Code	DM02L
Sr. No.	Feature/Parameter	Details Specification
1	Make & Model	WeP HQ2650
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
5	Workload	Min 2000 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 and 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 Power and Data cables
14	Indian Language printing	Should support Unicode and should be able to print in English & Hindi.
15	Ribbon Life	20 million characters or more
16	support	OEM warranty (labour,parts,on-site) for the entire contract period



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	Item Name	Line Matrix Printer
	Item Code	LM01L
Sr. No.	Feature/Parameter	Details Specification
1	Make & Model	LIPI 6820
2	Print Speed Draft	Min 2000 lines per minute
3	Print Speed (DP ,Upper case)	Min. 1500 lines per minute or higher
4	Print 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



Item Name	MFS - A4 Mono Laser	
Item Code	MF01L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Laserjet M128fn
2	Functionality	Print, Copy, FAX and Scan
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	Management	The printer should be remotely manageable through a standard web browser.
13	OS Compatibility	Windows XP,Vista,Windows7, Windows 8
14	Compliance	Energy Star compliant
15	Warranty	OEM warranty (labour,parts,onsite) for the entire contract period



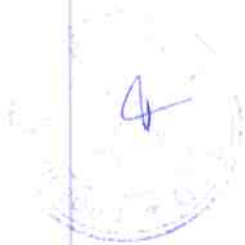
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Item Name		MFS - A4 Color Laser
Item Code		MF02L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Color LaserJet M476nw
2	Functionality	Print, Copy and Scan
3	Print and Copy Speed	20 ppm Mono & Color or higher
4	Connectivity	Ethernet 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	1200 x 1200 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, 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, onsite) for the entire contract period



Item Name		Plotter - MFS
Item Code		PL01L
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP Designjet T795
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	GUI / Adobe Post Script and RIP support.
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 / IS13252 / UL-60950
15	Compliance	Energy Star compliant
16	Warranty	OEM warranty (labour, parts, on-site)

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Item Name		Plotter - MFS
Item Code		PL02L
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	KIP 7700 series MFS
2	Compliance	Energy Star compliant
	PRINTER	
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
	CONTROLLER	
11	Connectivity Required	IEEE 1284 compliant bi-directional parallel / USB 2.0 , 10/100 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,2003,2008,7
16	Drivers	Windows XP, Windows 2003, Windows 7, Windows 8; Embedded webserver file submitter.AutoCAD: R 14, 2005, 2008, 2009, 2010 for Windows ; ADOBE Acrobat 6.0 and latest version
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	600 DPI or higher
21	Max Scan Length	36" x 15m
22	Scan Media thickness	1mm or upto 13mm
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
26	Tray to Hold Originals	Required
27	Zoom Options	25% TILL 400% ADJUSTABLE IN 1% AND 0.1% STEPS
28	Set Collation / Job Program	Copying and Printing
	Software	
29	Scanned Image Editing	Required
30	Raster to Vector Conversion (Semi	Required
31	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period



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Item Name		A0 size Plotter (LED) - High
Item Code		PL04H
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	KIP 7000 series Plotter
2	Compliance	Energy Star compliant
	PRINTER	
3	Print Speed	Min 9.5 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
	CONTROLLER	
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 Postscript5 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

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Item Name	Scanner - A4 low end	
Item Code	SC01L	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP Scanjet G3110 Photo Scanner
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 Vista, Windows 7, Windows 8, Windows XP (32bit)
6	Interface	Should have USB 2.0 or higher with requisite cables.
7	Image Type Sensor	CCD (Charge Coupled Device)
8	Compliance	Energy Star compliant
9	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period.



Item Name		Scanner - A4 Color
Item Code		SC02L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP ScanJet 7500
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	Image Type Sensor	CCD (Charge Coupled Device)/ CIS (Contact Image Sensor) - (Corrigendum-1)
9	Scan to PDF	Scan to searchable PDF facility should be available.
10	Compliance	Energy Star compliant
11	ADF capacity	100 sheet or higher
12	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period.



Item Code		SC03L
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP ScanJet N9120
2	Type	A3 Color Flatbed Scanner
3	Hardware Resolution	600 x 600 dpi
4	Speed	10 msec/line or higher
5	Transparency Adapter	Not Mandatory
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	Image Type Sensor	CCD (Charge Coupled Device)
9	OS Compatibility	32 bit & 64 bit versions of Windows XP, Vista, Windows 7, Windows 8
10	Compliance	Energy Star compliant
11	Interface	USB 2.0/SCSI or higher with requisite cables. In case of SCSI, compatible SCSI card should also be provided.
12	Warranty	OEM warranty (labour,parts,on-site) for the entire contract period.

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Item Name	Scanner - A4 Color High End	
Item Code	SC04H	
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP ScanJet 7500
2	Type	A4 Flatbed Color Scanner
3	Image Sensor Type	CCD(Charge Coupled Device)
4	Feed	Manual & ADF Ready with paper tray
5	ADF Capacity	50 Sheet 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 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	3000 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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Item Name		Scanner - A3 Color High End
Item Code		SC05H
S.No	Parameter/Feature	Details Specification
1	Make & Model	HP ScanJet N9120
2	Type	A3 Flatbed Color Scanner
	Image Sensor	
3	Type	CCD(Charge Coupled Device)
4	Feed	Manual & ADF Ready with paper tray
5	ADF Capacity	200 pages or higher
6	Duplex	Should be duplex ready.
	Optical	
7	Resolution	600dpi or higher
	Output	
8	Resolution	600dpi or higher (color, grayscale, binary)
	Scanning Speed at 200DPI(B & W, PORTRAIT)	
9		40 ppm (80 lpm in duplex mode) or higher
	Scanning Speed at 200DPI(Color, PORTRAIT)	
10		50 ppm (100 lpm 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



(Signature)

Item Name		A0 CCD Mono Scanner
Item Code		SC06H
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	Colortrac 5G44m Scanner
2	Optical Resolution	1200 dpi
3	Maximum Resolution	9600 dpi
4	Scanning width	42"
5	Media Thickness	Upto 2mm
6	Accuracy	+0.1% + 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	Scanner to be Rodent Proof
13	Software	Scanneing software to be included to manage Scan, Print and support for standard formats
14	Warranty	OEM comprehensive warranty (lbour, parts, on-site) for the entire contract period



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Item Name		Small UPS
Item Code		UP01L
S.No.	Parameter / Feature	Minimum BHEL Requirements
1	Make & Model	Uniline Make Smartline 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.



OS

Item Name		2KVA UPS
Item Code		UPo2H
S.No.	Parameter / Feature	Minimum BHEL Requirements
1	Make & Model	Uniline Make & Maxipower 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.

Item Name		5KVA UPS
Item Code		UP03H
S.No.	Parameter / Feature	Minimum BHEL Requirements
1	Make & Model	Uniline Make & Maxipower 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



Q

Item Name	10KVA Online UPS	
Item Code	UP04H	
S.No.	Parameter / Feature	Minimum BHEL Requirements
1	Make & Model	Uniline Make and Maxipower 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
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.

Item Name	2 x 10 KVA Online UPS	
Item Code	UP05H	
S.No.	Parameter / Feature	Minimum BHEL Requirements
1	Make & Model	Uniline Make & Gigaline Model
2	System Configuration	2x10 KVA Online UPS in parallel redundant equal load sharing Mode. One UPS should be capable of taking 100% load instantaneously 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 commutated 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 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

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Item Name	2 x 10 KVA Online UPS	
Item Code	UPo5H	
S.No.	Parameter / Feature	Minimum BHEL Requirements
30	Warranty	OEM onsite,labour,parts warranty for the entire lease period.



Item Name		20KVA Online UPS
Item Code		UPo6H
S.No.	Parameter / Feature	Minimum BHEL Requirements
1	Make & Model	Uniline Make & Gigaline 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
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.



10

Item Name		40 KVA Online UPS
Item Code		UPo8H
S.No.	Parameter / Feature	Minimum BHIEL Requirements
1	Make & Model	Uniline Make & Gigaline 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 commutated 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 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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Item Name		2x60 KVA Online UPS
Item Code		UP11H
S.No.	Parameter / Feature	Minimum BHEL Requirements
1	Make & Model	Uniline Make & Gigaline 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 commited 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 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 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
Item Code		UP11H
S.No.	Parameter / Feature	Minimum BHEL Requirements
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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Item Name	SAN Storage - Low End
Item Code	ST01L
Parameter / Feature	Detailed Specifications
1:- Make & Model	Netapp E2724A
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/SAS 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:- Multi-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 Nos. 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.

Item Name	SAN Storage - High End
Item Code	ST01H
Parameter / Feature	Detailed Specifications
1:- Make & Model	Netapp E2724A
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:- Multi-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	
Item Code	ST02L	
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP StoreEasy 1830
2	Rack mount	Should be rack mount. Field install Rack mount kit to be provided.
3	Processor	2 Nos. of Intel® Xeon E5 2609 Multicore processors at 2.3GHz or higher and each processor with SPEC CPU Rate 2006 (base) of 200 or higher (60% of SPEC Int Rate base2006 plus 40% of SPEC fp Rate base2006 scores - tested with 128GB RAM) with 10MB Cache or higher.
4	RAM	6 GB DDR3 expandable to 8 GB or higher
5	Hard Drives	Minimum 8x600GB 10K rpm hot pluggable SAS HDDs. Minimum 2 x 300GB with RAID1 configuration for OS.
6	HDD Bays (Internal & External)	At least 12 bays (OEM Make) to be provided.
7	Scalability	Minimum 7TB with 600GB HDD
8	Network Connectivity	2 10/100/1000 auto sensing NICs
9	RAID Controller	2 Nos. of RAID Controllers 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 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.
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		NAS Storage High End
Item Code		ST03H
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP StoreEasy 1830
2	Rack mount	Should be rack mount. Field install Rack mount kit to be provided.
3	Processor	2 Nos. of Intel® Xeon E5 2609 or latest Multicore processors at 2.3GHz or higher and each processor with SPEC CPU Rate 2006 (base) of 200 or higher (60% of SPEC Int Rate base2006 plus 40% of SPEC fp Rate base2006 scores - tested with 128GB RAM) with 10MB Cache or higher.
4	RAM	8 GB DDR3 expandable to 16 GB or higher
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 Controllers 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 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.
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

Item Name	SAN Storage - High End
Item Code	ST04H
Parameter / Feature	Detailed Specifications
1:- Make & Model	Netapp FAS2552A
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 RAID5 or RAID6/DP 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 5 or RAID 6/DP
6:- Controller	Dual controllers (fully redundant with support for automatic failover)
7:- Cache per Controller	6 GB or higher Cache per controller
8:- Multi-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,FC with required licenses.
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.
16:- Management Software	Software for storage management, RAID configuration, LUN creations, Storage Health monitoring, Alerting, partitioning , Browser basedGUI providing an easy-to-use remote and multi-array single management console 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 Switches
Item Code		STSW
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP 8/24 SAN Switch
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 or equivalent shall be included.



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Item Name		Server 2-way
Item Code		SR01H
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP DL380p Gen8 Server
2	Mounting	Rack Models
3	Height	Max 2U
4	Processor	2 Nos. of Intel® Xeon E5-2650 v2 or latest at 2.5GHz or higher and each processor with SPEC CPU Rate 2006 (base) 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.
5	No. of Processors	2 Processors Populated
6	Chip Set	Intel® C600 series
7	CPU Cache	15MB 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 300GB 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	DVD ROM	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
17	OS compatibility	Red Hat Linux Advanced Server latest version (with server virtualization capability) , MS Windows 2012 server (with server virtualization capability)
18	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 compliant RoHS compliant
19	Management	Server OEM Browser based Management Software for Monitoring, Managing and Configuring Servers. Support for heterogeneous operating environments - Microsoft Windows, Linux.
20	Warranty	OEM onsite , labour , parts warranty for the entire lease period



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Item Name		Blade Server
Item Code		SR02H
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP BL460c Gen8 Server
2	Mounting	Form Factor of BLADE Chassis
3	Processor	2 Nos. of Intel® Xeon® E5-2650 v2 or latest Multicore processors at 2.5GHz or higher and each processor with SPEC CPU Rate 2006 (base) 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.
4	No. of Processors	2 Processors Populated
5	Chip Set	Intel® C600 series
6	CPU Cache	15MB Cache or higher
7	Memory	Configured with 24GB DDR 3-1333 expandable up to 64GB
8	PCI expansion slots	2 x PCIe MEZZ card slots (One Slot populated with FC MEZZ card) supporting Ethernet, FC adapters or Two ports of converged network adapter supporting both Ethernet and FC traffic supporting 1Gigabit or higher and necessary hardware and cables to be provided for connectivity to LAN and SAN switch
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 SAS controller capable of connecting 8 SAS drives
12	NIC	2 No.s NICs Multifunction 10 Gigabit Network Adapters each with 2 ports with TCP/IP Offload Engine. The dedicated port for remote management shall on chassis.
13	Management	Server OEM Browser based Management Software for Monitoring, Managing and Configuring Servers. 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 compliant RoHS compliant
16	Warranty	OEM onsite , labour , parts warranty for the entire lease period

Item Name	Layer 2 Switch - 24 ports	
Item Code	NS01H	
S.No	Parameter / Feature	Detailed Specifications
1	Make & Model	HP 5120-24G SI
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	42 Gbps or more
4	Throughput	34 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 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.
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	
Item Code	NS02H	
S.No	Parameter/ Feature	Detailed Specifications
1	Make & Model	HP 5120-48G SI
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 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.
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 3 Switch (Type -I)
Item Code		NS03H
S.No	Parameter / Feature	Detailed Specifications
1	Make & Model	HP 5500-24G-4SFP HI
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
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.
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
Warranty and Support		OEM onsite, labour, parts warranty for the entire lease period



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Item Name	Wireless Access Point	
Item Code	NS07H	
S.No	Parameter/ Feature	Detailed Specifications
1	Make & Model	MSM430
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 Number	Network Security Device	
Item Code	NS08H	
S.No	Parameters/Features	Detailed Specifications
1	Make & Model	FORTINET, FortiGate-100D & FortiAnalyzer-200D
2	System	Should provide firewall, SSL & IPSEC VPN & intrusion prevention features in a single or multiple devices
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	Flash Memory / ASIC / HDD of 64 MB or higher
7	Routing	RIPv1/v2, OSPF, Static Routes, Multicast, Dual stack IPv4/IPv6, ICMPv6, DNSv6
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 for entire lease period signature & variant updation
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 application layer attacks, Reconnaissance attacks, DoS attacks unknown network and 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.
23	Action Response Should be able to	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 Opera	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 usign 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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Item Name	Wireless Access Controller	
Item Code	NS11H	
S. No	Parameter / Feature	Detailed Specifications
1	Make & Model	HP 850 Unified Wired-WLAN Switch Series
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, SNMP, 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.
15	Warranty	OEM onsite, labour, parts warranty for the entire lease period

Item Name		Link Load Balancer
Item Code		LL01H
S.NO	Parameter /Feature	Detailed Specifications
	Make & Model	Radware Alteon-5208 NG
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
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 given 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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Item Name		Print Server
Item Code		PS01L
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP Jetdirect 300x Print Server
2	Network Interface	10/100 Mbps Ethernet Interface with autosensing dual speed minimum TCP/IP support
3	Ports	1 Fast Ethernet and 1 Parallel port
4	Bidirectional communication	Should have Bidirectional communication
5	Remote management	Should have Telnet support
6	OS Compatibility	Supports Win XP, Vista, & Red Hat
7	Warranty	OEM onsite, labour, parts warranty for the entire lease period



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Item Name		42U Server Rack
Item Code		RS01L
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	Net rack/NRS Series
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



Bharat Heavy Electrical Limited, R.C.Puram, Hyderabad
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Item Name		42U Network Rack
Item Code		MS02N
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	Net rack/NRS Series
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
Item Code		SR03C
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP BladeSystem c7000 Enclosure
	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.
	Power Supplies & Fans	The chassis should be fully populated with redundant hotswap power supplies & fans.
	Processor Support	The enclosure offered should support Intel or AMD processor based Blade servers within the same enclosure.
	Management Software	Should come with web based management software for inventory control, power management, remote image based OS deployment and Performance Management
	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 or 4 Nos. of 10G converged network adapter and adequate internal 10G ports to support fully populated chassis
	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 or converged network adapter for connectivity to SAN switch. Necessary transceivers/modules/cables to be provided.
	KVM/CD/USB	To be enabled Virtually over IP for Remote Access or Provided Locally
	Warranty	OEM onsite , labour , parts warranty for the entire lease period



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Item Name		Tape Library
Item Code		TL01H
S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model	HP MSL 4048
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 SAS 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 BOM Includes :- 1) HP Data PRT Drive EXT UNIX/NAS/SAN - 2Qty 2) HP DP Online backup for unix - 4Qty 3) HP Data Prot Stater Pack for Linux - 1Qty 4) HP DP Advanced Backup to Disk - 1TB - 1Qty
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

Item Name		POE Switch
Item Code		POE
S.No.	Parameter / Feature	Detailed Specifications
	Make & Model	5120-24G EI-POE+
		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.
	Hardware & Performance Requirements	
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
	Connectivity & Filtering	
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
	Layer 2 Functionality	
11	802.1Q	Should support 802.1Q protocol
12	Type of VLANs	Should support port based VLANs
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
	Security Features	
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
	Network Protocols	
24	STP	Should Support Spanning Tree Protocol, Rapid Spanning Tree Protocol, Multiple Spanning Tree Protocol
	Quality of Service	
25	QoS Scheduling	Should support QoS scheduling
26	Queue per port	Should support minimum 4 queues per port



Item Name		POE Switch
Item Code		POE
S.No.	Parameter / Feature	Detailed Specifications
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.
	Multicasting	
28	Multicast	Should support IPv4 Multicasting
29	IGMP	Should Support IGMP v1, v2
	Management	
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.
	Software	
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
	IEEE Standards Compliance	
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



Item Name	SIP Phone Type-1
Item Code	SIP01
	Make & Model: Grandstream GXP 1450
S.No	Parameter/Feature
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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Item Name	SIP Phone Type-II
Item Code	SIP02
	Make & Model: Grandstream GXP 2140
S.NO	Parameter/Features
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 code MS09L- 12L KVM Switch	
S NO	Specifications
	Make & Model: Raritan DLX-216-MPAC & T1700-LED
1	A 16 port rack mount TCP/IP Enabled KVM switch with LCD monitor, keyboard and mouse (touchpad) and min. 8 ft. length cables for connecting 16 servers. Should comes with necessary rack rails.
2	Should provide 2 concurrent access thru ip sessions and one local user.
3	KVM should provide inband and outband access.
3	Should control from BIOS Level access.
4	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.



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Item Code	Item Name	Detailed Specifications
	Make & Model	Fluke Link Runner
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



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Item Code	Item Name	Detailed Specifications
		Make & Model: Logitech C270
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	
Item Code	SV01	
S.No.	Parameter/Feature	Detailed Specifications
	Liscence for HYPERVISOR + VM MANAGEMENT SERVER WITH CLIENT/WEB GUI	Assuming Pack of 2 physical Hosts each with 2 Octacore processors + 256 GB RAM supporting Clustering & High Availability <u>Software BOM:</u> 1). VMware vSphere with Operations Management Enterprise Plus for 1 processor – 4 Quantity 2). VMware vCenter Server 5 Foundation for vSphere up to 3 hosts (Per Instance) – 1 Quantity
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
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	<input checked="" type="checkbox"/> Shared storage: SAN, NAS, iSCSI, eSATA,FC, SSD & FCoE Support <input checked="" type="checkbox"/> Device support: All storage hardware <input checked="" type="checkbox"/> Storage multipathing: Redundant path to storage for fault tolerance and enhanced performance <input checked="" type="checkbox"/> Local disk support
22	HA (High Availability)	<input checked="" type="checkbox"/> Virtual machine restart in case of guest failure <input checked="" type="checkbox"/> Prioritize restart order allowing most critical VMs to be restarted first <input checked="" type="checkbox"/> No single point of failure <input checked="" type="checkbox"/> Maintenance Mode <input checked="" type="checkbox"/> Automatic fail over to standby management server in the event of failure to primary
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
30	Administration	<input checked="" type="checkbox"/> Single-view for centralized control <input checked="" type="checkbox"/> Host and VM system monitoring and management



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Item Name		SERVER VIRTUALISATION SOLUTION
Item Code		SV01
S.No.	Parameter/Feature	Detailed Specifications
		<input checked="" type="checkbox"/> administrative access to users for creating/running VMs and managing <input checked="" type="checkbox"/> environment through a portal <input checked="" type="checkbox"/> Granular, inheritable, directory-based security roles to all actions and objects <input checked="" type="checkbox"/> Choice of Microsoft Active Directory or IPA for user authentication <input checked="" type="checkbox"/> access to virtual machines using secure graphical console <input checked="" type="checkbox"/> Remote network boot via PXE (Preboot Execution Environment) <input checked="" type="checkbox"/> Customisable Reporting of historic usage, trending, and quality of service <input checked="" type="checkbox"/> Alerts and notifications: Errors and warnings immediately reported to administrators via email <input checked="" type="checkbox"/> Logging: Support remote logging and crash analysis <input checked="" type="checkbox"/> monitor and report VM health and status
31	Integration, Automation, and Customization	<input checked="" type="checkbox"/> API : Programmatic access to all management commands <input checked="" type="checkbox"/> Scripting and Automation of management commands
32	Security	<input checked="" type="checkbox"/> Kernel level <input checked="" type="checkbox"/> Small hypervisor footprint minimizing attack surface
33	Networking	<input checked="" type="checkbox"/> Device support: All network hardware and interfaces <input checked="" type="checkbox"/> vLAN s: Support for virtual LAN s inside the virtual infrastructure <input checked="" type="checkbox"/> Network offload: Offload virtual networking and network IO to compatible NIC hardware <input checked="" type="checkbox"/> Jumbo frames
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 / Featur	Detailed Specifcations
1	Make & Model	Raritan PXE-1493
2	Features	
		PDU should have local and remote monitoring capability measuring the power in V, W, A etc.
		True RMS current monitoring to allow users to receive the most accurate current reading
		IP addressable remote control and monitoring anywhere through IP KVM switch
		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 management software GUI
		Outlet naming, passwords, secure web server and password protection
		Vendor should quote appropriate PDU with combination of C13/C14 and C19/C20 sockets considering the power source available at site and the requirement for specific rack. PDU rating to be 32Amps with a capacity of 7.4KVA or better.
		Zero U (vertical) and rackmount (horizontal) form factors
	No of Output sockets	12 or more
3	Output Sockets	PDU should have min of 20% of C19/C20 and 80% of C13/C14 sockets inorder to accomodate blades and other IT devices.
4	Warranty	OEM warranty (labour,parts,on-site) for the entire contract perio



Item Name	BAR CODE READER: 78	
	ITEM CODE : BR01	
S.No.	Parameter /Feature	Detailed Specifications
	Make & Model	<u>Xenon 1900G</u>
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,onsite) for the entire contract period



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Item Name	BAR CODE PRINTER: 14	
	Item Code: BR02	
S.No.	Parameter /Feature	Detailed Specifications
1	Make & Model	Intermac PM43
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, EN55024, 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,onsite) for the entire contract period



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	Item Name	Add-ons	
Sl.No	Item Code	Description	Additional Requirement/Part/Configuration
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	SR01H(A1)	Server - 2 Way Rack(Higher HDD)	6 x 600GB in lieu of 6 x 300 GB
10	SR01H(A2)	Server - 2 Way Rack(Higher RAM)	64 GB in lieu of 24 GB
11	SR02H(A1)	Blade Server (Higher RAM)	48 GB in lieu of 24 GB
12	PL04H(A1)	PLP PlotWorks Pro 7. (Latest Version)	Compatible to the supplied Plotter Note : This option is to be used along with Item No. PL04H only
13	MS06H(A1)	Tape Library (With Fibre Ports)	2 Nos. of 4Gbps FC ports in place of SAS ports & SAN based backup software licenses for 2 Oracle, 2 Windows & 2 Linux Servers in lieu of Should come with two nos. of SAS ports & necessary cards & cables for connecting with backup server.
14	PC01L(A2)	PC (Higher Size TFT) 19"OEM make in place of 17" OEM make	HP Pro Display P19A 19" 4:3 / 5:4 aspect ratio,TCO 3 / 5 & Energy Star compliant in lieu of OEM make 17" 4:3 / 5:4 aspect ratio,TCO 3 / 5 & Energy Star compliant



Technical Compliance		
S.No	Item Code	Item Description
89	SW01H	Red Hat Enterprise Linux for Virtual Datacenters (x86 64bit), 2 sockets, unlimited virtual with 5 year Standard support from principle OEM.
90	SW02H	Red Hat Enterprise Linux Server (x86 64bit), 2 sockets, physical or 2 virtual nodes or latest with 5 year Standard support from Principle OEM.
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 Mangement Lic/SA (Latest Version)



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