REPLIES TO PRE BID REPLIES FOR REQUEST FOR PROPOSAL FOR SUPPLY, INSTALLATION AND MAINTENANCE OF SERVERS & STORAGE NPCI/RFP/2015-16/IT/012 dated 27.08.2015

S.No	Document Reference	Page No	Clause No	Description in RFP	Clarification sought	Additional Remarks (if any)	NPCI Response
1	**RFP Reference No: NPCI/RFP/2015-16/IT/012 dated 27.08.2015**	57	D	AMC Hardware charges	4th & 5th year AMC charges are asked for 28 servers only, storages AMC is not asked for 4th & 5th year		Please refer to Corrigendum 2
2	**RFP Reference No: NPCI/RFP/2015-16/IT/012 dated 27.08.2015**	57	E) Resource Requirement	Onsite Engineer for 6 days a week as per NPCI working hours during the entire contract period	Whether 1 engineer required at DC or engineer required at DC as well as DR sites.		Only 1 Engineer at Chennai
3	**RFP Reference No: NPCI/RFP/2015-16/IT/012 dated 27.08.2015**	19	Payment terms:	20% payment against delivery & 80% against Installation & acceptance	We request for 70% against delivery, 30% against installation, If there is any delay from customer end because of site not ready etc than customer should relese the full payment within 15 days of delivery.		No change in RFP
4	**RFP Reference No: NPCI/RFP/2015-16/IT/012 dated 27.08.2015**	8	3.1	Scope of work	Scope of work is related to AMC only, we need the detail SOW regarding installation like hardware installation any OS installation any virtualisation installation, any cluster installation requirement etc??? Also we need to know detailed SOW of storage installation like creation of LUN, any clustering or replication software needs to be deployed		Scope of work will be H/W ,Storage installation, Configuration and OS installation & Cluster configuration including SQL Server Cluster
5	**RFP Reference No: NPCI/RFP/2015-16/IT/012 dated 27.08.2015**	11	5.7, 5.8	Earnest Money Deposit (EMD) Return of EMD	We will submit BG with validity of 3 months or 4 months, since EMD will be returned either on submission of PBG or on declaration L1 so it will not take more than 3 months. Your below clause of valid for 6 months with claim period of 12 months contradict with clause 5.8 refer page No 11 of RFP.		No change in RFP
6	NPCI/RFP/2015-16/IT/012	19	8.14 Payment Terms	A. Supply of Hardware	A. Supply of Hardware	Please Modify this clause	No change in RFP
7	NPCI/RFP/2015-16/IT/012	19	8.14 Payment Terms	i) 20% payment shall be made to the Bidder against delivery of servers.	i) 80% payment shall be made to the Bidder against delivery of servers.		No change in RFP
8	NPCI/RFP/2015-16/IT/012	19	8.14 Payment Terms	ii) 80% payment will be made after successful Installation and acceptance of hardware	ii) 20% payment will be made after successful Installation and acceptance of hardware		No change in RFP

9	NPCI/RFP/2015-16/IT/012	28	D) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification **Point No 8**	The storage system should support RAID Levels 0, 5, 6, 10 or equivalent data protections. Multiple RAID configurations to be configured in the proposed solution. All the data to be written in RAID 10 and Read will be on RAID 5	How this expectation can be achived unless an application understands to read the data from a specific raid group which is running on a specifica raid level and write on a different raid group which is in a different raid level	Please Clarify	Storage need to to take care the Write in RAID 10 & Read in RAID 5 not the application
10	NPCI/RFP/2015-16/IT/012	28	D) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification **Point No 11**	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB. All the data to be written in RAID 5.	can we use MLC SSD's	Please Clarify	No Change in RFP
11	NPCI/RFP/2015-16/IT/012	28	D) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification **Point No 14**	The storage array must support at least 180 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. The same should be upgradeable to minimum 500 drives by adding controllers / changing the controllers	The scalablity expectation to 500 drives conflicts with the expectation the RFP Demands is a Mid range storage. Mid Range storage typical storage family will have support to min 450 drives from day one	Please Clarify	No Change in RFP
12	NPCI/RFP/2015-16/IT/012	30	E) Storage Qty 1 for DR at Chennai location. Technical Specification **Point No 7**	The storage system should support RAID Levels 0, 5, 6, 10 or equivalent data protections. Multiple RAID configurations to be configured in the proposed solution. All the data to be written in RAID 10 and Read will be on RAID 5	How this expectation can be achived unless an application understands to read the data from a specific raid group which is running on a specifica raid level and write on a different raid group which is in a different raid level	Please Clarify	Storage need to to take care the Write in RAID 10 & Read in RAID 5 not the application
13	NPCI/RFP/2015-16/IT/012	30	E) Storage Qty 1 for DR at Chennai location. Technical Specification **Point No 10**	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB & 3TB in SAS 10K with single SAS disk not larger than 900GB.All the data to be written in RAID 5.	can we use MLC SSD's, 3TB Drives do not come with 10K RPM& RFP states that Single SAS disk should not be larger than 900 GB	Please Clarify	Need to use eMLC SSD only . 3TB space in SAN need to given in SAS 10K RPM disk not larger than 900GB SAS Disks

14	NPCI/RFP/2015-16/IT/012	31	E) Storage Qty 1 for DR at Chennai location. Technical Specification **Point No 13**	The storage array must support at least 180 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. The same should be upgradeable to minimum 500 drives by adding controllers / changing the controllers	The scalablity expectation to 500 drives conflicts with the expectation the RFP Demands is a Mid range storage. Mid Range storage typical storage facmily will have support to min 450 drives from day one	Please Clarify	No change in RFP
15	E) Storage Qty 1 for DR at Chennai location. Technical Specification	30	7	All the data to be written in RAID 10 and Read will be on RAID 5.	This tiering feature is offered by only one OEM requiring 2 tiers of SSD (R1/0 for Read Intensive and R5 for Write Intensive). The RFP requires 17 TB usable capacity using eMLC-SSDs with <3msec response time which can be delivered without requiring tiering. Hence request NPCI remove the technical requirement as the required capacity and performance can be delivered without the two tiered SSD approach.		No Change in RFP
16	E) Storage Qty 1 for DR at Chennai location. Technical Specification	30	7	All the data to be written in RAID 10 and Read will be on RAID 5.	Request you to include hardware based RAID controller		Not Clear
17	E) Storage Qty 1 for DR at Chennai location. Technical Specification	30	8	The proposed System must be populated with the following ports	Request you to include minimum 2 nos. of 6Gbps SAS physical ports per Controller for disk connectivity. All storage OEM support 6Gbps SAS or higher.		Minimum 2nos of 6GBPS SAS phisical Ports can be given for Disk Conectivity
18	E) Storage Qty 1 for DR at Chennai location. Technical Specification	31	19	2 x 24-port SAN Switch with 18-ports active	SAN switch ports are avaliable as multiple of 12 hence request you to include 24 active ports per SAN switch. Hence 24 x 8Gbps FC ports and 24 x 10M LC-LC cables.		Minmum 18 port is Required if 18 ports is not Possible 24 Ports Licences can be Quoted
19	E) Storage Qty 1 for DR at Chennai location. Technical Specification	31	20	Each Switch should be configured with minimum 18 x 8Gbps FC ports & 18 x 10M LC-LC Cables	SAN switch ports are avaliable as multiple of 12 hence request you to include 24 x 8Gbps FC ports and 24 x 10M LC-LC cables for each SAN switch.		Minmum 18 port is Required if 18 ports is not Possible 24 Ports Licences can be Quoted
20	E) Storage Qty 1 for DR at Chennai location. Technical Specification	31	22	Replacement of disk drive would only be performed after degaussing faulty disk drive at NPCI Onsite location. Any such scenarios will be covered under the support period and contract.	Request NPCI to consider Data At Rest Encryption using Controller based or Self Encrypting Drives. This will ensure the all data written to disk is protected against unauthorized drive removal (lost or stolen) and eliminate the need for degaussing on drive failure.		No Change in RFP
21	Section 9- Technical Specification: A) Application Server	24	7	2x128GB using 32GB DIMMS and scalable up to 576GB	Please confirm that you need 256GB capacity using 32GB memory and Please modify the clause – 256 GB Memory capacity using 32 GB DIMM	Considered 256 GB Memory capacity	256 GB Memory
22	Section 9- Technical Specification: A) Application Server	24	12	Microsoft® Windows Server® 2008 & Microsoft Windows® HPC Server 2008	Request you to remove the OS as it is already End of Sale	HPC feature is available in Microsoft Windows Server 2012 R2	Proposed Servers need to support minimim Windows 2008 or 2008 R2

23	Section 9- Technical Specification: B) DB server	26	7	2x128GB using 32GB DIMMS and scalable up to 576GB	Please confirm that you need 256GB capacity using 32GB memory and Please modify the clause - 256 GB Memory capacity using 32 GB DIMM	Considered 256 GB Memory capacity	256 GB Memory
24	Section 9- Technical Specification: B) DB server	26	12	Microsoft® Windows Server® 2008 & Microsoft Windows® HPC Server 2008	Request you to remove the OS as it is already End of Sale	HPC feature is available in Microsoft Windows Server 2012 R2	Proposed Servers need to support minimim Windows 2008 or 2008 R2
25	Section 9- Technical Specification: C) Development server	27	12	Microsoft® Windows Server® 2008 & Microsoft Windows® HPC Server 2008	Request you to remove the OS as it is already End of Sale	HPC feature is available in Microsoft Windows Server 2012 R2	Proposed Servers need to support minimim Windows 2008 or 2008 R2
26	Table 9.2 Technical Specification of Servers and Storage is as under	Page No 24 and 26	Point No 7	2x128GB using 32GB DIMMS and scalable up to 576GB	2x128Gb RAM to be read as 256GB RAM..This has been suggested for easy readibility		256 GB Memory
27	D) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location	Pg No 28	Point No 8	The storage System should support RAID Levels 0, 5, 6, 10 or equivalent data protections. Multiple RAID configurations to be configured in the proposed solution. All the data to be written in RAID 10 and Read will be on RAID 5.	Kindly remove "and Read will be on RAID 5" It is a contraductory statement		No Change in RFP
28	D) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location	Pg No 28	Point 11	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB. All the data to be written in RAID 5.	All the data to be written in RAID 10 Raid 10 Gives Better Performance in Writing Compare to Raid 5		All the data need to write in RAID 10 and data read will be on RAID 5
29	E) Storage Qty 1 for DR at Chennai location	Pg No 30	Point 7	The Storage System should support RAID Levels 0, 5, 6, 10 or equivalent data protections. Multiple RAID configurations to be configured in the proposed solution. All the data to be written in RAID 10 and Read will be on RAID 5.	Kindly remove "and Read will be on RAID 5" It is a contraductory statement		No Change in RFP
30	E) Storage Qty 1 for DR at Chennai location	Pg No 30	Point 10	The storage should be configured with a total usable capacity of 17 TB using eMLC-SSDs with single SSD not larger than 1.6TB & 3TB in SAS 10K with single SAS disk not larger than 900GB. All the data to be written in RAID 5	"The storage should be configured with a total usable capacity of 17 TB using eMLC-SSDs with single SSD not larger than 1.6TB, data to be written in R10. 3TB in SAS 10K with single SAS disk not larger than 900GB data to be written in RAID 5"		All the data need to write in RAID 10 and data read will be on RAID 5
31	General	General	General	General	General	We propose OEM Bidders should be Vendors only from leaders quadrant from Gartner Magic Quadrant for both Servers & Storage	No change in RFP

32	Table 9.2 Technical Specification of Servers and Storage is as under	Page No 24 and 26	Point No 7	2x128GB using 32GB DIMMS and scalable up to 576GB	2x128Gb RAM to be read as 256GB RAM..This has been suggested for easy readibility		256GB RAM
33	D) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location	Pg No 28	Point No 8	The storage System should support RAID Levels 0, 5, 6, 10 or equivalent data protections. Multiple RAID configurations to be configured in the proposed solution. All the data to be written in RAID 10 **and Read will be on RAID 5.**	Kindly remove "and Read will be on RAID 5" It is a contraductory statement		No Change in RFP
34	D) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location	Pg No 28	Point 11	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB. **All the data to be written in RAID 5.**	All the data to be written in RAID 10 Raid 10 Gives Better Performance in Writing Compare to Raid 5		All the data need to write in RAID 10 and data read will be on RAID 5
35	E) Storage Qty 1 for DR at Chennai location	Pg No 30	Point 7	The Storage System should support RAID Levels 0, 5, 6, 10 or equivalent data protections. Multiple RAID configurations to be configured in the proposed solution. All the data to be written in RAID 10 **and Read will be on RAID 5.**	Kindly remove "and Read will be on RAID 5" It is a contraductory statement		No Change in RFP
36	E) Storage Qty 1 for DR at Chennai location	Pg No 30	Point 10	The storage should be configured with a total usable capacity of 17 TB using eMLC-SSDs with single SSD not larger than 1.6TB & 3TB in SAS 10K with single SAS disk not larger than 900GB. All the data to be written in RAID 5	"The storage should be configured with a total usable capacity of 17 TB using eMLC-SSDs with single SSD not larger than 1.6TB, **data to be written in R10. 3TB in SAS 10K with single SAS disk not larger than 900GB data to be written in RAID 5"**		All the data need to write in RAID 10 and data read will be on RAID 5
37	Eligibility Criteria	Page No 9	Point 4.2	The bidder should be Authorized OEM partner for sales and service and should provide back to back on site support from OEM during warranty and AMC period.	The bidder should be Authorized OEM partner for sales and service and should provide back to back on site support from OEM during warranty and AMC period/**OEM to directly service and support through warranty and AMC period.**		The bidder should be Authorized OEM partner for sales and service and should provide back to back on site support from OEM during warranty and AMC period/OEM to directly service and support through warranty and AMC period.
38	General		General	General	General	We propose OEM Bidders should be Vendors only from leaders quadrant from Gartner Magic Quadrant for both Servers & Storage	No change in RFP
39	RFP for Supply,Installation & Maintenance of Server& Storage	25	Technical Specification for Server & Storage-Avaliability	Internal Dual SD Module(Failsafe Hypervisor)	We would Request NPCI to consider Internal **Single** SD Module	Most of the server vendors Provide Single SD Module except one or two server vendors	Minimum Single Internal SD Module is Required

40	RFP for Supply,Installation & Maintenance of Server& Storage	26	Technical Specification for Server- Avaliability-Point No. 13	Internal Dual SD Module(Failsafe Hypervisor)	We would Request NPCI to consider Internal **Single** SD Module	Most of the server vendors Provide Single SD Module except one or two server vendors	Minimum Single Internal SD Module is Required
41	RFP for Supply,Installation & Maintenance of Server& Storage	27	Development Server Technical Qualification-Point No. 13	Internal Dual SD Module(Failsafe Hypervisor)	We would Request NPCI to consider Internal **Single** SD Module	Most of the server vendors Provide Single SD Module except one or two server vendors	Minimum Single Internal SD Module is Required
42	RFP for Supply,Installation & Maintenance of Server& Storage	44	Annexure J-Technical Evaluation Compliance-Avaliability-Point No. 13	Internal Dual SD Module(Failsafe Hypervisor)	We would Request NPCI to consider Internal **Single** SD Module	Most of the server vendors Provide Single SD Module except one or two server vendors	Minimum Single Internal SD Module is Required
43	RFP for Supply,Installation & Maintenance of Server& Storage	46	Technical Evaluation Compliance-Avaliability-Point No. 13	Internal Dual SD Module(Failsafe Hypervisor)	We would Request NPCI to consider Internal **Single** SD Module	Most of the server vendors Provide Single SD Module except one or two server vendors	Minimum Single Internal SD Module is Required
44	RFP for Supply,Installation & Maintenance of Server& Storage	48	Technical Evaluation Compliance-Avaliability-Point No. 13	Internal Dual SD Module(Failsafe Hypervisor)	We would Request NPCI to consider Internal **Single** SD Module	Most of the server vendors Provide Single SD Module except one or two server vendors	Minimum Single Internal SD Module is Required
45	RFP for Supply,Installation & Maintenance of Server& Storage	19	8.14 Payment Terms-Hardware	20% on delivery and remaining 80% against successful installation & acceptance of HW	We would Request NPCI to consider 80% on delivery and remaining 20% against successful installation & acceptance of HW		No change in RFP
46	Table 9.2 Technical Specification of Servers and Storage	24 26	Table-A; Clause -7 Table-B; Clause -7	Memory: 2x128GB using 32GB DIMMS and scalable up to 576GB	Please clarify whether this requirement is for 256GB RAM using 32GB DIMMs; or the specification of "2 x 128GB" has a different interpretation		256 GB RAM
47	Table 9.2 Technical Specification of Servers and Storage	24 26 27	Table-A; Clause-12 Table-B; Clause-12 Table-C; Clause-12	OS & Hypervisor Support: Microsoft Windows® HPC Server 2008 Microsoft® Windows Server® 2008, with Hyper-V	Servers with specified processors support minimum Windows Server 2008 R2, and Windows HPC Server 2008 R2		Proposed servers need to support minimim Windows 2008 or 2008 R2
48	Table 9.2 Technical Specification of Servers and Storage	25 26 27	Table-A; Clause-13 Table-B; Clause-13 Table-C; Clause-13	Internal Dual SD Module (Failsafe Hypervisor)	"Failsafe Hypervisor" is a vendor specific term. Servers can be provisioned to support internal dual SD cards.		Minimum Single Internal SD Module is Required
49	End of page	31		** Red Hat Cluster Suite required for each pair of DB servers within a site – both the servers within a site need to be clustered. NPCI had already purchased 1 yr. support for REHL from existing UPI vendor. The vendor should provide an onsite Engineer (minimum Engineering graduate) with minimum 5 years domain experience in Servers and Storage for 6 days a week as per NPCI working hours during the entire Contract period.	Please specify whether hypervisor & operating system license / subscriptions are to be quoted for all servers. In that case, please specify the version / edition of each to be quoted. Please specify the number of cluster suite required at each site. RFP mentions 6 DB servers at Hyderabad and 3 nos. at Chennai.		As we are using physical servers so we don't need hypervisor.We need 21 OS licenses that is 7 for each site (4 for Application Servers and 2 for OLTP DB Servers and 1 for Reporting DB Server). The OS cluster solution will be achieved through Resilient Storage Cluster that comes as an add-on with RHEL license. For each site, 2 of these RHEL + Resilient storage add-on licenses (i.e. total of 6) would be needed.

50	Table 9.1 Location wise server details , under **D)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	28	3	The storage system should be of Mid Range category and should have unified capability i.e. should support block (FC) and file access (CIFS, NFS).	Please specify the Block storage Capacity and File Storage Capacity	Please specify if PR & HA storages would be replicating to each other and distance between the same.	Storage replication future need to be there in proposed storage . As of now not going to use.
51	Table 9.1 Location wise server details , under **D)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	28	11	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB. All the data to be written in RAID 5.	Please confirm if Storage with MLC drive support will meet this criteria . **Suggest to change this point from eMLC to MLC or cMLC** as it is a vendor specific & traditional specification.		No Change in RFP
52	Table 9.1 Location wise server details , under **D)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	28	10	Proposed system must support all on-line data storage tiers in order to maximize both system performance and capacity scalability. It should support following types of drives SLC/ MLC / eMLC SSD 15K RPM 6Gbps SAS 10K RPM 6Gbps SAS 7.2K RPM NL-SAS	**Please confirm if Storage with MLC drive support will meet this criteria or Storage should support all three SLC/MLC/eMLC drives**. cMLC drives are preferred over SLC/MLC/eMLC drives and meet both performance and cost expectations. Suggest to remove SLC criteria as it is a vendor specific & traditional requirement and most storages will not qualify for same		No Change in RFP
53	Table 9.1 Location wise server details , under **D)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	28	14	The storage array must support at least 180 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. **The same should be upgradeable to minimum 500 drives by adding controllers / changing the controllers**	Could an "Online migration to a new storage with higher capacity meet this criteria of an upgradability"		No Change in RFP
54	Table 9.1 Location wise server details , under E) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	30	3	The storage system should be of Mid Range category and should have unified capability i.e. should support block (FC) and file access (CIFS, NFS).	Please specify the Block storage Capacity and File Storage Capacity	Please specify if PR & DR storages would be replicating to each other.	Storage replication future need to be there in proposed storage . As of now not going to use.
55	Table 9.1 Location wise server details , under **E)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	30	10	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB. All the data to be written in RAID 5.	Please confirm if Storage with MLC drive support will meet this criteria . Suggest to change this point from eMLC to MLC or cMLC as it is a vendor specific & traditional specification.		No Change in RFP

56	Table 9.1 Location wise server details , under **E)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	30	9	Proposed system must support all on-line data storage tiers in order to maximize both system performance and capacity scalability. It should support following types of drives SLC/ MLC / eMLC SSD 15K RPM 6Gbps SAS 10K RPM 6Gbps SAS 7.2K RPM NL-SAS	**Please confirm if Storage with MLC drive support will meet this criteria or Storage should support all three SLC/MLC/eMLC drives**. cMLC drives are preferred over SLC/MLC/eMLC drives and meet both performance and cost expectations. Suggest to remove SLC criteria as it is a vendor specific & traditional requirement and most storages will not qualify for same		No Change in RFP
57	Table 9.1 Location wise server details , under **E)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	31	13	The storage array must support at least 180 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. **The same should be upgradeable to minimum 500 drives by adding controllers / changing the controllers**	Could an "Online migration to a new storage with higher capacity meet this criteria of an upgradability"		No Change in RFP
58	Table 9.1 Location wise server details , under **D)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	Page No 28	Point No 3	The storage system should be of Mid Range category and should have unified capability i.e. should support block (FC) and file access (CIFS, NFS).	Please specify the Block storage Capacity and File Storage Capacity	Please specify if PR & HA storages would be replicating to each other and distance between the same.	Storage replication future need to be there in proposed storage . As of now not going to use.
59	Table 9.1 Location wise server details , under **D)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	Page No 28	Point No 11	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB. All the data to be written in RAID 5.	Please confirm if Storage with MLC drive support will meet this criteria . **Suggest to change this point from eMLC to MLC or cMLC** as it is a vendor specific & traditional requirement		No Change in RFP
60	Table 9.1 Location wise server details , under **D)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	Page No 28	Point No 10	Proposed system must support all on-line data storage tiers in order to maximize both system performance and capacity scalability. It should support following types of drives SLC/ MLC / eMLC SSD 15K RPM 6Gbps SAS 10K RPM 6Gbps SAS 7.2K RPM NL-SAS	**Please confirm if Storage with MLC drive support will meet this criteria or Storage should support all three SLC/MLC/eMLC drives**. cMLC drives are preferred over SLC/MLC/eMLC drives and meet both performance and cost expectations. Suggest to remove SLC criteria as it is a vendor specific & traditional requirement and most storages will not qualify for same		No Change in RFP

61	Table 9.1 Location wise server details , under **D)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	Page No 28	Point No 14	The storage array must support at least 180 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. **The same should be upgradeable to minimum 500 drives by adding controllers / changing the controllers**	Could an "Online migration to a new storage with higher capacity meet this criteria of an upgradability"		No Change in RFP
62	Table 9.1 Location wise server details , under E) Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	Page No 30	Point No 3	The storage system should be of Mid Range category and should have unified capability i.e. should support block (FC) and file access (CIFS, NFS).	Please specify the Block storage Capacity and File Storage Capacity	Please specify if PR & DR storages would be replicating to each other.	No Change in RFP
63	Table 9.1 Location wise server details , under **E)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	Page No 30	Point No 10	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB. All the data to be written in RAID 5.	Please confirm if Storage with MLC drive support will meet this criteria . **Suggest to change this point from eMLC to MLC or cMLC** as it is a vendor specific & traditional requirement		No Change in RFP
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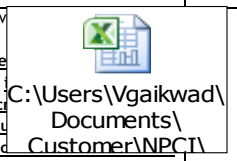
65	Table 9.1 Location wise server details , under **E)** Storage Qty. 1 for PR and Qty. 1 for HA at Hyderabad location. Technical Specification is as below	Page No 31	Point No 13	The storage array must support at least 180 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. **The same should be upgradeable to minimum 500 drives by adding controllers / changing the controllers**	Could an "Online migration to a new storage with higher capacity meet this criteria of an upgradability"		No Change in RFP
66	Table 9.2 Technical Specification of Servers and Storage	24 26	Table-A; Clause -7 Table-B; Clause -7	Memory: 2x128GB using 32GB DIMMS and scalable up to 576GB	Please clarify whether this requirement is for 256GB RAM using 32GB DIMMs; or the specification of "2 x 128GB" has a different interpretation		256 GB RAM

67	Table 9.2 Technical Specification of Servers and Storage	24 26 27	Table-A; Clause-12 Table-B; Clause-12 Table-C; Clause-12	OS & Hypervisor Support: Microsoft Windows® HPC Server 2008 Microsoft® Windows Server® 2008, with Hyper-V	Servers with specified processors support minimum Windows Server 2008 R2, and Windows HPC Server 2008 R2		Proposed Servers need to support minimim Windows 2008 or 2008 R2
68	Table 9.2 Technical Specification of Servers and Storage	25 26 27	Table-A; Clause-13 Table-B; Clause-13 Table-C; Clause-13	Internal Dual SD Module (Failsafe Hypervisor)	"Failsafe Hypervisor" is a vendor specific term. Servers can be provisioned to support internal dual SD cards.		Minimum Single Internal SD Module is Required
69	End of page	31		** Red Hat Cluster Suite required for each pair of DB servers within a site – both the servers within a site need to be clustered. NPCI had already purchased 1 yr. support for REHL from existing UPI vendor. The vendor should provide an onsite Engineer (minimum Engineering graduate) with minimum 5 years domain experience in Servers and Storage for 6 days a week as per NPCI working hours during the entire Contract period.	Please specify whether hypervisor & operating system license / subscriptions are to be quoted for all servers. In that case, please specify the version / edition of each to be quoted. Please specify the number of cluster suite required at each site. RFP mentions 6 DB servers at Hyderabad and 3 nos. at Chennai.		As we are using physical servers so we don't need hypervisor.We need 21 OS licenses that is 7 for each site (4 for Application Servers and 2 for OLTP DB Servers and 1 for Reporting DB Server). The OS cluster solution will be achieved through Resilient Storage Cluster that comes as an add-on with RHEL license. For each site, 2 of these RHEL + Resilient storage add-on licenses (i.e. total of 6) would be needed.
70	Scope of Work	8	3.1	resolution time of 12 hours.	Resolution time commitment adherence will depend on nature of problem.	Revised clause can possibly be as follows: **resolution time of 12 hours on a best effort basis**	The OS cluster solution will be achieved through Resilient Storage Cluster that comes as an add-on with RHEL license.
71	Scope of Work	8	3.1	onsite Engineer	Required for both sites or only one site? If only one site, which site - Hyd or Chen?		Only 1 Engineer is needed at Chennai
72	Prices for Rate Contract	18	8.12	There shall be no increase in price for any reason whatsoever during the period of 12 months from the date of acceptance of the Purchase Order.	Kindly please allow to accommodate a price change for dollar fluctuation of more than +/- 3%. Kindly please also confirm that any change in Taxes will be as per actuals.	Rev **The** **inc** **du** **mo** **acceptance of the Purchase Order. Any increase beyond 3% in**	No change in RFP
73	Payment Terms	19	8.14	20% against delivery, 80% against implementation and acceptance	Kindly please clarify whether this should be 80% against delivery and 20% against implementation and acceptance.	Revised spec can possibly be as follows: **80% against delivery and 20% against implementation and acceptance.**	No change in RFP



74	Technical Specification of Servers - Application Servers	24	9.2 - A - 3	Processor - 2X Intel E5-2640v3 or higher	This is a very low end processor and features 5th from bottom in Intel's list of 15 processors categorized for 2-socket Servers. Please refer page 4 this 5-page Intel document: http://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/xeon-e5-brief.pdf For NPCI's benefit of investment protection by way of investing in a CPU with longer shelf life, can NPCI standardize the Processor specification to atleast one from the top 3 CPUs?	Revised spec can possibly be as follows: **2X Intel E5-2697v3 2.6GHz 14-core 35MB Cache 9.6GT/s 2133MHz DIMM support.**	The proposed server need to have Processor - 2X Intel E5-2640v3 or higher , vnder cam propose for higher procesor also .
75	Technical Specification of Servers - Application Servers	24	9.2 - A - 7	Memory - 2x128GB using 32GB DIMMS and scalable up to 576GB	This spec means NPCI wishes to have 256GB RAM using only 8 x 32GB DIMMs. NPCI may please note that DIMMs need to be populated and addressed by OS in pairs. One 32GB DIMM failure causes loss of 64GB Memory for NPCI's Application. For NPCI's better Memory availability along with scalability, can NPCI standardize the Memory to have more numbers of 16GB DIMMs and also ask bidders to quote Servers with 24 DIMM slots on the motherboard?	Revised spec can possibly be as follows: **256GB using 16 x 16GB 2133MHz DIMMs with additional 8 Memory DIMM slots to be available for future expansion i.e. there should be total 24 DIMM slots on the Server.**	256 GB Memory
76	Technical Specification of Servers - Application Servers	24	9.2 - A - 8	Drive Bays - 2x600GB 10 K SAS drives	NPCI wants only OS and Application instance space on Server in high availability RAID 1. For NPCI's better OS and Application performance, smaller capacity drives like 300GB with higher RPM of 15K in RAID 1 will be advisable. For much higher availability, NPCI can look to move this capacity from the Server to the high availability SAN Storage and have the OS and application boot from SAN.	Revised spec can possibly be as follows: **2x300GB 15K SAS Drives in RAID 1 or alternatively same drives on SAN storage for each Server and no drives on Server.**	No change in RFP
77	Technical Specification of Servers - Application Servers	24	9.2 - A - 9	NIC - 4x1Gbps	For NPCI's better network-readiness as well workload performance, can NPCI standardize and ask for 10Gbps connectivity.	Revised spec can possibly be as follows: **Atleast 2x10Gbps, preferably 4x10Gbps.**	Minimum requirent is 1GBPS Nics, vender can quote higher also
78	Technical Specification of Servers - Application Servers	24	9.2 - A - 10	Additional Cards - 2x single port FC HBA	For NPCI's better network readiness as well as workload performance, can NPCI standardize and ask for 16Gbps FC connectivity. NPCI is also requested to accept a single dual-port FC HBA - which is also the standard even in mission critical Blade Servers.	Revised spec can possibly be as follows: **Atleast 2x16Gbps FC Ports.**	Minimum requirent is 1GBPS Nics, vender can quote higher also
79	Technical Specification of Servers - Application Servers	24	9.2 - A - 11	Expansion Slots - Min 5 PCIe 3.0 slots	If NPCI is not going to use any specific card apart from LAN NIC and SAN HBA, can NPCI please remove this spec?	Removing this spec will enable NPCI to invest in Blade Servers - which offer higher availability, reduced carbon foot print and simplified single point manageability.	No Change in RFP

80	Technical Specification of Servers - Application Servers	25	9.2 - A - 15	Form Factor - 2U	If NPCI is not going to need more than 2 internal Drives and not more than 2 Cards for LAN and SAN, then NPCI will benefit by investing in the space saving, easy to manage, higher availability Blade Server form factor. Can NPCI standarize on Blade Server form factor?	Revised spec can possibly be as follows: **Blade Chassis of 6U / 10U / 12U to accommodate 8 to 16 Blade Servers per Blade Chassis.**	No Change in RFP
81	Technical Specification of Servers - Database Servers	26	9.2 - B - 3	Processor - 2X Intel E5-2698v3 or higher	E5-2698v3 is a 2.3GHz 16 core processor. For Application Server, we have recommended to standardize on E5-2697v3 2.6GHz 14-core processor which is a higher clock speed processor. NPCI will benefit from having a standard asset base of same high-end processor across both Application & Database Servers. Can NPCI standarize this spec to E5-2697v3 CPU?	Revised spec can possibly be as follows: **2X Intel E5-2697v3 2.6GHz 14-core 35MB Cache 9.6GT/s 2133MHz DIMM support.**	The proposed server need to have Processor - 2X Intel E5-2640v3 or higher. Vendor can propose for higher processor also .
82	Technical Specification of Servers - Database Servers	26	9.2 - B - 7	Memory - 2x128GB using 32GB DIMMS and scalable up to 576GB	This spec means NPCI wishes to have 256GB RAM using only 8 x 32GB DIMMs. NPCI may please note that DIMMs need to be populated and addressed by OS in pairs. One 32GB DIMM failure causes loss of 64GB Memory for NPCI's Application. For NPCI's better Memory availability along with scalability, can NPCI standardize the Memory to have more numbers of 16GB DIMMs and also ask bidders to quote Servers with 24 DIMM slots on the motherboard?	Revised spec can possibly be as follows: **256GB using 16 x 16GB 2133MHz DIMMs with additional 8 Memory DIMM slots to be available for future expansion i.e. there should be total 24 DIMM slots on the Server.**	No Change in RFP
83	Technical Specification of Servers - Database Servers	26	9.2 - B - 8	Drive Bays - 2x600GB 10 K SAS drives	This spec means NPCI wants only OS and Application instance space on Server in high availability RAID 1. For NPCI's better OS and Application performance, smaller capacity drives like 300GB with higher RPM of 15K in RAID 1 will be advisable. For much higher availability, NPCI can look to move this capacity from the Server to the high availability SAN Storage and have the OS and application boot from SAN.	Revised spec can possibly be as follows: **2x300GB 15K SAS Drives in RAID 1 or alternatively same drives on SAN storage for each Server and no drives on Server.**	No Change in RFP
84	Technical Specification of Servers - Database Servers	26	9.2 - B - 9	NIC - 4x1Gbps	For NPCI's better network-readiness as well workload performance, can NPCI standardize and ask for 10Gbps connectivity.	Revised spec can possibly be as follows: **Atleast 2x10Gbps, preferably 4x10Gbps.**	Minimum requirent is 1GBPS Nics, vender can quote higher also
85	Technical Specification of Servers - Database Servers	26	9.2 - B - 10	Additional Cards - 2x single port FC HBA	For NPCI's better network readiness as well as workload performance, can NPCI standardize and ask for 16Gbps FC connectivity. NPCI is also requested to accept a single dual-port FC HBA - which is also the standard even in mission critical Blade Servers.	Revised spec can possibly be as follows: **Atleast 2x16Gbps FC Ports.**	No Change in RFP

86	Technical Specification of Servers - Database Servers	26	9.2 - B - 11	Expansion Slots - Min 5 PCIe 3.0 slots	If NPCI is not going to use any specific card apart from LAN NIC and SAN HBA, can NPCI please remove this spec?	Removing this spec will enable NPCI to invest in Blade Servers - which offer higher availability, reduced carbon foot print and simplified single point manageability.	No Change in RFP
87	Technical Specification of Servers - Database Servers	26	9.2 - B - 15	Form Factor - 2U	If NPCI is not going to need more than 2 internal Drives and not more than 2 Cards for LAN and SAN, then NPCI will benefit by investing in the space saving, easy to manage, higher availability Blade Server form factor. Can NPCI standarize on Blade Server form factor?	Revised spec can possibly be as follows: **Blade Chassis of 6U / 10U / 12U to accommodate 8 to 16 Blade Servers per Blade Chassis.**	No Change in RFP
88	Technical Specification of Servers - Development Servers	24	9.2 - C - 3	Processor - 2X Intel E5-2640v3 or higher	This is a very low end processor and features 5th from bottom in Intel's list of 15 processors categorized for 2-socket Servers. Please refer page 4 this 5-page Intel document: http://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/xeon-e5-brief.pdf For NPCI's benefit of investment protection by way of investing in a CPU with longer shelf life, can NPCI standardize the Processor specification to atleast one from the top 3 CPUs?	Revised spec can possibly be as follows: **2X Intel E5-2697v3 2.6GHz 14-core 35MB Cache 9.6GT/s 2133MHz DIMM support.**	the proposed server need to have Processor - 2X Intel E5-2640v3 or higher , vnder cam propose for higher procesor also .
89	Technical Specification of Servers - Development Servers	24	9.2 - C - 7	Memory - 2x128GB using 32GB DIMMS and scalable up to 576GB	This spec means NPCI wishes to have 256GB RAM using only 8 x 32GB DIMMs. NPCI may please note that DIMMs need to be populated and addressed by OS in pairs. One 32GB DIMM failure causes loss of 64GB Memory for NPCI's Application. For NPCI's better Memory availability along with scalability, can NPCI standardize the Memory to have more numbers of 16GB DIMMs and also ask bidders to quote Servers with 24 DIMM slots on the motherboard?	Revised spec can possibly be as follows: **256GB using 16 x 16GB 2133MHz DIMMs with additional 8 Memory DIMM slots to be available for future expansion i.e. there should be total 24 DIMM slots on the Server.**	No Change in RFP
90	Technical Specification of Servers - Development Servers	24	9.2 - C - 8	Drive Bays - 2x600GB 10 K SAS drives	This spec means NPCI wants only OS and Application instance space on Server in high availability RAID 1. For NPCI's better OS and Application performance, smaller capacity drives like 300GB with higher RPM of 15K in RAID 1 will be advisable. For much higher availability, NPCI can look to move this capacity from the Server to the high availability SAN Storage and have the OS and application boot from SAN.	Revised spec can possibly be as follows: **2x300GB 15K SAS Drives in RAID 1 or alternatively same drives on SAN storage for each Server and no drives on Server.**	No Change in RFP
91	Technical Specification of Servers - Development Servers	24	9.2 - C - 9	NIC - 4x1Gbps	For NPCI's better network-readiness as well workload performance, can NPCI standardize and ask for 10Gbps connectivity.	Revised spec can possibly be as follows: **Atleast 2x10Gbps, preferably 4x10Gbps.**	Minimum requirent is 1GBPS Nics, vender can quote higher also

92	Technical Specification of Servers - Development Servers	24	9.2 - C - 10	Additional Cards - 2x single port FC HBA	For NPCI's better network readiness as well as workload performance, can NPCI standardize and ask for 16Gbps FC connectivity. NPCI is also requested to accept a single dual-port FC HBA - which is also the standard even in mission critical Blade Servers.	Revised spec can possibly be as follows: **Atleast 2x16Gbps FC Ports.**	No Change in RFP
93	Technical Specification of Servers - Development Servers	24	9.2 - C - 11	Expansion Slots - Min 5 PCIe 3.0 slots	If NPCI is not going to use any specific card apart from LAN NIC and SAN HBA, can NPCI please remove this spec?	NPCI is requested to remove this spec to be able to accept and technically qualify Blade Servers.	No Change in RFP
94	Technical Specification of Servers - Development Servers	25	9.2 - C - 15	Form Factor - 2U	If NPCI is not going to need more than 2 internal Drives and not more than 2 Cards for LAN and SAN, then NPCI will benefit by investing in the space saving, easy to manage, higher availability Blade Server form factor. Can NPCI standarize on Blade Server form factor?	Revised spec can possibly be as follows: **Blade Chassis of 6U / 10U / 12U to accommodate 8 to 16 Blade Servers per Blade Chassis.**	No Change in RFP
95	Technical Specification of Servers - Application, Database and Development Servers at both Hyderabad and Chennai				If NPCI finds value proposition in our recommendation and request to invest in Blade Servers instead of Rack Servers, then NPCI would need standardized specifications to tender for Blade Chassis Enclosure (configured with separate dedicated redundant 1GbE/10GbE LAN and separate dedicated redundant 8GbFC SAN Switches) and Blade Servers. Please find enclosed herewith complete standard specifications for Blade Chassis and Blade Servers. Further, NPCI can protect its environment by asking bidders to separate Blade Chassis for Application, Database and Development Servers.		No Change in RFP
96	Technical Specification of Storage - Hyderabad	28 & 29	9.2 - D - 11	The storage should be configured with a total usable capacity of 17 TB using eMLC - SSDs with single SSD not larger than 1.6TB. All the data to be written in RAID 5.	If NPCI has missed asking SAS capacity here, kindly please add. Further, can NPCI standarize to ask bidders to quote RAID 6 instead of RAID 5? This is because RAID 6 offers protection against dual disk failure instead of RAID 5 which offers protection against only one disk failure.	Revised spec can possibly be as follows: 11. **The storage should be configured with a total usable capacity of 17 TB using Flash / eMLC-SSDs with single Drive not larger than 1.6TB & usable capacity of 3TB using 600GB 15K RPM SAS . All the data to be written in RAID 6.**	No Change in RFP

97	Technical Specification of Storage - Hyderabad	28	9.2 - D - 12	Proposed storage should support less than 3 ms Response time with SSD.	What is the Read:Write ratio and Total IOPS for SSD layer assumed to deliver 3ms Response Time? If NPCI has no specific requirement on this front, NPCI can look to standarize on a particular IOPS value.	Revised spec can possibly be as follows: **Proposed storage should support less than 3 ms Response time and deliver atleast 55000 IOPS from the required usable Flash / SSD Drive capacity for 100% random workload and 70:30 Read:Write ratio.**	No Change in RFP
98	Technical Specification of Storage - Hyderabad	28	9.2 - D - 14	The storage array must support at least 180 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. The same should be upgradeable to minimum 500 drives by adding controllers / changing the controllers.	Minimum industry average of drive support is seen to be 260 drives per controller pair. Can NPCI standardize the specification to 260 disk drive support? Can NPCI standardize the specification to minimum 1200 drive upgradability? NPCI will get better investment protection by asking bidders to quote storage array that can support atleast 260 disk drives behind the proposed pair of controllers. Further, NPCI can increase its investment protection by asking bidders to quote for scalability to atleast 1200 drives.	Revised spec can possibly be as follows: **The storage array must support at least 260 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. The same should be upgradeable to minimum 1200 drives by adding controllers / changing the controllers.**	no Change in RFP
99	Technical Specification of Storage - Hyderabad	29	9.2 - D - 21	2 x 24-port SAN Switch with 16-ports active	By using Blade Servers as suggested by us in one of our query above, NPCI can fit the Server and Storage solution in 16 ports per SAN Switch. Additionally, if NPCI wants to connect Backup Master and Media Servers and Tape Libraries, NPCI will require additional 3 to 4 ports per SAN Switch. So, it will be suitable for NPCI to ask bidders to quote for all 24 ports per SAN Switch. However, if NPCI wants to use Rack Servers only as presently asked in the RFP, NPCI will require 25 ports per SAN Switch for Server, Storage and Backup connectivity. For this NPCI will require 48-port capable SAN switches activated with 36 ports initially. NPCI to please confirm whether to quote for 2 x 24-port SAN switch with all 24 ports active per Switch OR to quote 2 x 48-port SAN switch with 36 ports active per Switch.		Minmum 16 port is Required if 16 ports is not Possible 24 Ports Licences can be Quoted

100	Technical Specification of Storage - Hyderabad	29	9.2 - D - 22	Each Switch should be configured with minimum 16 x 8Gbps FC ports & 11 x 10M LC-LC Cables	If NPCI agrees to change the Server form factor to Blade Servers, NPCI may please ask bidders to quote for 24 x 8Gbps FC Ports and 24 x 10M LC-LC Cables. However, If NPCI has to retain the Server form factor to Rack Servers only, then NPCI may please ask bidders to quote for 48-port capable 8Gbps FC Switches with 36 ports activated and 36 x 10M LC-LC Cables. Please confirm whether bidder should quote for 24 cables or 36 cables per switch.		Minmum 16 port is Required if 16 ports is not Possible 24 Ports Licences can be Quoted
101	Technical Specification of Storage - Hyderabad	29	9.2 - D - 24	Replacement of disk drive would only be performed after degaussing faulty disk drive at NPCI Onsite location. Any such scenarios will be covered under the support period and contract.	Instead of deguassing service, NPCI is requested to avail of Disk Retention Service or Keep Your HArd Drive Service option from OEMs whereby the faulty disk drive is retained by NPCI and destroyed / disposed or degaussed as per their convenient manner and timelines for complete peace of mind of data security.	Revised spec can possibly be as follows: **Bidders to include Disk Retention Option or Keep Your Hard Drive option in the price to allow NPCI to retain the faulty HDD.**	No Change in RFP
102	Technical Specification of Storage - Chennai	30	9.2 - E - 10	The storage should be configured with a total usable capacity of 17 TB using eMLC-SSDs with single SSD not larger than 1.6TB & 3TB in SAS 10K with single SAS disk not larger than 900GB. All the data to be written in RAID 5	can NPCI standarize to ask bidders to quote RAID 6 instead of RAID 5? This is because RAID 6 offers protection against dual disk failure instead of RAID 5 which offers protection against only one disk failure. Further, NPCI will get better performance on SAS capacity by standardizing on 600GB SAS 15K RPM for the 3TB usable capacity.	Revised spec can possibly be as follows: **The storage should be configured with a total usable capacity of 17 TB using Flash / eMLC-SSDs with single Drive not larger than 1.6TB & usable capacity of 3TB using 600GB 15K RPM SAS . All the data to be written in RAID 6.**	The storage should be configured with a total usable capacity of 17 TB using eMLC-SSDs with single SSD not larger than 1.6TB & 3TB in SAS 10K with single SAS disk not larger than 900GB. All the data to be write in RAID 10 and Read from RAID 5
103	Technical Specification of Storage - Chennai	30	9.2 - E - 11	Proposed storage should support less than 3 ms Response time with SSD.	What is the Read:Write ratio and Total IOPS for SSD layer assumed to deliver 3ms Response Time? If NPCI has no specific requirement on this front, NPCI can look to standarize on a particular IOPS value.	Revised spec can possibly be as follows: **Proposed storage should support less than 3 ms Response time and deliver atleast 55000 IOPS from the required usable Flash / SSD Drive capacity for 100% random workload and 70:30 Read:Write ratio.**	No Change in RFP

104	Technical Specification of Storage - Chennai	31	9.2 - E - 13	The storage array must support at least 180 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. The same should be upgradeable to minimum 500 drives by adding controllers / changing the controllers.	Minimum industry average of drive support is seen to be 260 drives per controller pair. Can NPCI standardize the specification to 260 disk drive support? Can NPCI standardize the specification to minimum 1200 drive upgradability? NPCI will get better investment protection by asking bidders to quote storage array that can support atleast 260 disk drives behind the proposed pair of controllers. Further, NPCI can increase its investment protection by asking bidders to quote for scalability to atleast 1200 drives.	Revised spec can possibly be as follows: **The storage array must support at least 260 disk drives behind the proposed pair of controllers. It must be a single or tightly clustered singly managed system rather than aggregate of multiple separate smaller boxes. The same should be upgradeable to minimum 1200 drives by adding controllers / changing the controllers.**	No Change in RFP
105	Technical Specification of Storage - Chennai	30	9.2 - E - 19	2 x 24-port SAN Switch with 18-ports active	By using Blade Servers as suggested by us in one of our query above, NPCI can fit the Server and Storage solution in 12 ports per SAN Switch. Additionally, if NPCI wants to connect Backup Master and Media Servers and Tape Libraries, NPCI will require additional 3 to 4 ports per SAN Switch. So, NPCI's ask for 18 ports active per SAN Switch matches the solution requirement. However, if NPCI wants to use Rack Servers only as presently asked in the RFP, NPCI will require 25 ports per SAN Switch for Server, Storage and Backup connectivity. For this NPCI will require 48-port capable SAN switches activated with 36 ports initially. NPCI to please confirm whether to quote for 2 x 24-port SAN switch with all 24 ports active per Switch OR to quote 2 x 48-port SAN switch with 36 ports active per Switch.		Minmum 18 port is Required if 18 ports is not Possible 24 Ports Licences can be Quoted
106	Technical Specification of Storage - Chennai	30	9.2 - E - 20	Each Switch should be configured with minimum 18 x 8Gbps FC ports & 18 x 10M LC-LC Cables	If NPCI agrees to change the Server form factor to Blade Servers, NPCI's ask matches solution requirement. However, If NPCI has to retain the Server form factor to Rack Servers only, then NPCI may please ask bidders to quote for 48-port capable 8Gbps FC Switches with 36 ports activated and 36 x 10M LC-LC Cables. Please confirm whether bidder should quote for 18 cables or 36 cables per switch.		Minmum 16 port is Required if 16 ports is not Possible 24 Ports Licences can be Quoted

107	Technical Specification of Storage - Chennai	31	9.2 - E - 22	Replacement of disk drive would only be performed after degaussing faulty disk drive at NPCI Onsite location. Any such scenarios will be covered under the support period and contract.	Instead of deguassing service, NPCI is requested to avail of Disk Retention Service or Keep Your HArd Drive Service option from OEMs whereby the faulty disk drive is retained by NPCI and destroyed / disposed or degaussed as per their convenient manner and timelines for complete peace of mind of data security.	Revised spec can possibly be as follows: **Bidders to include Disk Retention Option or Keep Your Hard Drive option in the price to allow NPCI to retain the faulty HDD.**	No Change in RFP
108	E) Storage Qty 1 for DR at Chennai location. Technical Specification	30	7	All the data to be written in RAID 10 and Read will be on RAID 5.	This tiering feature is offered by only one OEM requiring 2 tiers of SSD (R1/0 for Read Intensive and R5 for Write Intensive). The RFP requires 17 TB usable capacity using eMLC-SSDs with <3msec response time which can be delivered without requiring tiering. Hence request NPCI remove the technical requirement as the required capacity and performance can be delivered without the two tiered SSD approach.		No Change in RFP
109	E) Storage Qty 1 for DR at Chennai location. Technical Specification	30	7	All the data to be written in RAID 10 and Read will be on RAID 5.	Request you to include hardware based RAID controller		Qurey not clear
110	E) Storage Qty 1 for DR at Chennai location. Technical Specification	30	8	The proposed System must be populated with the following ports	Request you to include minimum 2 nos. of 6Gbps SAS physical ports per Controller for disk connectivity. All storage OEM support 6Gbps SAS or higher.		
111	E) Storage Qty 1 for DR at Chennai location. Technical Specification	31	19	2 x 24-port SAN Switch with 18-ports active	SAN switch ports are avaliable as multiple of 12 hence request you to include 24 active ports per SAN switch. Hence 24 x 8Gbps FC ports and 24 x 10M LC-LC cables.		Minmum 18 port is Required if 18 ports is not Possible 24 Ports Licences can be Quoted
112	E) Storage Qty 1 for DR at Chennai location. Technical Specification	31	20	Each Switch should be configured with minimum 18 x 8Gbps FC ports & 18 x 10M LC-LC Cables	SAN switch ports are avaliable as multiple of 12 hence request you to include 24 x 8Gbps FC ports and 24 x 10M LC-LC cables for each SAN switch.		Please check the above and quote
113	E) Storage Qty 1 for DR at Chennai location. Technical Specification	31	22	Replacement of disk drive would only be performed after degaussing faulty disk drive at NPCI Onsite location. Any such scenarios will be covered under the support period and contract.	Request NPCI to consider Data At Rest Encryption using Controller based or Self Encrypting Drives. This will ensure the all data written to disk is protected against unauthorized drive removal (lost or stolen) and eliminate the need for degaussing on drive failure.		No Change in RFP
114	L) PR SAN	10	16	Remote Replication	Is replciation license required for DC/DR asynchronous replication.		yes
115	L) PR SAN	11	19	Storage Virtualization	Request you to confirm the total capacity of existing storage at NPCI under single point of control.		Qurey not clear
116	Section 9- Technical Specification: A) Application Server	24	7	2x128GB using 32GB DIMMS and scalable up to 576GB	Please confirm that you need 256GB capacity using 32GB memory and Please modify the clause - 256 GB Memory capacity using 32 GB DIMM	Considered 256 GB Memory capacity	256 GB Memory
117	Section 9- Technical Specification: A) Application Server	24	12	Microsoft® Windows Server® 2008 & Microsoft Windows® HPC Server 2008	Request you to remove the OS as it is already End of Sale	HPC feature is available in Microsoft Windows Server 2012 R2	proposed Servers need to support minimim Windows 2008 or 2008 R2

118	Section 9- Technical Specification: B) DB server	26	7	2x128GB using 32GB DIMMS and scalable up to 576GB	Please confirm that you need 256GB capacity using 32GB memory and Please modify the clause - 256 GB Memory capacity using 32 GB DIMM	Considered 256 GB Memory capacity	256 GB Memory
119	Section 9- Technical Specification: B) DB server	26	12	Microsoft® Windows Server® 2008 & Microsoft Windows® HPC Server 2008	Request you to remove the OS as it is already End of Sale	HPC feature is available in Microsoft Windows Server 2012 R2	proposed Servers need to support minimim Windows 2008 or 2008 R2
120	Section 9- Technical Specification: C) Development server	27	12	Microsoft® Windows Server® 2008 & Microsoft Windows® HPC Server 2008	Request you to remove the OS as it is already End of Sale	HPC feature is available in Microsoft Windows Server 2012 R2	proposed Servers need to support minimim Windows 2008 or 2008 R2
121	Additional servers and storage specification -PR Site	2	3- Interconnect support	Should support simultaneous housing of Ethernet (1GbE and 40 GbE), FC, iSCSI, IB interconnect fabrics, offering Hot Pluggable & Redundancy as a feature. Enclosure Should have minimum 6 Interconnect Bays (Including redundancy)	Request to share the requirement, Since in none of the requirements customer needs more than two type of Interconnects. For eg : 10G + FC and infiniband is predominantly used in HPC env.	Enclosure Should have minimum 4 Interconnect Bays (Including redundancy)	No Change in RFP
122	Additional servers and storage specification -PR Site	3	2-Form Factor	Half height Blade	Half height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
123	Additional servers and storage specification -PR Site	4	2-Form Factor	Half height Blade	Half height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
124	Additional servers and storage specification -PR Site	5	2-Form Factor	Full height Blade	Full height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
125	Additional servers and storage specification -PR Site	5	7- Internal Storage	4 * 300 GB 15K hot-plug SAS Drives	In blade deployment scenario which is connected to external storage, the compute host hold the OS & application data only (max logs). Hence 300 GB capacity is sufficient , looking at scalability and flexibility we recommend 2 x 600 15 K RPM HDD with RAID 1 and any additional capacity augumentation is recommenedated to be done from storage	2 * 600GB 15 K RPM hot-plug SAS Drives	No Change in RFP
126	Additional servers and storage specification -PR Site	6	2-Form Factor	Full height Blade	Full height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
127	Additional servers and storage specification -PR Site	6	7- Internal Storage	4 * 300 GB 15K hot-plug SAS Drives	In blade deployment scenario which is connected to external storage, the compute host hold the OS & application data only (max logs). Hence 300 GB capacity is sufficient , looking at scalability and flexibility we recommend 2 x 600 15 K RPM HDD with RAID 1 and any additional capacity augumentation is recommenedated to be done from storage	2 * 600GB 15 K RPM hot-plug SAS Drives	No Change in RFP

128	Additional servers and storage specification -PR Site	7	2-Form Factor	Full height Blade	Full height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
129	Additional servers and storage specification -PR Site	7	7- Internal Storage	4 * 300 GB 15K hot-plug SAS Drives	In blade deployment scenario which is connected to external storage, the compute host hold the OS & application data only (max logs). Hence 300 GB capacity is sufficient , looking at scalability and flexibility we recommend 2 x 600 15 K RPM HDD with RAID 1 and any additional capacity augumentation is recommenedated to be done from storage	2 * 600GB 15 K RPM hot-plug SAS Drives	No Change in RFP
130	Additional Servers and Storage Specifications-DR Site	12	3- Interconnect support	Should support simultaneous housing of Ethernet (1GbE and 40 GbE), FC, iSCSI, IB interconnect fabrics, offering Hot Pluggable & Redundancy as a feature. Enclosure Should have minimum 6 Interconnect Bays (Including redundancy)	Request to share the requirement, Since in none of the requirements customer needs more than two type of Interconnects. For eg : 10G + FC and infiniband is predominantly used in HPC env.	Enclosure Should have minimum 4 Interconnect Bays (Including redundancy)	No Change in RFP
131	Additional Servers and Storage Specifications-DR Site	13	2- Form Factor	Half height Blade	Half height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
132	Additional Servers and Storage Specifications-DR Site	14	2- Form Factor	Half height Blade	Half height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
133	Additional Servers and Storage Specifications-DR Site	15	2-Form Factor	Full height Blade	Full height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
134	Additional Servers and Storage Specifications-DR Site	15	7- Internal Storage	4 * 300 GB 15K hot-plug SAS Drives	In blade deployment scenario which is connected to external storage, the compute host hold the OS & application data only (max logs). Hence 300 GB capacity is sufficient , looking at scalability and flexibility we recommend 2 x 600 15 K RPM HDD with RAID 1 and any additional capacity augumentation is recommenedated to be done from storage	2 * 600GB 15 K RPM hot-plug SAS Drives	No Change in RFP
135	Additional Servers and Storage Specifications-DR Site	16	2-Form Factor	Full height Blade	Full height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
136	Additional Servers and Storage Specifications-DR Site	16	7- Internal Storage	4 * 300 GB 15K hot-plug SAS Drives	In blade deployment scenario which is connected to external storage, the compute host hold the OS & application data only (max logs). Hence 300 GB capacity is sufficient , looking at scalability and flexibility we recommend 2 x 600 15 K RPM HDD with RAID 1 and any additional capacity augumentation is recommenedated to be done from storage	2 * 600GB 15 K RPM hot-plug SAS Drives	No Change in RFP

137	Additional Servers and Storage Specifications-DR Site	17	2-Form Factor	Full height Blade	Full height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
138	Additional Servers and Storage Specifications-DR Site	17	7- Internal Storage	4 * 300 GB 15K hot-plug SAS Drives	In blade deployment scenario which is connected to external storage, the compute host hold the OS & application data only (max logs). Hence 300 GB capacity is sufficient , looking at scalability and flexibility we recommend 2 x 600 15 K RPM HDD with RAID 1 and any additional capacity augumentation is recommenedated to be done from storage	2 * 600GB 15 K RPM hot-plug SAS Drives	No Change in RFP
139	Additional Servers and Storage Specifications-DR Site	18	2-Form Factor	Full height Blade	Full height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
140	Additional Servers and Storage Specifications-DR Site	19	2- Form Factor	Half height Blade	Half height terminology is vendor specific and this point doesn't have any bearing on the project, request to drop the clause		No Change in RFP
141	L) PR SAN	9 & 32	7	Capacity: The proposed storage must be provided with 34 TB of usable capacity using 800GB eMLC SSD with RAID5, 6 TB of usable capacity using 300GB 15K SAS drives with RAID1/0, 56 TB of usable capacity using 600GB 10K drives with RAID5. Global hot spare additional.	NPCI may please be open to accept higher than 800GB SSD / Flash Drive in the solution so that NPCI can avail of higher performance higher capacity Flash Drives available in industry.	Revised spec can possibly be: ***The proposed storage must be provided with 34 TB of usable capacity using 800GB or higher SSD/Flash with RAID5, 6 TB of usable capacity using 300GB 15K SAS drives with RAID1/0, 56 TB of usable capacity using 600GB 10K drives with RAID5. Global hot spare additional.***	No Change in RFP
142	L) PR SAN	11 & 34	16	Remote Replication: The replication solution must support three-way zero data loss solution with functionality to provide delta-resync capability from surviving site in case of a disaster.	NPCI wants the RGCS Storage at only 2 sites - namely Chennai and Hyderabad. So, please confirm that three way zero data loss solution is not required at this stage and that the storage model proposed should support three way zero data loss in future as and when required.	Revised spec can possibly be: ***The proposed storage model should support three-way zero data loss replication solution with functionality to provide delta-resync capability from surviving site in case of a disaster - in future as and when needed and deployed.***	minimum two way replication required

143	I) DR SAN	21 & 45	7	Capacity: The proposed storage must be provided with 39 TB of usable capacity using 800GB eMLC SSD with RAID5, 8 TB of usable capacity using 300GB 15K SAS drives with RAID1/0, 76 TB of usable capacity using 600GB 10K drives with RAID5. Global hot spare additional.	NPCI may please be open to accept higher than 800GB SSD / Flash Drive in the solution so that NPCI can avail of higher performance higher capacity Flash Drives available in industry.	Revised spec can possibly be: ***The proposed storage must be provided with 39 TB of usable capacity using 800GB or higher SSD/Flash with RAID5, 8 TB of usable capacity using 300GB 15K SAS drives with RAID1/0, 76 TB of usable capacity using 600GB 10K drives with RAID5. Global hot spare additional.***	no Change in RFP
144	I) DR SAN	22 & 46	16	Remote Replication: The replication solution must support three-way zero data loss solution with functionality to provide delta-resync capability from surviving site in case of a disaster.	NPCI wants the RGCS Storage at only 2 sites - namely Chennai and Hyderabad. So, please confirm that three way zero data loss solution is not required at this stage and that the storage model proposed should support three way zero data loss in future as and when required.	Revised spec can possibly be: ***The proposed storage model should support three-way zero data loss replication solution with functionality to provide delta-resync capability from surviving site in case of a disaster - in future as and when needed and deployed.***	minimum two way replication required
145	Corrigendum-1 - Blade Chassis	2	2	Blade Chassis : The maximum height of the Chassis should be 10U	The maximum height of the Chassis should be 12U	Huawei E9000 with 12U height - Justification. 12U rack height as following advantages over 10U rack : 1) it can support upto next 7 to 10 years and all latest Intel CPU's. 2) 12U support 128 network port where in 10U support only max . 120 network port 3) 12U can control heat radiation more so that CPU performace is not degraded in any ways 4) 10U support only 14 blade but 12U support 16 blades so 12u support 2 more blades and aslo saves on the cost / future investment. 5) Also shortly 10U Chassis will be coming EOM and in near future all Chassis will be manufactured with 12U. so we request you to	Blade Chassis : The height of the Chassis should be 10U or higher

146	Corrigendum-1 - Blade Chassis	2	2	Should support stacking of up to 9 chassis	this is certain OEM specific , kindly delete said clause from the RFP.		vendor can quote more also
147	Request for Proposal for Supply, Installation & Maintenance of Servers & Storage	25	Table 9.2	Internal Dual SD Module (Failsafe Hypervisor)	this is certain OEM specific , kindly delete said clause from the RFP		Minimum Single Internal SD Module is Required
148	Technical Specification of Servers and Storage is as under of corigendum	Page No 8 of Corigendum	Point L -PR SAN point 1-storage architechture	The proposed storage must be an enterprise class SAN storage supporting multiple controllers/directors, offering scale-out architecture for better availability, scalability and performance; whereby processor, global Cache, disk, ports can be scaled linearly by adding multiple Controllers / directors. The proposed storage must be scalable to minimum four SAN controllers/directors.	This architecture is only available in Monolithic storage & limited to 1 or 2 Storage vendors. However the performance & scalability can be met with enterprise-class modular storage from Dell		Bidder can propose the no of controllers as per the performance requirements provided by NPCI . If incase of any failure of the componets (Controller /Directors) , the level of performance need to be maintained
149	Technical Specification of Servers and Storage is as under of corigendum	Page No 8 of Corigendum	Point L -PR SAN point 1-storage architechture	The proposed SAN storage must be a single enterprise class storage product, and not a storage solution with multiple silo/groups of dual-controller storage in a clustered configuration proposed to meet the performance and scalability requirement.	Dual-controller configuration supports 1024 drives & 300000+ IOPS		Bidder can propose the no of controllers as per the performance requirements provided by NPCI . If incase of any failure of the componets (Controller /Directors) , the level of performance need to be maintained
150	Technical Specification of Servers and Storage is as under of corigendum	Page No 9 of Corigendum	Point L -PR SAN point 3-Ports	The proposed storage should have minimum 16 nos. of 16Gbps FC ports for host connectivity and minimum 16 nos. of 6Gbps SAS links for disk connectivity. Additional ports for replication to be included.	There are SAN Switches asked with the solution of 24-port each & so having so many FE-Ports is just an over-Kill & consume ports on SAN Switch. Request to pl. change to "Proposed pair of Storage controllers will be configured with 12 x 16Gbps Front-End FC ports, 16 x 6Gbps Back-End SAS ports. Additional ports for replication to be included."		Bidder can propose the no of controllers as per the performance requirements provided by NPCI . If incase of any failure of the componets (Controller /Directors) , the level of performance need to be maintained
151	Technical Specification of Servers and Storage is as under of corigendum	Page No 9 of Corigendum	Point L -PR SAN point 4-Cache	The proposed storage must provide dynamic cache allocation in line with the changing read/write workload.	With features like Tiering & SSD Disks the dynamic performance requirement can be managed in much better & faster way. Asking this dynamic feature from Cache will have limited performance enhancement as there is limit to avaiability of Cache also, this kind of features are only available in Monolithic Storage		Proposed architechture of the Storage cache should be in such a way that performance of the workload will not get impact.
152	Technical Specification of Servers and Storage is as under of corigendum	Page No 9 of Corigendum	Point L -PR SAN point 4-Cache	The proposed storage should be provided with a minimum of 512GB of global cache memory.	Pl. change it to 256GB across controllers		Proposed architechture of the Storage cache should be in such a way that performance of the workload will not get impact.

153	Technical Specification of Servers and Storage is as under of corigendum	Page No 9 of Corigendum	Point L -PR SAN point 4-Cache	The proposed storage should support cache coherancy. In the event of a controller failure write cache of the redundant controller of the pair should not be disabled, so as not to impact application performance.	This feature is not required in Dell solution as in our architecture we disable write cache when data is written on SSDs. Request to pl. remove this point		Proposed architechture of the Storage cache should be in such a way that performance of the workload will not get impact.
154	Technical Specification of Servers and Storage is as under of corigendum	Page No 9 of Corigendum	Point L -PR SAN point 5 Disk Drive Support	The proposed storage must be scalable to additional 1200 drives.	Proposed pair of Storage controllers are scalable to 1024 drives. Pl. change it to - "The proposed storage must be scalable to additional 800 drives."		Proposed solution should have the scability upto 200 % additionally of the Current NPCI Capcity.
155	Technical Specification of Servers and Storage is as under of corigendum	Page No 9 of Corigendum	Point L -PR SAN point7 Capacity	The proposed storage must be provided with 34 TB of usable capacity using 800GB eMLC SSD with RAID5, 6 TB of usable capacity using 300GB 15K SAS drives with RAID1/0, 56 TB of usable capacity using 600GB 10K drives with RAID5. Global hot spare additional. The storage should provide minimum 50,000 IOPS with a block size of 8K and 70:30	Suggestion - If we need performance pl. increase the required useable capacity for SSD or 15K rpm disks. Since now eMLC SSD are available in 1.6TB as well you can ask for the same. Also, you can also ask for both 6TB & 56TB useable using 600GB 15K drives with RAID5, for best & balanced performance.		Bidder can propose 800GB / 1.6TB eMCL SSD & 56 TB usable capacity 600GB 10K or higher
156	Technical Specification of Servers and Storage is as under of corigendum	Page No 10 of Corigendum	Point L -PR SAN point 12 Data Protection	The proposed storage should ensure end-to-end (from the host all the way to disk) data integrity checking using the ANSI T10 data integrity field (DIF) standard or equivalent methods. The T10 data integrity standard or equivalent proprietary methods must be supported on all types of disks.	Feature in the Roadmap & will come in next 6 months, will be available to existing customers with no extra charge		Bidder should provide this on before implematations.
157	Technical Specification of Servers and Storage is as under of corigendum	Page No 10 of Corigendum	Point L -PR SAN point 14 Full copy Clone	The proposed SAN storage should support full copy Clones. The storage should support incremental updates (delta re-synchs) to minimum of 2 targets LUN's (clones) post the initial full sync. Provide all the necessary licenses for entire offered capacity of full copy Clones creation and restore.	Partial - Supports full copy clone to 1 target		Proposed Storage storage should support minmum of the 1 target

158	Technical Specification of Servers and Storage is as under of corigendum	Page No 10 of Corigendum	Point L -PR SAN point 16 Remote application	The asynchronous replication in proposed solution should support incremental data update with synchronization period less than 60 seconds to achieve RPO of less than four minute. Provide all the necessary licenses for full capacity of asynchronous replication.	The ask is only supported from 1 or 2 vendor using a proprietory appliance. Request to pl. change it to "The proposed solution should supports asynchronous replication with incremental data update of 15 mins."		Proposed stroage should replicate LUNS parallely not in sequential manner . This is for the future scope.
159	SAN -Qty-1 L PR SAN	Page No 8	L PR SAN Serial No 1	The proposed storage must be an enterprise class SAN storage supporting multiple controllers/directors, offering scale-out architecture for better availability, scalability and performance; whereby processor, global Cache, disk, ports can be scaled linearly by adding multiple Controllers / directors. The proposed storage must be scalable to minimum four SAN controllers/directors.	This architecture is only available in Monolithic storage & limited to 1 or 2 Storage vendors. However the performance & scalability can be met with enterprise-class modular storage from Dell		Bidder can proposed no of controller as per the performance asked by NPCI . Incase any componets (Controller /Directors) same perforamce need to be Maintained
160	SAN -Qty-1 L PR SAN	Page No 8	L PR SAN Serial No 1	The proposed SAN storage must be a single enterprise class storage product, and not a storage solution with multiple silo/groups of dual-controller storage in a clustered configuration proposed to meet the performance and scalability requirement.	Dual-controller configuration supports 1024 drives & 300000+ IOPS		Bidder can propose the no of controllers as per the performance requirements provided by NPCI . If incase of any failure of the componets (Controller /Directors) , the level of performance need to be maintained
161	PORT	Page No 9	PORT	The proposed storage should have minimum 16 nos. of 16Gbps FC ports for host connectivity and minimum 16 nos. of 6Gbps SAS links for disk connectivity. Additional ports for replication to be included.	There are SAN Switches asked with the solution of 24-port each & so having so many FE-Ports is just an over-Kill & consume ports on SAN Switch. Request to pl. change to "Proposed pair of Storage controllers will be configured with 12 x 16Gbps Front-End FC ports, 16 x 6Gbps Back-End SAS ports. Additional ports for replication to be included."		Bidder can proposed Number of Ports as per the NPCI Requirements and future Scaliblity and Performance . Incase any Critical componets failures also performance need to be Maintained
162	CACHE	Page No 9	CACHE	The proposed storage must provide dynamic cache allocation in line with the changing read/write workload.	With features like Tiering & SSD Disks the dynamic performance requirement can be managed in much better & faster way. Asking this dynamic feature from Cache will have limited performance enhancement as there is limit to avaiability of Cache also, this kind of features are only available in Monolithic Storage		Proposed architechture of the Storage cache should be in such a way that performance of the workload will not get impact.
163	CACHE	Page No 9	CACHE	The proposed storage should be provided with a minimum of 512GB of global cache memory.	Pl. change it to 256GB across controllers		Proposed architechture of the Storage cache should be in such a way that performance of the workload will not get impact.

164	CACHE	Page No 9	CACHE	The proposed storage should support cache coherancy. In the event of a controller failure write cache of the redundant controller of the pair should not be disabled, so as not to impact application performance.	This feature is not required in Dell solution as in our architecture we disable write cache when data is written on SSDs. Request to pl. remove this point		Proposed architechture of the Storage cache should be in such a way that performance of the workload will not get impact.
165	Disk Drive Support	Page No 9	Disk Drive Support	The proposed storage must be scalable to additional 1200 drives.			Proposed solution should have the scability upto 200 % additionally of the Current NPCI Capcity.
166	Capacity	Page No 9	Capacity	The proposed storage must be provided with 34 TB of usable capacity using 800GB eMLC SSD with RAID5, 6 TB of usable capacity using 300GB 15K SAS drives with RAID1/0, 56 TB of usable capacity using 600GB 10K drives with RAID5. Global hot spare additional. The storage should provide minimum 50,000 IOPS with a block size of 8K and 70:30	Suggestion - If we need performance pl. increase the required useable capacity for SSD or 15K rpm disks. Since now eMLC SSD are available in 1.6TB as well you can ask for the same. Also, you can also ask for both 6TB & 56TB useable using 600GB 15K drives with RAID5, for best & balanced performance.		Bidder can propose 800GB / 1.6TB eMCL SSD & 56 TB usable capacity 600GB 10K or higher
167	Data Protection	Page No 10	Capacity	The proposed storage should ensure end-to-end (from the host all the way to disk) data integrity checking using the ANSI T10 data integrity field (DIF) standard or equivalent methods. The T10 data integrity standard or equivalent proprietary methods must be supported on all types of disks.	Feature in the Roadmap & will come in next 6 months, will be available to existing customers with no extra charge		Bidder should provide this on before implematations.
168	Full Copy Clone	Page No 10	Full Copy Clone	The proposed SAN storage should support full copy Clones. The storage should support incremental updates (delta re-synchs) to minimum of 2 targets LUN's (clones) post the initial full sync. Provide all the necessary licenses for entire offered capacity of full copy Clones creation and restore.	Supports full copy clone to 1 target		Proposed Storage storage should support minmum of the 1 target need to clone

169	Remote replication	Page No 10	Remote replication	The asynchronous replication in proposed solution should support incremental data update with synchronization period less than 60 seconds to achieve RPO of less than four minute. Provide all the necessary licenses for full capacity of asynchronous replication.	The ask is only supported from 1 or 2 vendor using a proprietory appliance. Request to pl. change it to "The proposed solution should supports asynchronous replication with incremental data update of 15 mins."		Proposed stroage should replicate luns parallely not in sequential manner . This is for the future Scope.
170	Storage Virtualization	Page No 11	Storage Virtualization	The proposed storage solution should be able to virtualize existing storage arrays at NPCI from EMC, IBM, HP, Dell, Net App for provisioning providing a single management interface and hence single point of control.	Not complied		Optional