

Andhra Pradesh State FiberNet Limited (APSFL)

**Procuring Hardware/Software Infrastructure required to support the provision of
Middleware and DRM& other software for IPTV, OTT Services & VAS Delivery over
the AP Fibergrid Network**

Tender No:APSFL/Middleware & DRM Software/63/2016 Dt: 01/09/2016

Corrigendum-1 - dated 15/09/2016

S.No	Section in the Tender	Page No.	Clause in RFP	Revised Clause
1	A	4	Bid Closing Date& Time 16-09-2016 & 3.00PM	Bid Closing Date& Time - 23-09-2016 & 3.00PM
2	A	4	Eligibility criteria Bid Opening 16-09-2016 & 4.00PM	Eligibility criteria Bid Opening 23-09-2016 & 4.00PM
3	D	8	Scope of Work	Revised scope of work is attached as Annexure-I
4	Annexure- 12	39	Price Bid Form	Revised Price Bid form is attached as Annexure-II

Annexure-1

D. Scope of Work:

APSFL is deploying Fiber to the home across Andhra Pradesh to deliver Triple play services including IPTV, Broadband Internet and Fixed Telephony services. As part of this project it has chosen Middleware and DRM & other software for IPTV, OTT Services & VAS Delivery to deliver secured Television services (Live Channels, Value Added Services including Video on Demand, Catchup TV, Government and Education related application) in the existing APSFL's IP network. The DRM (Digital Rights Management) solutions will secure the channels and ensure delivery to subscribed users connected to IP Set top boxes.

APSFL intends to deliver these Television services across one million households (connected with IP Set top boxes) of Andhra Pradesh in the first phase. In this regards APSFL needs Hardware infrastructure for installation of Middleware & DRM & other software as detailed below

1. Server computing requirement for Corpus middleware application, DRM, Maria Database in cluster

Item	Feature description
Processors	One chassis with 16 Blades or 2 chassis of 8 blades and each blade shall have a minimum of two (2) Intel E5 CPUs , 2.6Ghz or more, 10 Core or more, 20 MB cache each and should supports all Intel CPUs , including the highest performance Intel E5 20 Core or more, 2.6Ghz or more CPUs
Storage	The server should support SAS, SATA and SSD hard disk drives. Server should be configured with 2 Nos of 600 GB , 12 Gbps 10K RPM SAS HDDs in Raid 0,1
	Must supports booting hypervisors
	The Blade should have support for Boot from SAN
Memory	The Blade Server should be configured with 64 GB (8x8GB) of DDR4 Memory from day one. Each Processor should be Configured with Four (4) Identical DDR4 DIMMS for Best Memory Bandwidth and Low Latency and Should support minimum 1.5 TB of DDR4 memory per Blade with Two Nos of all supported with all CPU configurations including the highest performance CPUs the Intel E5, 20 core or more 2.6Ghz CPUs.
Network	The Blade server should support both Ethernet and FC connectivity
	FC Connectivity should be 8 Gbps or more

	It should have 20 GB or more connectivity per server with a minimum of 2 ports , which is expandable to 40 GB or more connectivity per server
	It should have two adapters per server to support above for card level redundancy
	Should include support for virtualized adapter with up to 40 Gb connectivity and which can be partitioned into more than 32 NICs or HBAs , in virtualized environment
	In a virtualized environment , the virtualized adapter should support by passing the hypervisor
	Should be able to support VM Direct Path I/O with Vmotion on VMware vSphere
	Adapter and QoS policies can be set and defined for each of the vNICs or vHBAs created in the virtualized adapter
Management	It should support remote KVM capability from an external keyboard, video monitor and mouse to all blades installed in the chassis through the management controllers
	Remote KVM should support up to 4 active sessions
Others	The Blade should be hot pluggable
	The chassis density should be better than those offered by the typical 1 U rack server
Environmental	Operating Temperature support from 50 to 95°F (10 to 35°C) and Non operating Temperature from -22 to 140°F (-30 to 60°C)
	Operating Humidity : - 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non- condensing and Non-operating Humidity from 5% to 93% non condensing.
	Operating Altitude: from 0 to 10,000 ft (0 to 3000m) and Non-Operating Altitude: - Up to 9,144 m (30,000 ft).
Power & Cooling	N+1 redundant fans
	N+N Power Supply Redundancy Support in Chassis
Warranty	3 years 24x7 Onsite Support and support has to be provided
	directly by OEM during the warranty period
Operating System	Server should be offered with Redhat Enterprise Linux 7.x operating System with all required licenses along with support Subscription from Red HAT for a Period of Three Years.
Database	Server should be offered with Maria DB enterprise cluster license and support for 3

Software	years from the same ISV (Maria DB).
Monitoring Software	System should be provided with monitoring software to enable CPU, Memory, IO, Interrupts, IPC queues, processes all OS features.
Remote System Monitoring	Proposed system should be provided with Remote Support process that deliver 24x7 monitoring, pre-failure alerts, automatic call logging.

1.1 Chassis Specifications for Server:

Parameter	Description
Blade Chassis	Blade chassis shall be 19" Electronic Industries Alliance Standard Width rack mountable and provide appropriate rack mount kit.
Power	The enclosure should be populated fully with power supplies of the highest capacity & energy efficiency of a minimum of 90%.
	The power subsystem should support N + N power redundancy (where N is at least equal to 2) for a fully populated chassis with all servers configured with the highest CPU configuration (135 W and above) , maximum memory and IO configuration possible
Cooling	Each blade enclosure should have a cooling subsystem consisting of redundant hot pluggable fans or blowers enabled with technologies for improved power consumption and acoustics
Chassis connectivity	The chassis should support redundant modules for connectivity . The uplink aggregated converged (LAN + SAN) connectivity from the chassis should be able to support up to 10 Gb per server blade or 5 Gbps per Server in case of one module failure
Management Software	Redundancy and HA should be built in the management subsystem so that if one management module/solution fails other should be able to take over automatically. Centralized Redundant Management solution should be provided so that management of all blade servers across multiple chassis within Datacenter can be done from single console. If the management system runs as a virtual machine , then all hardware and software licenses to enable this should be included
	Role Based Access Control and remote management capabilities including remote KVM should be included
	Movement of server identity from one slot to another in the event of server failure within chassis as well as across chassis.

	Should support a stateless environment where server identity is created by the administrator who defines the server BIOS version, MAC ID, NIC firmware version, WWPN , FC-HBA firmware version , Adapter QoS , Management module firmware version, Server Boot Policies, KVM IP etc
	Must support the ability to rollback firmware from current active versions to the previous version for the Server BIOS, Adapter firmware and bootcode versions , individual server management chips from the same console.
	Firmware upgrade, rollback should be possible for all the components in the infrastructure including the server, chassis management modules , Ethernet switch modules, SAN switch modules, Other IO modules from the same console that is used to manage the individual blades
	Should support multiple level of authentication methods including TACACs+, LDAP and RADIUS
Licensing	Should include all necessary licenses for management for a fully loaded chassis.
Embedded / Network Uplinking Switch	The fabric switches should support 1 Gb and 10 Gb connectivity
	It should support the direct connection to FC, FCoE enabled storage arrays and NAS , iSCSI based arrays

2. Storage requirements for Middleware, DRM, Database and 5000 Hours Video On Demand:

a. 20 TB SSD.

SI No	Feature	Description
1	Storage Capacity	Proposed storage system should be configured with minimum 20TB Usable space using SSD Drives in RAID DDP with minimum 2 hotspare. The proposed storage system should be scalable to at least 40 TB.
2	Controller	Dual I/O controller, with minimum of four 16Gbps Front-End FC SFP per controller & two 12Gbps Back-end SAS ports per controller. GUI/CLI management S/W for controller under Linux/Windows
3	Cache	64GB usable cache across dual controller. Cache should be mirrored between the controllers. Must support either Cache battery backup for a minimum of 72 hours during power failure to prevent possible data loss or cache de staging to disk/Flash.

4	RAID Level	RAID DDP or equivalent with appropriate number of hot Spares should be configured
5	RAID level support	0, 1, 5, 10, 6 and DDP
6	Performance	Proposed storage should be capable of handling 12GB/Sec throughput and scalable upto 48GB/Sec
7	Architecture	The Proposed Storage systems with No single point of failure in entire storage solution
8	Controller software and Non-Disruptive Upgrade	Firmware should be upgradeable for functionality improvement and enhancements. Must support non-disruptive upgrade.
9	Protocol Support	The storage system must have auto-negotiating 16/8Gbps FC
10	OS Support	It must support heterogeneous client operating systems, which include all popular flavors of Windows, Linux and hypervisors like VMWare, Hyper-V (Windows Server® 2008 & 2012 , Linux, Vmware, Hyper-V etc.
11	SAN Features	Storage Array should be configured with thin provisioning, snapshot, cloning, Sync and Async replication features.
12		Should support minimum 64 host
13		Should support minimum 512 luns.
14		Should support VAAI, VASA API for vmware to integrate within virtual environment.
15	Management	Management Comprehensive storage resource management software(GUI, Web GUI) for fully configuring, managing and administering block storage and associated functionalities including deployment, provisioning, protection and performance monitoring.
16	Warranty	The proposed storage should be provided with 3 years comprehensive warranty with 6 hours of failed parts onsite replacement.

b. 120 TB – SAS

SI No	Feature	Description
1	Storage Capacity	Proposed storage system should be configured with minimum 120 TB Usable space with minimum 2 hotspare. The proposed storage system should be scalable to 500 TB.
2	Controller	Dual I/O controller, with minimum of four 16Gbps FC Front-End SFP per controller & two 12Gbps Back-End SAS ports per controller. GUI/CLI management S/W for controller under Linux/Windows
3	Cache	32GB usable cache across dual controller. Cache should be mirrored between the controllers. Must support either Cache battery backup for a minimum of 72 hours during power failure to prevent possible data loss or cache de staging to disk/Flash. The storage should have the facility to use DRAM/SSD drives/Flash minimum of 128GB and as extended cache upto 5TB, if required.
4	Disk Speed	Minimum 7.2 Krpm
5	RAID Level	RAID DDP or equivalent with appropriate number of hot Spares should be configured
6	RAID level support	0, 1, 5, 10, 6
7	Performance	Proposed storage should be capable of handling 6GB/Sec throughput and scalable upto 48GB/Sec
8	Architecture	The Proposed Storage systems with No single point of failure in entire storage solution
9	Controller software and Non-Disruptive Upgrade	Firmware should be upgradeable for functionality improvement and enhancements. Must support non-disruptive upgrade.
10	Protocol Support	The storage system must have auto-negotiating 16/8Gbps FC

11	OS Support	It must support heterogeneous client operating systems, which include all popular flavors of Windows, Linux and hypervisors like VMWare, Hyper-V Windows Server® 2008 & 2012 , Linux, Vmware, Hyper-V etc.
12	SAN Features	Storage Array should be configured with thin & thick provisioning, snapshot, cloning, Sync and Async replication features.
13		Should support minimum 64 host
14		Should support minimum 512 luns.
15		Should support VAAI, VASA API for vmware to integrate within virtual environment.
16	Management	Management Comprehensive storage resource management software(GUI, Web GUI) for fully configuring, managing and administering block storage and associated functionalities including deployment, provisioning, protection and performance monitoring.
17	Warranty	The proposed storage should be provided with 3 years comprehensive warranty with 6 hours of failed parts onsite replacement.

3. SAN Switches

SN	Specification
A	Hardware and Interface Requirement
1	The Switch should be a multilayer fabric switch supporting SAN environment from small standalone to enterprise data center edge switch deployment
2	There switch should not have any single point of failure for power supplies and fan Trays
3	Should be rack mounting with 1 RU in size
4	Switch should support up to 48 autosensing fiber channel ports capable of 2, 4, 8 & 16Gbps speed

5	Should be activated with 24 number of ports with 16 Gbps speed with SFP+ transceivers
	Performance
6	2/4/8/16Gbps autosensing FC ports with 16 Gbps dedicated bandwidth on each ports
7	Should support 64 Buffer credit on each ports and 256 maximum on a group of 4 ports wherein one port can have up to 253
8	Should support 16 physical links in a Port channel
9	Should support Virtual output Queuing to ensure line rate performance on each port by eliminating the HOL
	Reliability and Availability
10	Hot-Swappable Power supply, Fan trays and SFP+
11	Should support In-service Software upgrade (ISSU) which allows software upgradation while FC ports carry the traffic
12	Should support Stateful process restart
13	Should support Fabric-based multipathing and Per-VSAN fabric Services
14	Should support Port tracking and VVRP for management connection
	Intelligent Traffic management Fabric Services
15	Should have Login and fabric Configuration server Services
16	Switch should have Public loop, Broadcast and in-order delivery fabric services
17	Should support Virtual SAN and flow based & Zone based QoS
18	Should support Advance traffic management features such as fabric wide QOS and inter-VSAN routing
19	Should support Port channel with multipathing load balancing
	Should support Following Protocols
20	FC-PH, FC-PI, FC-FS , FC-LS ,FC-MI, FC-IFR and FC-FLA
21	FC-PI, FC-PI-2, FC-PI-3, FC-PI-4, FC-PI-5

22	FC-FS, FC-FS-2, FC-FS-3
23	Fiber Channel Class 2, Class 3 and Class F
24	Fiber Channel enhanced SD, ST & TE port types
25	Should support in-band management using IP over fiber Channel
26	IPv4, IPv6 & ARP over Fiber channel
	Security features
	Should support following enterprise Network Security features
27	Per-VSAN role based AAA using RADIUS, LDAP, AD and TACACS+.
28	Hardware-enforced Zoning, Broadcast Zones and Control plane security
29	Should support FC-SP Host-to-Switch and switch-to-switch Authentication
30	SFTP, SSHv2 and SNMPv3
	Management
31	Should support configurable and manageable using CLI or DCNM tool
32	Should support Power On Auto provisioning (POAP) to Automate software image upgrades & configuration file installation on newly deployed switches
33	Should support intelligent diagnostics, protocol decoding, network analysis tool
32	Should have out of band 10/100/1000 Ethernet management Port
	Power
36	AC input: 100 to 240V AC
37	Back to Front Airflow
38	Should not consume more then 130W power with fully populated

4. Hardware Load balancer:

Index	Feature
1	Hardware

1.1	The proposed solution should be purpose build ASIC based hardware appliance
1.2	The hardware should have minimum of 6 numbers of 10/100/100 interfaces.
1.3	The hardware should have minimum 2 number of 10G interfaces
1.4	The solution should have atleast 16GB of memory (RAM) to support multiple load balancing functions and scalable up to 32GB RAM
1.5	hardware should have dual power supply with 80+ Gold certification
2	Architecture
2.1	Solution should be virtualization ready with OEM's own hypervisor with minimum 2 virtual instances from day 1 and scalable to 15 virtual ADC instances
2.2	Virtualization: Ability to divide single box in to multiple virtualized load balancers & operate as independently so single device can be used to load balance application servers located across multiple DMZ / LAN without compromising network security.
2.3	Solution should provide Complete fault isolation between virtual load balancer instances – failure of one of the instances does NOT affect other instances. Even restart and shutdown of one virtual load balancer should not effect to neighbor instance.
2.4	System should supports multiple software images for virtual load balancer – each can run different software version.
2.5	Physical resources like memory, CPU must not be shared between virtual load balancer instance, resulting in predictable performance of each virtual load balancer instance
2.6	On Demand addition & removal of compute & networking resources, virtual load balancer & advanced services from virtual load balancer instances with no effect on other instances
2.7	Proposed Solution should be capable to provide Link Load balancing if required in future on the same appliance
2.8	Proposed solution should be capable to provide Global Server Load Balancing if required in future on the same appliance
2.9	Proposed solution should have the support for ICSA Lab Certified WAF if required in future on same device
2.10`	Fault Isolation between virtual ADC instances should be tested by 3rd party organization

3	Performance
3.1	System should support 5 Gbps L7 throughput and should be scalable to 15 Gbps L7 throughput
3.2	System should support minimum 550K Layer 4 Connection Per second
3.3	System Should support minimum 800K Layer 7 Request Per second
3.4	System should support minimum of 500 SSL CPS with 2K bit key
4	Load balancing features
4.1	System supports performing load balancing for Layers 4 through 7 of the Open Systems Interface (OSI) reference model with support to the IP, TCP and UDP protocols.
4.2	System Should support DNSSEC.
4.3	System provides predefined Layer 7, application level health checks (HTTP, HTTPS, LDAP, SMTP, and so on) and customized Layer 7 health checks for any binary and text based protocols
4.4	System supports advanced health checks with the ability to decide on the server status based on parsing the data received by the health check
4.5	System supports performing load balancing for Layers 4 through 7 based on source/destination IP
4.6	System supports performing load balancing for Layers 4 through 7 based on application content
4.7	System should support load balancing metric such as least connection, round robin, weighted, HASH, response time
4.8	System should support user configurable stickiness timeout values
4.9	System should support content switching functionality that is able to route requests to different server groups based on Layer 7 content
4.10	System should support content switching functionality that is able to route requests to different server groups based on a user-defined group of destination server ports.
4.11	System should support returning an error page in case the resources/application servers are not available. The error page and message must be customizable, including graphical objects.
5	Persistency

5.1	System should support session persistency based on Layer 3 and 4
5.2	System should support session persistency based on Source IP
5.3	System should support session persistency based on Cookie. Capable of utilizing different methods for “cookie persistence”: passive, insert, rewrite.
5.4	System should support session persistency based on SSL session ID
5.5	System should support session persistency based on IP Hashing
5.6	System should support session persistency based on any HTTP header value
5.7	System should support session persistency based on XML tag
5.8	System should be able to make persistency decisions based on static or dynamic cookies
6	Modification
6.1	System Should support cookie injection in relation to session persistence
6.2	System should support header data injection/modification/ deletion in HTTP/S in both request and response
6.3	System should support the ability to inject the Client Source IP address into the Layer 7 header
6.4	System should support modification of URLs in the HTTP body valid in request and response
6.5	System should support bi-directional automatic URL modification in HTTP body
6.6	System should support HTTP content modification to obscure server identity and structure with no scripting required.
6.7	System should support HTTP content modification to allow easy content management with no scripting required
6.8	Systems should support HTTP content changes with no scripting required
6.9	System should support scripting capabilities for HTTP and non-HTTP traffic
7	Application Acceleration
7.1	System should support SSL offload - the ability to manage client side SSL traffic by terminating incoming SSL connections and sending the request to the server in clear text

7.2	System should support backend SSL encryption – terminate the SSL clients on the front-end, and open a set of SSL sessions to the back-end
7.3	System should support passing client IP addresses through Secure Socket Layers (SSL)
7.4	System should support SSL certificates import/export in the PEM and PKCS#12 format
7.5	System should support the ability to handle all SSL client authentication tasks (request or require client certificates) normally handled by the target server.
7.6	System should support passing the client certificate information to the destination Web server
7.7	System should support hardware based SSL acceleration
7.8	System should support client certificate authentication along with OCSP validation
7.9	System will be able to define the allowed signing algorithms for OCSP responses without the need for scripting solutions
7.10	System should support SHA1 and SHA2 (Secured Hashing Algorithm)
7.11	System should support managing Server certificates at the Virtual Service level
7.12	System should support TLS1.2
7.13	System should support secure renegotiation (RFC 5746)
7.14	System should support Certificate Validation Policies (validation of certificate parameters values)
7.15	System should support TCP Multiplexing
7.16	System should support clients using HTTP pipelining
7.17	System should support HTTP connection pooling
7.18	System should support HTTP compression
7.19	Selective compression to avoid know compression problems in commonly used browsers
7.20	System should support Web caching in compliance with RFC 2616 of HTTP 1.1 or with ability to override RFC behaviour.
7.21	System should support Browser Cache optimization techniques such as rewriting attributes

7.22	caching solution should optimize client browser caching time by changing objects headers
7.23	System should allow automatic invalidation of cache content by user interaction with web application
7.24	System should support TCP optimization
7.25	System Should support Http 2.0 Gateway to accelerate web applications over internet/WAN
b	DoS protection integrated in Server load balancer from Day 1
b.1	Should be able to configure security ACL on the system
b.2	System should provide protection against Scans such as NullScan, XMASscan, Finscan, SYNFIN Scan
b.3	System should provide protection against attacks such as LAN Attack, Fragmentation flag incorrect, Smurf, SNMPNull, ICMP data
b.4	System should provide prevention from ARPspooof,ARP non unicast, incorrect ARP length
b.5	Should be able to support protocol based rated limiting for TCP, UDP, ICMP
b.6	Should provide protection against UDP blast attack
b.7	System Should provide TCP or UDP pattern matching to block the attack
8	Warranty
8.1	3 years comprehensive warranty with 6 hours of failed parts onsite replacement.

Annexure II
Price Bid Form

To
Andhra Pradesh State FiberNet Limited,
PlotNo.5, 6, 15&16,1stFloor,
KKR Square, Kavuri Hills, Phase-I,
JubileeHills, Hyderabad–500033,
Telangana, India.

Date:

Subject: Procuring Hardware/Software Infrastructure required to support the provision of Middleware and DRM& other software for IPTV, OTT Services & VAS Delivery

APSFL invites the proposals for Procuring Hardware/Software Infrastructure required to support the provision of Middleware and DRM& other software for IPTV, OTT Services & VAS Delivery

Sr No	Description	Quantity (Nos)	Unit Price(inclusive of all taxes)(INR)	Total Price (INR)
1	High End Servers	2		
2	Rhel license + support for 3 years	2		
3	Data Base support license for 3 years	2		
4	SAN Storage	1		
5	SAN Switches	2		
6	Hardware Load Balancer	1		
		Grand Total		
	In Words :			

Note:

- 1) The rates to be quoted by the bidder as mentioned above shall be inclusive of all the taxes / duties such as VAT, Excise Duty, Service Tax & Service charges etc. to be payable at the prevailing applicable rates by the bidder. There will not be any liability on part of APSFL to pay any taxes / charges as part of the software procurement and services delivery as mentioned above.
- 2) All the amounts should be quoted in figures and words. In case of a discrepancy in the figures and in words, the Amount quoted in the words shall prevail.
- 3) The bidder quoting the lowest Grand Total (i.e. L1) in price bid form shall be declared as the successful bidder