

**CRIME & CRIMINAL TRACKING NETWORK & SYSTEMS  
(CCTNS)  
IMPLEMENTATION OF CCTNS IN GOA**

**CORRIGENDUM**

**RELEASED BY  
GOVERNMENT OF GOA**

**11-Apr-11**

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## 1. REQUEST FOR PROPOSAL REVISED SCHEDULES

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S. NO	INFORMATION	DETAILS
1	Last date (deadline) for receipt of proposals in response to RFP notice	<b>19-04-2011 at 1400 hours</b>
2	Place, Time and Date of opening of Technical proposals received in response to the RFP notice	<b>19-04-2011 at 1500 hours PHQ, Panaji, Goa.</b>
3	Place, Time and Date for Technical Presentations	<b>22-04-2011 and 23-04-2011 PHQ, Panaji, Goa.</b>
4	Place, Time and Date of opening of Financial proposals received in response to the RFP notice	<b>25-04-2011 at 1500 hours PHQ, Panaji, Goa</b>
5	Contact Person for queries	<b>Managing Director – GEL</b>
6	Addressee and Address at which proposal in response to RFP notice is to be submitted	<b>Managing Director, Goa Electronics Limited, Mezzanine floor, Block 'B', EDC House, Dr. Dada Vaidya Road, Panaji, Goa - 403001</b>

## 2. REQUEST FOR PROPOSAL VOLUME - I

### A: TECHNOLOGY STACK

The Technology Stack mentioned in Annexure V of Volume -1 of the RFP is revised and mentioned in the following table for developing the Goa State CAS. This has been done only because Goa state is using the existing GCOPS software application as state CAS.

Technology stack for State (CAS)						
The Below list is indicative only	Proposed Solution by Development Agency	Software	Version and Year of Release	Original Supplier	Description (include major features/ services only)	Support Provided by
Web server	Apache server	HTTP	2.2	Apache Foundation	HTTP Server	CMC
Application Server	IBM Websphere application server (ND)		6.1	IBM	J2EE Application Server	IBM
Database	Oracle RDBMS		10g*	ORACLE	DB Store	N/A
Operating System	Red Hat Enterprise Linux or equivalent		5.0*	Red Hat	Operating System	N/A
Others	J2EE Framework			SDA	Complete end to end Presentation to data access framework for web centric applications	SDA
Reporting engine	Crystal Reports		10	Business Objects	Reporting Services	N/A
Email/Messaging	Mithi Mail server				E-Mail Solution	
Search Engine	Search: Unstructured data: using Oracle Text search Structured Data Standard SQL Interface to Oracle & Custom application interface		N/A	N/A	N/A	N/A
Portal Server	Websphere Application Server		3.0	IBM	J2EE Application Server	IBM
Workflow Engine	Custom Built		N/A	SDA	Workflow Engine	SDA
Rules Engine	Custom built		N/A	SDA	Rules Framework	SDA
Directory Services	IBM Directory Services		5.0	IBM	LDAP	IBM
DMS/CMS	Stored in Database		N/A	N/A	N/A	N/A
Security	DB Encryption		N/A	N/A	N/A	N/A

<b>Technology stack for State (CAS)</b>					
<b>The Below list is indicative only</b>	<b>Proposed Solution by Software Development Agency</b>	<b>Version and Year of Release</b>	<b>Original Supplier</b>	<b>Description (include major features/ services only)</b>	<b>Support Provided by</b>
	(Oracle), DB Access Controls, Role Based Access Control (Custom Developed), LDAP (Sun Directory Services),				
Identity Management	Custom application store	NA	SDA	N/A	SDA
Audit	log4j, Custom Built application audit, database audit features	N/A	SDA	N/A	SDA
ETL	Custom built	N/A	N/A	N/A	N/A

## **B: ANNEXURE: 1 - BILLS OF MATERIAL & TECHNICAL SPECIFICATIONS**

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Annexure 9 and 10 Indicative Bill of Material and the Technical Specifications, Volume - I of this RFP, is revised as

### **BILLS OF MATERIAL**

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**Note:** It is to be emphasized here that Goa Police is looking at this engagement as asset of complete services to be provided by the selected agency and not as a supply of hardware & software. To that end the specifications laid out in RFP are indicative requirement and Bill of material is minimum, whereas the bidder are expected to focus on the objectives and SLAs of this project and formulate their solution offering in a manner that enables achieving those objectives both in letter as well as spirit

SI is requested to put due diligence while responding to this RFP and shall be responsible for proposing other hardware (like racks etc)/ software components as part of their Bill of Material for the successful implementation of this project

#### *DATA CENTER AND DR FOR CCTNS GOA*

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<b>Equipment</b>	<b>Qty</b>
<b>Data Center Storage</b>	
SAN Storage	1
SAN Switch	2
<b>Disaster Recovery (DR) Storage</b>	
SAN Storage	1
SAN Switch	2
<b>Data Center Server</b>	
Database Server	2
Blade Enclosure	1
Blade Server	6
<b>Automated Tape Library for Data Center</b>	1
<b>Fibre Cabling and Networking items for DC &amp; DR Centers</b>	
<b>Data Center</b>	
Passive Cabling	1
Core Switch	2
DMZ Switch	2

Equipment	Qty
UTM Device	2
Server Load Balancer	2
Appliance based Hardware Security Module (HSM) for PKI Security and Encryption.	2
<b>Software for Data Center</b>	
DMS and Workflow	1
EMS (including Helpdesk management system)	1
Back-up and Replication Software	1
Operating System for Server	6
Antivirus and Antispam	250 Users
Digital Signature (USB)	250 Users

DR Hardware and Software should be 50% of DC except storage

*DETAILED BREAKUP OF THE BLADE SERVER FOR DC*

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SI No.	Equipment	Location	Qty
1.	Database Server	Data Center	2
2.	Application Server	Data Center	2
3.	Portal/Web Server	Data Center	2
4.	Mail Messaging Server (existing)	Data Center	2
5.	Directory Server (existing)	Data Center	1
6.	DMS and Workflow (existing)	Data Center	2
7.	Proxy Server (existing)	Data Center	1
8.	Network Management Server (existing)	Data Center	2
9.	Antivirus Server (existing)	Data Center	1

*DETAILED BREAKUP OF THE HARDWARE IN NON CIPA POLICE STATIONS*

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SI No.	Equipment	Qty /PS	Total Qty
1.	Desktop with table and chair	4	92
2.	Laser Printer with table	1	23
3.	MF Printer	1	23
4.	Online UPS - 5KVA with 2 hours backup	1	23
5.	Finger print reader	1	23
6.	Digital Camera	1	23

7	Electronic Pen	1	23
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*DETAILED BREAKUP OF THE HARDWARE IN CIPA POLICE STATIONS*

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SI No.	Equipment	Qty /PS	Total Qty
1.	Desktop with table and chair	4	16
2.	Laser Printer with table	1	4
3.	MF Printer	1	4
4.	Online UPS - 5KVA with 2 hours backup	1	4
5	Finger print reader	1	4
6	Digital Camera	1	4
7	Electronic Pen	1	4

*DETAILED BREAKUP OF THE HARDWARE IN HIGHER OFFICES*

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Higher Offices	QUANTITY REQUIRED				
	Desktop with table and chair	Online UPS - 5KVA with 2 hours backup	MFP with table	16 port - Switch	Site Preparation
SCRB	4	1	1	1	1
SPDOs	4	1	1	1	1
Districts	10	2	1	1	2
Police Head Quarters	30	3	1	1	1
Police Control Room	5	1	1	1	1
Forensic Lab	3	1	1	1	1

**INDICATIVE TECHNICAL SPECIFICATIONS (SYSTEM INTEGRATOR CAN QUOTE EQUIVALENT OR BETTER SPECIFICATIONS)**

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***TECHNICAL SPECIFICATION FOR SERVER FOR DATA CENTER COMPONENTS***

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***SPECIFICATION OF BLADES ENCLOSURE***

Feature	Specifications	Compliant(Yes/No)
<b>Form Factor</b>	Up-to 10 U Form factor per chassis with all redundancy features (Hard Drives, Power, and Cable Management). The requisite number of Enclosures to be configured to populate the Servers and Storage/Expansion Units	



Feature	Specifications	Compliant(Yes/No)
<b>Blade Bays</b>	Blade Chassis to accommodate minimum of 8 hot pluggable blade servers with SAS HDDs.	
<b>Chassis Feature</b>	<ul style="list-style-type: none"> <li>▪ Dual network connectivity for each blade server for redundancy should be provided.</li> <li>▪ Backplane should be completely passive device. If it is active, dual backplane should be provided for redundancy</li> <li>▪ Should have the capability for installing industry standard flavors of Windows, Linux, Unix, Solaris for x86 Operating Environments</li> <li>▪ Single console for all blades in the enclosure or KVM Module</li> <li>▪ DVD ROM can be internal or external, which can be shared by all the blades allowing remote installation of S/W and OS</li> <li>▪ Minimum 2 external USB connections functionality</li> </ul>	<ul style="list-style-type: none"> <li>▪</li> </ul>
<b>Ethernet Switch Modules</b>	Two hot-plug, redundant 1Gbps Ethernet module which enable connectivity to Ethernet via switch. Switch should be Internal/external. The number of Ethernet ports should be sufficient to connect fully populated chassis being offered to network.	
<b>SAN Connectivity</b>	Two hot-plugs, redundant 4 Gbps Fiber Channel for connectivity to the external Fiber channel Switch and ultimately to the storage device.	
<b>Redundancy</b>	Mechanical Devices such as Hard Disks, Fans and Power Units should be completely Hot Swappable and Redundant to ensure High Availability	
<b>Blade Management</b>	<ul style="list-style-type: none"> <li>▪ Systems Management and deployment tools to aid in Blade Server configuration and OS deployment,</li> <li>▪ Remote management capabilities through internet browser</li> <li>▪ It should provide Secure Sockets Layer (SSL) 128 bit encryption and Secure Shell (SSH) Version 2 and support VPN for secure access over internet.</li> <li>▪ Ability to measure power historically for servers or group of servers for optimum power usage</li> <li>▪ Blade enclosure should have provision to connect to display console / central console for local management like trouble shooting, configuration, system status / health display</li> </ul>	
<b>Power</b>	<ul style="list-style-type: none"> <li>▪ Hot Swap redundant power supplies to be provided</li> <li>▪ Power supplies should have N+N. All Power Supplies modules should be populated in the chassis</li> </ul>	
<b>KVM</b>	To be enabled Virtually over IP for Remote Access or Provided Locally.	

SPECIFICATIONS FOR DATABASE SERVERS

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Features	Specifications Required	Compliant(Yes/No)
<b>CPU</b>	4 Sockets Populated with Intel E6540 Series Processors or higher. Scalable to eight sockets	
<b>Chipset</b>	Suitable Processor OEM motherboard/chipset	
<b>Form factor</b>	Rack	
<b>Memory</b>	64GB DDR3 scalable to 128 GB	
<b>Clustering</b>	Should have Cluster support for high availability	
<b>Controllers</b>	SAS Raid Controller with RAID 0/1/1+0/5/5+0 with 256/512MB battery backed write cache (onboard or in a PCI Express slot).	
<b>Hard Disk Drives</b>	Min. 4 x 146 GB Hot Plug SAS HDD scalable to 8 HDD	
<b>System Management and Diagnostics</b>	LED lights indicating failing component and on-board diagnostics (via on-board system management processor)	
<b>Software</b>	Server Management software with the device drivers	
<b>OS</b>	Red hat Enterprise Linux Latest Edition or equivalent	
<b>Storage Connectivity</b>	Dual Channel 8 Gbps FC HBA	

SPECIFICATIONS FOR OTHER SERVERS

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Features	Specifications Required	Compliant(Yes/No)
<b>CPU</b>	X86 based Processor. The Frequency should be minimum 2.6 GHz. Processor should be latest series/generation for the server model being quoted	
<b>Chipset</b>	Suitable Processor OEM motherboard/chipset	
<b>Form factor</b>	Half/Full Height Blade with I/O connectivity to backplane	
<b>Memory</b>	64GB DDR3 scalable to 128 GB	
<b>SCSI Controllers</b>	Dual Port Serial Attached SCSI controller on board with RAID 0 & 1 capability	
<b>Bays</b>	Dual 2.5" SAS Hard Disk bays	
<b>Hard Disk Drives</b>	Two 146 GB 2.5" SAS Hard Disk Drive hot swappable system disk with mirroring using integrated RAID 0,1 on internal disks	
<b>Ethernet Adapter</b>	Dual Port 1000BASE-T Gigabit Ethernet Adapter	
<b>SAN Connectivity</b>	The Blade should have redundant 8 Gbps Fiber Channel HBA (For Application, Directory and Mail Messaging)	

Features	Specifications Required	Compliant(Yes/No)
<b>I/O Expansions</b>	I/O expansion slot for up gradation of Ethernet Adapter	
<b>Power Supply</b>	From the Blade Chassis	
<b>System Management and Diagnostics</b>	LED lights indicating failing component and on-board diagnostics or equivalent	
<b>Software</b>	Server Management software with the device drivers	
<b>OS</b>	MS Windows Server 2008 /Red hat Enterprise Linux Latest Edition/ equivalent	

## SPECIFICATION OF STORAGE AREA NETWORK FOR DC AND DR

### SPECIFICATION OF SAN STORAGE BOX

S No.	Storage Parameter	Functionality	Compliant(Yes/No)
1	Operating System & Clustering Support	<ul style="list-style-type: none"> <li>The storage array should support industry-leading Operating System platforms including: Windows Server 2003, 2008, Vmware, Sun Solaris, HP-UX, IBM-AIX and Linux</li> <li>Offered Storage shall support all above operating systems in Clustering.</li> </ul>	
2	Capacity & Scalability	<ul style="list-style-type: none"> <li>The Storage Array shall be offered with 5 TB Usable space after Raid Implementation</li> <li>Storage shall be scalable to 10 TB after Raid Implementation</li> </ul>	
3	Processing Power	Offered controllers shall be based on latest PCI-e technology to ensure that there is no bottleneck for IO communication.	
4	Architecture & Processing Power	<ul style="list-style-type: none"> <li>The storage array should support dual, redundant, hot-pluggable, active-active array controllers</li> <li>Storage Array shall have Switched Architecture for Disk drive connectivity.</li> <li>Controllers shall be true active-active so that a single Logical unit can be shared by both controllers at the same time.</li> </ul>	
5	No Single point of Failure	Offered Storage Array shall be configurable in a No Single Point of configuration including Array Controller card, Cache memory, FAN, Power supply etc. It should have Redundant power supplies, batteries and cooling fans and data path and storage controller.	
6	Disk Drive	Offered Storage Array shall support 4/6Gbps	

S No.	Storage Parameter	Functionality	Compliant(Yes/No)
	Support	dual-ported 146/ 300 / 400 / 450GB / 600GB hot-pluggable Enterprise FC/SAS hard drives	
7	Cache	<ul style="list-style-type: none"> <li>Offered Storage Array shall be given with Minimum of 4GB cache</li> <li>Cache shall be mirrored using dedicated PCI-express bus and shall not use Disk data path</li> <li>Cache shall be dynamically managed for Read and Write operations</li> <li>Shall have dynamic management of Cache block size</li> <li>Cache shall not have any overhead for the operating system.</li> </ul>	
8	Raid Support	<ul style="list-style-type: none"> <li>Offered Storage Subsystem shall support Raid 0, 1, 1+0, 5 and Raid 6</li> <li>Offered Storage subsystem controllers shall have capability to create a single volume of more than 24TB</li> </ul>	
9	Data Protection	<ul style="list-style-type: none"> <li>The storage array must have complete cache protection mechanism either by destaging data or providing complete cache data protection with battery backup for up to 72 hours or more.</li> </ul>	
10	Host Ports & Back-end Ports	Offered Storage shall have minimum of 4 host ports for connectivity to servers & minimum of 2 device ports for Disk shelf connectivity	
11	Ports Bandwidth	Offered storage shall be end to end 4Gbps where each drive and drive shelf shall be connected through dual active-active paths.	
12	Global Hot Spare	<ul style="list-style-type: none"> <li>Offered Storage Array shall support distributed Global hot Spare for offered Disk drives</li> <li>At least 2 Global hot spare drives shall be configured for every 50 drives.</li> </ul>	
13	Performance	<ul style="list-style-type: none"> <li>Offered Storage subsystem shall support more than 1,00,000 IOPS</li> <li>Shall have capability to use more than 30 drives per array group or raid group for better performance</li> <li>Shall support more than 800MB/sec sequential throughput.</li> </ul>	
14	Load Balancing & Multi-path	Multi-path and load balancing software shall be provided,	
15	Maintenance	Offered storage shall support online non-disruptive firmware upgrade for both Controller and disk drives.	
16	Re-build time	For better re-build times in case of disk failure, offered storage rebuild operations shall not depends upon the number of drives in the raid	

S No.	Storage Parameter	Functionality	Compliant(Yes/No)
		group.	
17	Business Copy	Shall support Snapshot,	
18	Storage Array Configuration & Management Software	<ul style="list-style-type: none"> <li>• Vendor shall provide Storage Array configuration and Management software</li> <li>• Software shall be able to manage more than one array of same family</li> </ul>	
19	Performance Management	Vendor shall also offer the performance management software for Storage Array	
20	Remote Replication	<ul style="list-style-type: none"> <li>• Storage shall support both Synchronous and Asynchronous replication at controller level</li> <li>• Shall support replication across all models of the offered family</li> </ul>	

#### SPECIFICATION OF SAN SWITCH

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S. No.	SAN Switch Parameter	Functionality	Compliant(Yes/No)
1	Capacity	SAN switch shall be configured with minimum of 16 Ports.	
3	Throughput	Should deliver 8 Gbit/Sec Non-blocking architecture with 1:1 performance for up to 24 ports	
4	Auto sensing	Should protect existing device investments with auto-sensing 1, 2, 4, and 8 Gbit/sec capabilities	
6	Form Factor	The switch should be rack mountable	
7	Upgrade	Non disruptive Microcode/ firmware Upgrades	
8	Bandwidth	The switch shall provide Aggregate bandwidth of 192 Gbit/sec: 24 ports x 8 Gbit/sec (data rate) end to end.	
9	Management	Switch shall have support for web based management and should also support CLI.	
10	Interface	The switch should have USB port for firmware download, support save, and configuration upload/download.	

#### SPECIFICATION OF AUTOMATED TAPE LIBRARY

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Sr. No.	Tape Library Parameter	Functionality	Compliant(Yes/No)
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1	Capacity	<ul style="list-style-type: none"> <li>• Shall support Native data capacity of 36TB (uncompressed) expandable to 72TB (2:1compressed)</li> <li>• Shall be offered with 24 Cartridge slots.</li> </ul>	
2	Tape Drive Architecture	Offered LTO5 drive in the Library shall conform to the Continuous and Data rate matching technique for higher reliability.	
3	Speed	Offered LTO5 drive shall support 140MB/sec in Native mode and 280MB/sec in 2:1 Compressed mode	
4	Scalability	Tape Library shall support scalability for more than 4 Number of LTO-5 and 120 slots either within the same frame or by cascading another frame	
6	Connectivity	Offered Tape Library shall provide 8Gbps native FC connectivity to SAN switches.	
7	Management	Tape Library shall provide web based remote management.	
8	Barcode Reader and Mail slots	Tape library shall support Barcode reader and mail slot.	
9	Other Features	<ul style="list-style-type: none"> <li>• Tape Library shall have GUI Panel</li> <li>• Shall be rack mountable</li> <li>• Minimum 10 cartridges to be provided with barcode labels.</li> </ul>	

#### *UNIFIED THREAT MANAGEMENT DEVICE*

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UTM security appliances should offer unified threat management solutions to secure the network, including security protections, updates and management and hardware warranty. It should have Integrated UTM management & the ability to centrally manage multiple Devices from a single console.

The proposed UTM solution should be able to provide the following functionalities:

- Firewall
- IPSEC VPN
- Identity Awareness
- IPS
- URL Filtering
- Antivirus & Anti-Malware
- Anti-Spam & Email Security
- Web Security

UTM device should meet the following specification:

Ports	Minimum of 4* 10/100/1000
Firewall Throughput	Minimum 4.5 GBPs
VPN Throughput	Minimum 300 Mbps
Concurrent Sessions	Minimum 500,000
IPS Throughput	Minimum 500mbps
Licensed Users	Unlimited
VLANs	Minimum 1024
Storage	Minimum 60 GB
Enclosure	1U

## **TECHNICAL SPECIFICATION OF NETWORKING ITEMS FOR DC AND DR**

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All switches should be from same OEM for better management and after sales service and the OEM should be in leading quadrant of latest Gartner report.

### *SPECIFICATION OF CORE SWITCHES*

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#### Switch Architecture

- Core data switch consisting of One Management module
- All modules should be provided with distributed forwarding capability.
- Minimum 2\* 12 Gigabit Fiber Interfaces. Support of 100BASE-SX , 100BASE FX (Multi Mode) & 100BASE-BX (Single Mode)
- 1x48 port 10/100/1000 module.
- Redundant power source to meet the full power requirements including the expanded load in future.
- The Core Data Switch should have the following features & requirements and Scalable with full expansion capability, Number of Slots – Minimum of 6 payload slots.

#### Performance Specifications:

- Shall have up to 720 Gbps switching capacity in single chassis Layer 3 Forwarding Performance of up to 350 Mpps.
- Redundant Management Modules with stateful failover. The Security features should support port filtering, enabling of individual ports to access only selected nodes, IP permit lists to prevent unauthorized access to the switch, Access Control Lists (ACL) to secure

networks from unauthorized users, authentication and secure communications over un - secure channels for access to the network.

### Layer 2 Features

- 802.1Q, Centralized VLAN management and configuration.
- 802.1 p/q - VLAN Tagging
- 802.3x - Flow Control
- Ethernet IEEE 802.3, 10 Base T
- Fast Ethernet (IEEE802.3u, 10/100 Base-TX, 100 Base FX, 1000 Base FX)
- Gigabit Ethernet-(IEEE 802.3z, 802.3ab)
- Support for 10 Gigabit Ethernet ( IEEE 802.3ae)

### Layer 3 Features

- Layer 3 or 4 switching and routing
- Port Mirroring
- L2, L3 and L4 access control filters. L3/L4 frame classification
- VRRP or equivalent for High Availability
- Rapid Spanning Tree Protocol (RSTP)(802.1w)
- Rapid convergence Layer 3 protocols
- 802.1s - Per-VLAN Group Spanning Tree Protocol
- Support for IP routing features for Static,RIPv1,BGPv4,OSPFv2,IS-IS
- IGMP v1/v2/v3
- Protocol-Independent Multicast (PIM)-SM
- PIM (Protocol Independent Multicast)
- IP Version 6 (IPv6) support in hardware.

### Quality of Service Features

- Enterprise wide QoS management: LAN to WAN integration
- Traffic Classification: Physical Port, IP DA/SA, IP DA/SA/L4 Port
- Admission Control: IP DA/SA, IP DA/SA L4, RSVP
- Traffic Marking: Diffserv ,IEEE 802.1Q/P COS, IPv4 ToS, via ACLs
- Congestion Avoidance: WRED, multiple Queue Thresholds
- Scheduling IP precedence, 802.1p and ISL priority, three transmit queues on a per port basis, WRR, Strict Priority Queue TOS<->COS mapping



- Micro-Flow Policing (limits BW of specific user/application)
- Aggregate-Flow Policing (dedicated BW per customer SLA)
- Excess-Rate Policing (permits traffic bursts, enables granular priority Values/service-level)
- Strict-Priority Queue (protects mission-critical, delay-sensitive traffic)

### Security Features

- Port based and policy based VLAN & Spanning tree
- Network ingress filtering - RFC 2267
- IP broadcast forwarding control
- Rate limiting using ACLs
- Uni cast Reverse Path Forwarding (RPF)
- SYN attack protection
- Session control
- RADIUS
- Support for Server load balancing with Layer 3 and Layer 4 protection
- No impact on packet forwarding performance

### Wire rate Access Control Lists

- Standard/Extended, Reflexive (stateful) & Dynamic (time of day)
- IP permit lists
- MAC address filtering based on Source and Destination Address
- Traps and Syslog messages sent on security violations
- 802.1x Network Security and Authentication.
- Support for the 802.1x standard allows users to be authenticated regardless of which LAN port they are accessing, and provides unique benefits to that have a large base of mobile (wireless) users accessing the network.
- 802.1x with VLAN assignment allows a dynamic VLAN assignment a specific user regardless of where the user is connected.
- IP Access Lists to limit telnet and SNMP access.
- SSH, RADIUS, AAA for login authentication
- Support for Local Command Accounting and logging.

### Network Management features

- Web based
- SNMPv1, SNMPv2c, SNMPv3

## **SPECIFICATION OF LAYER 2 SWITCH FOR DMZ**

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### General Features

- The switch should have minimum 20 x Gigabit Ethernet Ports & 4 X dual –purpose Uplinks (four SFP-based Gigabit Ethernet ports).
- Support for Redundant Power supply.

### Performance

- 48 Gbps switching fabric
- Wire-speed forwarding rate - 35 Mpps

### Layer-2 Features

- IEEE 802.1Q VLAN encapsulation. Up to 512 VLANs should be supported. Support for 4000 VLAN IDs.
- Support for Centralized VLAN Management.
- Spanning-tree Enhancements for fast convergence
- IEEE 802.1d, 802.1s, 802.1w, 802.3ad
- Spanning-tree feature to prevent other edge switches becoming the root bridge.
- IGMP snooping v3, Support for upto 255 IGMP Groups. IGMP filtering.
- Link Aggregation Protocol (LACP)
- Support for Detection of Unidirectional Links (in case of fiber cut) and to disable them to avoid problems such as spanning-tree loops.
- The Switch should be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.
- Per-port broadcast, multicast, and storm control to prevent faulty end stations from degrading overall systems performance.
- Local Proxy Address Resolution Protocol (ARP) to work in conjunction with Private
- VLAN Edge to minimize broadcasts and maximize available bandwidth

### Quality of Service (QoS) & Control

- Standard 802.1p CoS and DSCP
- Control- and Data-plane QoS ACLs
- There should not be any performance penalty for highly granular QoS functions.

### Management

- Command Line Interface (CLI) support for configuration & troubleshooting purposes.
- SNMPv1, SNMPv2c, and SNMPv3

## **TECHNICAL SPECIFICATIONS OF SERVER LOAD BALANCER**

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- 10/100/1000Mbps Ethernet Ports – minimum 2 ports upgradeable to 4 ports
- Memory: Minimum 1 GB
- Minimum of 2 Gbps throughput
- Minimum of 1 Gbps SSL throughput
- Minimum of 4000 SSL connections scalable to 7500 SSL connections
- Server Load Balancing Mechanism
  - Cyclic, Hash, Least numbers of users
  - Weighted Cyclic, Least Amount of Traffic
  - NT Algorithm / Private Algorithm / Customizable Algorithm / Response Time
- Redundancy Features
  - Supports Active-Active and Active-Standby Redundancy
  - Segmentation / Virtualization support along with resource allocation
- Server Load Balancing Features
  - Server and Client process coexist
  - UDP Stateless
  - Service Failover
  - Backup/Overflow
  - Direct Server Return
  - Client NAT
  - Port Multiplexing-Virtual Ports to Real Ports Mapping
  - DNS Load Balancing
- Load Balancing Applications
  - Application/ Web Server, MMS, RTSP, Streaming Media
  - DNS, FTP- ACTIVE & PASSIVE, REXEC, RSH,
  - LDAP, RADIUS

## **TECHNICAL SPECIFICATIONS OF HSM FOR PKI SECURITY AND ENCRYPTION**

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To ensure integrity and confidentiality, the data collected (both online and offline) at the police location should be digitally signed and encrypted before it is sent from one location to other / central data center. Hardware Security module should be integrated with applications at Data Center in high availability mode and should be able to endure the security and integrity of the signing key, key management and multifactor authentication to access the key and most *Crime & Criminals Tracking Network and Systems* Significantly. It should be able to enhance the performance of the complete system by offloading the complete cryptography process to a dedicated appliance. Digital Certificates in addition to the HSM appliance may be used for further enhancing the security and integrity of the information.

- Should support Windows 2000,2003,2008, Linux, Solaris, HP-UX 11i, VMWARE, AIX 5.3
- Should comply to standards like FIPS 140-2 Level-3, CC EAL4+, ROHS, FCC part 15 Class B
- Signing speed : 5000 S/S
- Remote PED Support for Authentication
- Onboard key generation, Digital Signing & Verification process to be done inside the HSM only for better performance and security
- HSM should be integrated with the applications running inside the Data Center
- Complete hardware based storage of key material for entire Life cycle

## **TECHNICAL SPECIFICATION OF SOFTWARE**

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### *SPECIFICATION OF EMS SOFTWARE*

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- Bidder should provide a centralized Enterprise Management solution for all the IT assets spread across various units.
- The offered solution should be from a single vendor/product family so as to ensure the integration and high level of data exchange between various layers and based on an Internationally recognized industry standard Enterprise Management Software (EMS) and shall be required to have full capabilities to provide unified Fault, Performance and Service level management and reporting.

- The Solution is expected to be based on SNMP and TCP/IP standards permitting Network layer level Management of alarm and event s on the same platform.

#### *APPLICATION PERFORMANCE MANAGEMENT*

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- End to end Management of applications (J2EE/.NET based)
- Determination of the root cause of performance issues whether inside the Java application in connected back-end systems or at the network layer.
- Automatic discovery and monitoring of the web application environment
- Ability to monitor applications with a dashboard.
- Ability to expose performance of individual SQL statements within problem transactions
- Monitoring of third-party applications without any source code change requirements.
- Proactive monitoring of all end user transactions; detecting failed transactions; gathering evidence necessary for problem diagnose.
- Storage of historical data is for problem diagnosis, trend analysis etc.
- Monitoring of application performance based on transaction type
- Ability to identify the potential cause of memory leaks.

#### *SLA MONITORING*

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- EMS should integrate with the application software component of portal software that measures performance of system against the following SLA parameters: Response times of Portal; Uptime of data centre; Meantime for restoration of Data Centre etc;
- EMS should compile the performance statistics from all the IT systems involved and compute the average of the parameters over a quarter, and compare it with the SLA metrics laid down in the RFP.
- The EMS should compute the weighted average score of the SLA metrics and arrive at the quarterly service charges payable to the Agency after applying the system of penalties and rewards.
- The SLA monitoring component of the EMS should be under the control of the authority that is nominated to the mutual agreement of Director, the partner so as to ensure that it is in a trusted environment.

#### *DESKTOP MANAGEMENT*

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- The proposed desktop management system should provide single integrated agent for Asset Management, Remote Software Delivery and Remote Desktop Control.
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## *FAULT MANAGEMENT*

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- Should be able to get fault information in real time and present the same in alarm window with description, affected component, time stamp etc.
- Should be able to get fault information from heterogeneous devices — routers, switches, servers etc.
- Event related to servers should go to a common enterprise event console where a set of automated tasks can be defined based on the policy.
- Should have ability to correlate events across the entire infrastructure components of DC/DR.
- Should support automatic event correlation in order to reduce events occurring in DC/DR.
- Should support advanced filtering to eliminate extraneous data / alarms in Web browser and GUI.
- Should be configurable to suppress events for key systems/devices that are down for routine maintenance or planned outage.
- Should be able to monitor on user-defined thresholds for warning/ critical states and escalate events to event console of enterprise management system.
- Should provide out of the box root cause analysis with multiple root cause algorithms inbuilt for root cause analysis.
- Should have self-certification capabilities so that it can easily add support for new traps and automatically generate alarms.
- Should provide sufficient reports pertaining to availability of critical network resources as well as network response times for critical links.
- Should provide the following reports for troubleshooting, diagnosis, analysis and resolution purposes: Trend Reports, At-A-Glance Reports, & capacity prediction reports
- Should be able to calculate resource utilization baselines for the entire managed systems and networks and allow user to set corresponding upper and lower threshold limits

## *DISCOVERY*

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- Should provide accurate discovery of layer 3 and heterogeneous layer 2 switched networks for Ethernet, LAN and Servers etc.

## *IDENTITY MANAGEMENT*

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- The Identity Management should provide a services-oriented, software-based identity management service, which allows to easily automate the management (i.e., creation,

modification, suspension and deletion) of the accounts needed on a variety of disparate systems and physical resources, ensuring that employees, outsourced agencies should have access to the right systems at the right level of privilege. Proposed solution must be designed for all internal users.

### *HELPDESK MANAGEMENT*

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- It should be integrated with Fault Management Solution.
- It should support automatic problem registration with respect to EMS event management, based on predefined policies.
- It should be able to log and escalate user interactions and requests.
- It should provide status of registered calls to end -users over email and through web.
- It should have an updateable knowledge base for technical analysis and further help end-users to search solutions for previously solved issues.
- It should have the ability to track work history of calls to facilitate troubleshooting.
- It should support tracking of SLA (service level agreements) for call requests within the helpdesk through service types.
- It should support request management and change order management.
- It should be capable of assigning call requests to technical staff manually as well as automatically.
- It should be able to provide reports.
- The service desk should be from the same product family/suite/OEM as the EMS and should be compliant with ITIL standards.

### **TECHNICAL SPECIFICATIONS FOR POLICE STATIONS HARDWARE COMPONENTS**

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#### *DESKTOP COMPUTER*

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<b>Features</b>	<b>Specifications</b>	<b>Compliant(Yes/No)</b>
<b>Processor</b>	Intel i5 or higher	
<b>Motherboard</b>	OEM mother board	
<b>Bus Architecture</b>	Integrated Graphics, Integrated (on board) High Definition Audio controller with internal speaker, 2 PCI slats	
<b>Bays</b>	2x Internal 3.5" bays, 2xExternal 5.25" bays & 2xExternal 3.5" bays	

<b>Memory</b>	4 GB DDR3 SDRAM expandable to 8 GB	
<b>Hard Drive</b>	320 GB SATA-II.	
<b>Removable drive</b>	DVD ROM drive	
<b>Network</b>	Integrated 10/100 Mbps Ethernet Adapter (RJ-45), PXE support	
<b>Key board</b>	Standard USB keyboard	
<b>Mouse</b>	2 button optical wheel mouse	
<b>Monitor</b>	19 " TFT (Wide Screen) TCO 05 Certified Same make of PC	
<b>Interface</b>	1 serial, 1 Parallel, 6 USB (Minimum 2 in front), 1 PS/2 Keyboard, 1 PS/2 Mouse, VGA, audio ports for Microphone & headphones in front.	
<b>OS Certification</b>	Microsoft Windows	
<b>OS</b>	Preloaded Windows 7 Business Edition	

#### *LASER JET PRINTER*

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<b>Features</b>	<b>Specifications</b>	<b>Compliant(Yes/No)</b>
Print speed	Up to 14 ppm A4 &letter	
Resolution	upto 600 x 600 dpi	
Printing Features	<ul style="list-style-type: none"> <li>▪ Manual duplex printing</li> <li>▪ Economic mode for toner savings</li> </ul>	
Memory	2 MB RAM	
Paper Handling Tray	<ul style="list-style-type: none"> <li>▪ 150-sheet adjustable main input tray,</li> <li>▪ 100-sheet output bin,</li> <li>▪ manual two-sided printing</li> </ul>	
Paper Size	<ul style="list-style-type: none"> <li>▪ A4,</li> <li>▪ A5,</li> <li>▪ letter,</li> <li>▪ legal,</li> <li>▪ postcards,</li> <li>▪ envelopes</li> </ul>	
Interfaces	Hi-Speed USB 2.0 port,	
operating systems support Required	Windows, Linux	



*PRINTER, SCANNER, COPIER ALL IN ONE DEVICE*

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<b>Features</b>	<b>Specifications</b>	<b>Compliant(Yes/No)</b>
Print speed	Up to 27 ppm letter	
Resolution	<ul style="list-style-type: none"><li>▪ Printing: upto 1200 x 1200 dpi</li><li>▪ Copying: up to 600 x 600 dpi</li><li>▪ Scanning: up to 1200 x 1200 dpi</li></ul>	
Printing Features	<ul style="list-style-type: none"><li>▪ Manual duplex and booklet printing</li><li>▪ Collation,</li><li>▪ Watermarks,</li></ul>	
Copying Features	<ul style="list-style-type: none"><li>▪ 1 to 99 multiple copies</li><li>▪ reduce/enlarge from 25 to 400%</li><li>▪ 2-up or 4-up allowing 2 or 4 pages to be copied onto 1 page</li></ul>	
Scanning Features	<ul style="list-style-type: none"><li>▪ Flatbed scanner up to letter, A4 size;</li><li>▪ supported file types: JPEG, TIFF, PDF, GIF, and BMP</li><li>▪ Should be able to scan Legal Documents</li></ul>	
Control panel	<ul style="list-style-type: none"><li>▪ 2-line LCD text display,</li><li>▪ Asian character support,</li><li>▪ 16-character display,</li></ul>	
Memory	32 MB RAM	
Paper Handling Tray	<ul style="list-style-type: none"><li>▪ 10-sheet priority input tray,</li><li>▪ 250-sheet multipurpose input tray,</li><li>▪ 125-sheet output bin,</li><li>▪ manual two-sided printing</li></ul>	
Paper Size	<ul style="list-style-type: none"><li>▪ 76 x 127 mm (3 x 5 inches) to 216 x 356 mm (8.5 x 14 inches);</li><li>▪ letter,</li><li>▪ legal,</li><li>▪ index cards,</li><li>▪ postcards;</li><li>▪ A4,</li><li>▪ A5</li></ul>	
Interfaces	<ul style="list-style-type: none"><li>▪ Hi-Speed USB 2.0 port,</li><li>▪ Ethernet port</li></ul>	
operating systems support Required	Windows, Linux	

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*SPECIFICATIONS FOR DIGITAL CAMERA*

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<b>Make and Model Offered – (To be filled by bidder)</b>		<b>Compliant(Yes/No)</b>
Pixels (Min.)	12 mega pixels or higher	
LCD Monitor		
Type	TFT	
Display Size	2.7 inches or higher	
Recording Format	JPEG	
Zoom	4X or higher	
ISO Sensitivity Setting	Auto / 80 / 100 / 200 / 400 / 800 / 1600 / High	
Recording Media	SD memory card, SDHC memory card, SDXC memory card, Multimedia Card	
Optical Zoom During Movie Recording	Yes	
Auto Focus Range	Approx: (W)=3 cm to infinity, (T)= 80 cm to infinity	
Self Timer	Yes	
Shooting Modes	Auto, Portrait, Landscape, Night Snapshot, Indoor, Face self-timer, Low Light, Beach, Underwater, Foliage, Snow, Fireworks, Long Shutter, Movie, Documents	
White Balance	Auto / Daylight / Cloudy / Fluorescent / Incandescent / Flash	
Flash Function	Auto/ Red Eye Reduction/Off/Face detection/noise reduction	
USB Connectivity	Yes (Hi- Speed)	
Battery Backup	120 Min	
Operating system Support	Window XP / Vista / 7/ Linux	

*SPECIFICATION OF LAYER 2 SWITCH*

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<b>Features</b>	<b>Specifications</b>	<b>Compliant(Yes/No)</b>
No of Switch Ports	16	
MAC Address Table Size	8K	
SwitchFabric	32Gbps Forwarding Capacity	
Transmission Method	Store-and-Forward	

Diagnostic LEDs	Per Unit: Power	
	Per Port: Activity/Link, Speed	
Packet Buffer Memory	340KBytes Buffer Memory per Device	
QoS	802.1p (4 Queues)	
<b>Interface Options</b>		
RJ-45	10BASE-T, 100BASE-TX, AND 1000BASE-T	
<b>Network Protocols and Standards</b>		
IEEE	802.3 Ethernet, 802.3u Fast Ethernet, 802.3x Flow Control, 802.3ab Gigabit Ethernet, 802.1p QoS, 802.1w, 802.1D, 802.1as, 802.1x,	

### FINGER PRINT SCANNER

S.No	Type	Detailed Specifications	Compliant(Yes/No)
1	Resolution	Minimum 500 ppi or above	
2	Dynamic Range	8 bit 256 level Grey Scale	
3	Sensor Type	Optical	
4	Sensing Area	46 mm X 46 mm or better	
5	Image Capture Ability	Minimum 10 frames/second	
6	Computer Interface / Power Interface	USB 2.0 (500 mA @ 5V)	
7	Operating Temperature	0 deg to 55 deg C	
8	System Requirements	Windows XP and Linux	
9	Humidity Range	10-90% Non Condensing /Splash Resistant	
10	Uniform Illumination	Less than 30% Variation from Center to corners	
11	Active Platen Area	800 x 750 pixels	
12	Finger Print Image Quality	Forensic – Quality Flat Fingerprint Image	
13	Light Rejection	Should have Ambient Light Rejection	
14	Auto Capture & brightness	Should be enable with auto capture & Adjustable brightness	
15	Certifications	ISO-IEC 19794-4: 2005	
		FBI PIV-071006 Single Finger Cap	
		FIPS 201 PIV	

		EN 55022:2006, EN 55024:1998 + A1:2001+ A2: 2003	
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*ELECTRONIC PEN*

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<b>Make and Model Offered – (To be filled by bidder)</b>		<b>Compliant(Yes/No)</b>
Data communication	USB 1.1 standard (also supports USB 2.G standard), Bluetooth 1.2 standard	
Built-in battery	Rechargeable battery	
Continuous writing time	2 hours or longer	
	Standby time:1 hours (min.) without a cap	
Charging time	Approx. 2 hours (from 0 to100% charge)	
Charging method	Dox cradle or USB adapter	
Operating system Support	Window XP/ Vista/ 7/ Linux	

*FURNITURE*

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<b>Make and Model - (To be filled by bidder)</b>		<b>Compliant(Yes/No)</b>
<b>Computer Table</b>	Top: Size 910 x 610 mm made of 18 mm thick pre laminated medium density fiber (MDF) board ISI Marked (IS: 14587-1998). The top shall be firmly screwed on 25x25x1 mm square tube frame as shown in figure	
	Upper side of laminated board shall be in natural teak shade while the bottom side shall be white/cream shade.	
<b>Size: L 910 x W 610 x H 728 mm</b>	Sliding key Board tray: A Sliding key Board tray shall be made of 18mm pre laminated medium density fiber board of size 725x450 mm. The gap between top and tray shall be 100mm.	
	Key board tray shall slide smoothly on sliding channel duly powder coated having nylon roller arrangement.	
	The storage shelf for CVT : A storage shelf made of 18 mm particle board shall be provided along with the length of the table at bottom about 100 mm above from the ground level. Shelves shall be screwed on frame work of 25x25x1 mm square tube. The shelf shall be covered from back side with 18mm pre laminated medium density fiber board as shown in drawing.	
	Steel Structure: The rigid steel structure shall consist of two nos. rectangular base tubes of size 50x25x1.25 mm about 520 mm length placed along the width on vertical tubes of size 25x25x1 mm shall be welded for fixing up of	

	side panels. A supporting frame of 25x25x1 mm square tube shall be welded on the top of the tubes for the side panels as shown for supporting the top of the table.	
	The base tube shall be provided with adjustable shoes 2 nos. on each side.	
	Painting: Complete frame of tubes shall be powder coated.	
<b>Printer Table</b>	Printer table shall be as per figure/ drawing.	
	Shelves : 3 no. made of 18mm thick pre laminated Medium Density Fiber Board(MDF) ISI marked (IS 14587 – 1998)	
<b>Size: L 610 x W 610 x H 660 mm</b>	Top shelf size 610x610 mm for placing printing unit.	
	Middle Shelf size 460x330 mm for placing feet on stationary.	
	Bottom shelf size 460x380 mm for collecting print out.	
	The top faces of the shelf shall be natural teak wood shade.	
	The bottom faces shall be in plain white/cream shades.	
	Structure: The structure shall be made from square and rectangular steel tubes duly welded finished and powder coated.	
	Vertical tubes shall be welded in two rectangular bottom tubes 50x25x1.25 mm as shown in drawing.	
	The horizontal tube 25x25x1 mm thick 330 m long shall be welded over vertical tubes 25 mm off the center width /depth wise.	
	Panels made of 18 mm pre laminated particle board shall be screwed rigidly between vertical tubes on both sides.	
	Two nos. bottom support tubes 50x25x1.25mm thick shall also be provided with two nos. of adjustment shoes.	
	A rectangular slot of size 455x25 mm shall be provided on top shelf along with length for feeding stationary as shown in figure. A slot shall be covered with PVC insertion for safely of paper.	
	The ends of bottom and top shall be plugged with PVC/ plastic caps.	
	Painting Complete steel structure shall be pretreated and powder coated with minimum thickness of 60 microns coating	
<b>Computer Chair with Handle</b>	Seat size shall be 430x430 mm on 10 mm. thick molded comm. ply with 60 mm thick 40 density molded PU foam	
	Back rest size shall be 400x300 mm on 10 mm thick molded comm. ply with 40 mm thick 32 density molded PU foam covered with tapestry.	
	The height of back rest shall be 900x500 mm for top and	

	bottom edges respectively. The black rest shall be provided with lifting arrangement on flat iron & helical spring.	
	Two nos. suitable PU handles shall be provided.	
	The base stand should be made up of 5 prongs duly pressed welded together centrally with a pedestal bush with good quality twin wheel castors. The stand and other metal parts excluding central spindle shall be powder coated. Complete steel structure shall be pretreated and powder coated with minimum thickness of 60 microns coating.	
	A central spindle of 25mm dia rod without threads shall be provided with revolving arrangements. The adjustable height of chair shall be from 530 to 570 mm.	
	A good quality tapestry cloth shall be provided on seat & back in attractive color/ shade.	

### Electric Cabling:

Make and Model Offered(To be filled by bidder)	Compliant(Yes/No)
Total 5 Electrical Points Including 3 Switches&3 Sockets in Each Point, (2 No. 5-Amps and 1 No. 15 Amps.) - Point wiring using ISI approved PVC Conduit / Casing Capping, 1.1 KV grade 2.5 square meter FRLS Cu flexible wire including supply of wire, switch, socket and GI Box. Including all necessary hardware & accessories complete, material and labor as per requirement of the Goa Police. For point wiring having Average Point length is 12 to 18 Meters.	
UPS Electrical Cabling for Network Rack, Four Computer Points, separate cabling for Two Printers from main input and Generator set to UPS Including change-over, MCB and all other accessories as per requirement.	

### 5KVA UPS SYSTEMS

Technical Specifications		Compliant(Yes/No)
Make & Model Offered		
Manufacturer	ISO 9001 & ISO 14001 Certified	
<b>TECHNOLOGY</b>	IGBT based PWM Technology	
	Microprocessor Controlled Digital Design	
	Double Conversion True On-line UPS	
Overall Efficiency (AC-AC)	≥ 85%	

Technical Specifications		Compliant(Yes/No)
<b>INPUT</b>		
Voltage range	160V – 270V	
Frequency range	47 to 53 Hz	
Phase	Single Phase with ground	
Power Factor	>0.9 or better	
<b>OUTPUT</b>		
Voltage	220VAC-230VAC	
Voltage regulation	+/-2% (or better)	
Frequency regulation	50 Hz +/- 0.1% (free Run Mode)	
Harmonic Distortion (THD)	< 3% (linear load)	
Waveform	Pure Sinewave	
Crest Factor	3:1	
Load power factor	0.8 lag	
Galvanic Isolation	Provided through Inbuilt transformer	
Battery Backup	2 Hour (Min. VAH 13500 VAH)	
Battery Type	Sealed Lead Maintenance Free VRLA type (Lead Calcium SMF batteries NOT acceptable)	
DC Bus Voltage	≥ 120 V	
Transfer Time	0 ms	
Battery Enclosure	Powder Coated Cabinets matching with color of UPS.	
Battery Brands	Reputed & Reliable brands like Exide, Panasonic, Rocket, Hitachi, Quanta, Luminous, CSB	
General Operating Temperature	0 to 40 Degree C	
Audible Noise	<55 dB at 1 mtr distance	
Alarms & Indications	All necessary alarms & indications essential for performance monitoring of UPS like mains fail, low battery & fault detection	
Bypass	Automatic, Manual Bypass Switch	
Compatibility	UPS to be compatible with DG Set supply	

<b>Technical Specifications</b>		<b>Compliant(Yes/No)</b>
Communication Interface Standard	RS 232 port for software interface	
Optional	SNMP interface support	
Certifications	For Safety & EMC as per international standards	



## C: ANNEXURE – 2: EXISTING INFRASTRUTURE AT DATA CENTRE

<b>Application Server - Dell PE 2950</b>	
<b>Quantity : 4</b>	
<b>Date of Supply : 01.10.2007</b>	
<b>Warranty : 3 years</b>	
<b>Feature</b>	<b>Specification</b>
Processor	Intel Quad Core Xeon E5310 Processor, 1.6GHz x 2, 2x4MB Cache each.
Front side bus	Dual Independent 1333MHz
Chipset	Industry Standard Intel 5000X Chipset
Memory	16 GB DDR-2 667MHz ECC 2R Fully-Buffered Memory exp. Up to 32GB (8 FBD DIMM slots): (Fully Buffered DIMMs (FBD) in matched pairs)
Hard Disk Drive	4 x 73GB 2.5-inch, 10K RPM SAS Hard Drive ,Maximum internal storage Up to 4.5TB: six 750GB hot-plug SATA (7.2 K RPM)
Optical Drive	CDRW/DVD Combo Drive with 24x Max Speed
Drive Controller	4 port SAS 5/i integrated SAS controller (no RAID)
SAS Controller	Optional PERC 5/i integrated SAS/SATA daughtercard controller with 256MB cache, PERC 4e/DC, PERC 5/e adapter
Fibre HBA	Fibre Channel Host Bus Adapter with Q logic 2460 single port 4GBPS PCI Express HBA card - 2 Nos
Ethernet	Dual embedded Broadcom® NetXtreme II™ 5708 Gigabit2 Ethernet NIC with fail-over and load balancing. TOE (TCPIP Offload Engine) supported on Microsoft Windows Server 2003, SP1 or higher with Scalable Networking Pack
Bays	3 hard drive base options:
	8 x 2.5" Hard Drive Option: 2.5" HD Option: up to 8 SAS HDs (10K);
	SATA (7.2K) drives; 6 x 3.5" Hard Drive Option: 3.5" HD Option: up to 6 SAS (10K/15K) or SATA (7.2K) drives; Peripheral bay options; Floppy Drive, DAT72 Tape Drive (not available with 6 x 3.5" hard drive base);
	Slim optical drive bay with choice of CD-ROM, DVD-ROM or Combo CD-RW/DVD-ROM
Video	Embedded ATI ES1000 with 16MB memory
Slots	Three PCI slots, either PCIe riser with three PCI Express slots (one x4 (x8 connector) and two x8) or two PCI-X 64-bit/133MHz and one PCI Express x8 slot
Cooling Fans	Minimum 4 Hot Plug Fans
Power Supply	Minimum Two Hot Plug 750 Watts Power Supply with redundancy ; Auto-switching universal 110/220 Volts
Form Factor	2U Rack Mount Server
Compliance	ACPI Compliant, PCI 2x Compliant, WOL Support, USB 2.0 Support

O/S Certification	Server should be certified for Red Hat Linux. Should also be Red Hat Linux Cluster Certified
Manageability	OEM Server Management Software, Redundant ROM, Pre-Failure Warranty on Processors, Memory & SCSI Hard Disk Drives,
Remote Management	Standard Baseboard Management Controller with IMPI 2.0 support; optional DRAC5
Operating System	Redhat Linux Enterprise AS Version 4.0

<b>Mail Server - Dell PE 2950</b>	
<b>Quantity : 5</b>	
<b>Date of Supply : 01.10.2007</b>	
<b>Warranty : 3 years</b>	
<b>Feature</b>	<b>Specification</b>
Processor	Quad-Core 1.6GHz Intel(R) Xeon(R) E5310, 2x4MB Cache
Front side bus	Dual Independent 1333MHz
Chipset	Intel 5000xChipset
Memory	4 GB DDR-2 667MHz ECC 2R Fully-Buffered Memory exp. Up to 32GB (8 FBD DIMM slots): (Fully Buffered DIMMs (FBD) in matched pairs)
Hard Disk Drive	2 x 73GB 2.5-inch, 10K RPM SAS Hard Drive ,Maximum internal storage Up to 4.5TB: six 750GB hot-plug SATA (7.2 K RPM)
Optical Drive	CDRW/DVD Combo Drive with 24x Max Speed
SAS Controller	SAS RAID controller with 256MB cache, PERC 4e/DC, PERC 5/e adapter
Ethernet	Dual embedded Broadcom® NetXtreme II™ 5708 Gigabit2 Ethernet NIC with fail-over and load balancing. TOE (TCPIP Offload Engine) supported on Microsoft Windows Server 2003, SP1 or higher with Scalable Networking Pack
Bays	3 hard drive base options:
	8 x 2.5" Hard Drive Option: 2.5" HD Option: up to 8 SAS HDs (10K);
	4 x 3.5" Hard Drive Option: 3.5" HD Option: up to 4 SAS (10K/15K) or SATA (7.2K) drives; 6 x 3.5" Hard Drive Option: 3.5" HD Option: up to 6 SAS (10K/15K) or SATA (7.2K) drives; Peripheral bay options; Floppy Drive, DAT72 Tape Drive (not available with 6 x 3.5" hard drive base);
	Slim optical drive bay with choice of CD-ROM, DVD-ROM or Combo CD-RW/DVD-ROM
Video	Embedded ATI ES1000 with 16MB memory
Slots	Three PCI slots, either PCIe riser with three PCI Express slots (one x4 (x8 connector) and two x8) or two PCI-X 64-bit/133MHz and one PCI Express x8 slot
Cooling Fans	Minimum 4 Hot Plug Fans
Power Supply	Minimum Two Hot Plug 750 Watts Power Supply with redundancy ; Auto-switching universal 110/220 Volts

Form Factor	2U Rack Mount Server
Compliance	ACPI 2.0 Compliant, PCI 2.2 Compliant, WOL Support, Microsoft® Logo certifications, USB 2.0
O/S Certification	Server should be certified for Red Hat Linux.
Manageability	OEM Server Management Software,Redundant ROM, Pre-Failure Warranty on Processors, Memory & SCSI Hard Disk Drives,
Remote Management	Standard Baseboard Management Controller with IMPI 2.0 support; optional DRAC5
Operating System	Redhat Linux Enterprise AS Version 4.0
Storage	LTO Drive Symantec Backup exec 11d with database agent. – 200/400 GB for Database servers
Operating System	Redhat Linux Enterprise AS Version 4.0

<b>Oracle:</b>	
<b>Quantity : 1</b>	
<b>Date of Supply : 01.10.2007</b>	
<b>Warranty : 3 years</b>	
<b>Feature Specification</b>	/ Oracle database 10g Enterprise Edition Processor license for 2 Quad-CPU Licence(Linux)

<b>IBM</b>	
<b>Quantity : 1</b>	
<b>Date of Supply : 01.10.2007</b>	
<b>Warranty : 3 years</b>	
<b>Feature / Specification</b>	IBM Web sphere 6.1 nd 2 quad CPU license Linux

<b>Fibre External Storage - Dell-EMC CX3-10</b>	
<b>Quantity : 1</b>	
<b>Date of Supply : 01.10.2007</b>	
<b>Warranty : 3 years</b>	
<b>Feature</b>	<b>Specification</b>
Storage Architecture	Features full Fibre Channel end-to-end architecture. The system supports dual-ported Fibre Channel drives. The architecture allows modular upgrades of hardware and software for investment protection. The array supports coexistence of FC and iSCSI for enhanced external connectivity.

<b>Fibre External Storage - Dell-EMC CX3-10</b>	
Storage Capacity	Production capacity : 3.5 TB usable capacity after RAID 5 utilizing 4d+1p with 146GB 15K dual ported FC disks ; Business copy capacity : 3.5 TB Usable capacity after RAID 5 utilizing 7d+1p with 500GB 7200RPM SATA spindles ; Archival capacity : for future implementation TB usable capacity after RAID 5 utilizing 7d+1p with 500GB 7200RPM SATA spindles, port required for 500GB for higher sata spindle Archive Logs capacity : Archive Logs to be provided using numbers of 72GB 15K RPM FC Disks in RAID 1+0. Which is the optional requirement for future use, The array is scalable to a minimum of 120 spindles behind the same controller pair by adding the appropriate number of spindles and disk shelves.
Hard disk drives	10 x 146 GB 10K FC2 Hard Drives
Spindle Flexibility	73 and 146 GB 15,000 rpm 4 Gb/s disks 73, 146, and 300 GB 10,000 rpm 2 Gb/s disks 500 GB 7,200 rpm 3 Gb/s SATA II disks Mix and match of different type of spindles should be supported within the array.
Scability	Up to 4 disk array enclosures (DAE4P); Up to 60 drives in the storage array
Array Architecture	The array should be equipped with 2 nos. of array controllers for better performance and redundancy. Each RAID controller should have minimum 2GB cache with minimum 2 FC Host ports each at 4Gbps and 4 iSCSI ports each at 1Gbps. The array controller should support co-existence of iSCSI and FC without requiring external iSCSI engines. The front end FC ports , Backend FCAL ports and Disk shelves should be based on 4Gbps technology.
Number of LUNS	The array should allow scalability to 1024 LUNS behind the controller pair
Cache	2GB
Cache Protection	Cache is mirrored between the Active- Active controllers on separate Inter controller paths. The inter controller paths is redundant(at least 2 paths) to prevent disruption if one path fails. Supports either Cache battery backup for a minimum of 72 hours or fully automatic de-stage of cache to disks during power failure to prevent possible data loss.
O/S support	Industry-leading Operating System platforms including: Windows 2000 (Advanced Server), Windows Server 2003 (Enterprise Edition), Sun Solaris, HP-UX, IBM-AIX and Linux.
Global Hot Sparing	System have capability to designate global hot spares that can automatically be used to replace a failed drive anywhere in the system.
RAID Level Support	Supports hardware RAID levels 0, 1, 0+1, 3 and 5. Support inter-mixing different RAID groups within one storage system. Different type of RAID levels co-exist within the same array simultaneously to match the different protection requirements of data.
On-line RAID Group	Support online expansion of RAID Group. Able to add additional

<b>Fibre External Storage - Dell-EMC CX3-10</b>	
Expansion	disks on the fly to expand the RAID group capacity.
Online LUN Migration for flexibility of redeployment.	Most applications benefit from striping across multiple spindles. The array supports subsystem based striping across at least 30 spindles for enhanced performance. The striping is forced on all spindles and storage administrator should be given control and flexibility of data layout in the array, it is inbuilt into the storage and does not require any host based volume manager.
Disaster recovery	Storage array should support hardware based long distance data replication at the array controller level in both Sync and Async mode.
Software required	Management Software: Replication Software - Software to replicate within the system should be licence for the entire storage capacity Multipathing software - Software for path failover and load balancing. Software should be provided for managing multiple paths between 2 hosts and storage systems.
Number of supported hosts	Up to 4 direct attached HA (redundantly connected) servers; Up to 64 HA SAN connected servers
Front end connectivity	Four 4Gb Fibre Channel ports per array (two per Storage Processor); Four iSCSI ports per array (two per Storage Processor)
Drive interface	Dual, independent FC-AL interface ports on each drive; Failover from each storage processor to the fibre channel loop.
Power supply	Minimum Dual Power Supply
Fans	Redundant fans
RAID Support	Support RAID 0, RAID 1, RAID 5, RAID 1+0,

#### **D: DETAILS OF RECORDS FOR MIGRATION FROM CIPA TO CAS (STATE)**

The following table provides the details on the number of records that needs to be migrated from CIPA to CAS state

S.No	Name of the Police Station	FIR	Non Cognizable	Missing	UD	Others
1.	Porvorim	62	69	-	-	-
2.	Ponda	806	1969	142	7	239
3.	Calangute	233	-	-	-	-
4.	Mapusa	193	117	-	84	

**E: DETAILS OF VARIOUS POLICE STATIONS COVERED UNDER CCTNS PROJECT**

Name of the Police Station	Complete Postal Address of the Police Station along with PIN CODE	Name of District	Tel No.s
Panaji	Police Inspector, Panaji Police Station, Goa - Pincode 403 001	North Goa	2428482
Old Goa	Police Inspector, Old Goa Police Station, Goa - Pincode 403 006	North Goa	2285301
Agacaim	Police Inspector, Agacaim Police Station, Goa - Pincode 403 204	North Goa	2218000
Ponda	Police Inspector, Ponda Police Station, Goa - Pincode 403 401	North Goa	2313101
Collem	Police Inspector, Collem Police Station, Goa - Pincode 403 410	North Goa	2600233
Valpoi	Police Inspector, Valpoi Police Station, Goa - Pincode 403 506	North Goa	2374255
Bicholim	Police Inspector, Bicholim Police Station, Goa - Pincode 403 504	North Goa	2362233
Mapusa	Police Inspector, Mapusa Police Station, Goa - Pincode 403 007	North Goa	2262231
Calangute	Police Inspector, Calangute Police Station, Goa - Pincode 403 516	North Goa	2278284
Porvorim	Police Inspector, Porvorim Police Station, Goa - Pincode 403 501	North Goa	2417704
Anjuna	Police Inspector, Anjuna Police Station, Goa - Pincode 403 509	North Goa	2273233
Pernem	Police Inspector, Pernem Police Station, Goa - Pincode 403 512	North Goa	2201233 2201065
Margao	Police Inspector, Margao Police Station, Goa - Pincode 403 601	South Goa	2705095
Cuncoim	Police Inspector, Cuncoim Police Station, Goa - Pincode 403 001	South Goa	2763234
Maina Curtorim	Police Inspector, Maina Curtorim Police Station, Goa - Pincode 403 001	South Goa	2714787
Colva	Police Inspector, Colva Police Station, Goa - Pincode 403 708	South Goa	2788396
Quepem	Police Inspector, Quepem Police Station, Goa - Pincode 403 705	South Goa	2662253
Curcholem	Police Inspector, Curcholem Police Station, Goa - Pincode 403 703	South Goa	2650568
Sanguem	Police Inspector, Sanguem Police Station, Goa - Pincode 403 704	South Goa	2604233
Canacona	Police Inspector, Canacona Police Station, Goa - Pincode 403 702	South Goa	2633357

Name of the Police Station	Complete Postal Address of the Police Station along with PIN CODE	Name of District	Tel No.s
Vasco	Police Inspector, Vasco Police Station, Goa - Pincode 403 802	South Goa	2513273 2512304
Verna	Police Inspector, Verna Police Station, Goa - Pincode 403 722	South Goa	2782325
Harbour	Police Inspector, Harbour Police Station, Goa - Pincode 403 803	South Goa	2520740
Vasco Railway	Police Inspector, Vasco Railway Police Station, Goa - Pincode 403 802	South Goa	2512488
Crime Branch	Police Inspector, Crime Branch Police Station, Goa - Pincode 403 004	CID	2456688
Konkan Railway	Police Inspector, Konkan Railway Police Station, Goa - Pincode 403 601	South Goa	2706048
ANC	Police Inspector, ANC Police Station, Goa - Pincode 403 001	CID	2428439
Women	Police Inspector, Women Police Station, Goa - Pincode 403 001	CID	2428992

#### **F: EXPECTED BENEFITS TO STAKE HOLDERS:**

<b>Citizens</b>
This would save them a lot of time and effort and would ensure convenience to each citizen.
Simplified process for registering and tracking petitions and FIRs
Simplified process Multiple channels to access services from police like, Web, Call centre and Police dept Office to access the for accessing general services such as requests for certificates, verifications, and permissions
Simplified process for registering grievances against police
Simplified process for tracking the progress of the case during trials
Simplified access to view/report unclaimed/recovered vehicles and property
Improved relationship management for victims and witnesses
Faster and assured response from police to any emergency calls for assistance
The Citizen would get the benefit as the processes will become quick and efficient. It has been envisaged that the citizens would be provided with quick and easy access to the desired services
Citizens would be having the flexibility of obtaining status of its application/service request immediately on request.
Citizens would also get the advantage of various payment options and channels through various payment interfaces

Easy access to the desired information pertaining to departmental services
<b>State Police Department &amp; Police Officials</b>
Enhanced tools for investigation
Centralized crime and criminal information repository along with the criminal images and fingerprints with advanced search capabilities
Enhanced ability to analyze crime patterns, modus operandi including GIS tools
Enhanced ability to analyze accidents and other road incidents including GIS tools
Faster turnaround time for the analysis results (crime and traffic) to reach the officers on the field
Reduced workload of the police station back-office activities such as preparation of regular and ad-hoc reports and station records management
Enhanced tools to optimize resource allocation for patrols, emergency response, petition enquiries, and other general duties
A collaborative knowledge-oriented environment where knowledge is shared across the different regions and units
Better coordination and communication with external stakeholders through implementation of electronic information exchange systems
Advanced tools for traffic regulation and enforcement
Automated system would save the efforts of the officials in various day to day tasks.
Automation of Search of Documents will facilitate convenience for the Police officials
Speedy recovery of data and impounding will be possible due to instant access to data.
Timely Report generation with all desired fields and adhoc report generation would be possible through the system. This will help the decision makers of the Department in prompt decision making & progress tracking.
Multiple access channels for the citizens would lead to reduce rush and chaos at various offices across the state.
Balanced performance evaluation metrics and framework
Simplified process for registering grievance within department
Simplified process for personnel's administrative services such as leave, pay-roll, loans, and bill claims
Integrated view of the service record that presents the performance feedback and training needs
<b>External Departments of the State such as Jails, Courts, Passport Office, Transport Department, Hospitals etc.:</b>



Seamless integration with police systems for better citizen service delivery and improved law enforcement

Proper monitoring of incidents and cases with the of file management system (FMS).

### **Ministry of Home Affairs and NCRB**

Standardized means of capturing the crime and criminal data across the police stations in the country

Faster and easier access to crime and criminal information across the country in a manner amenable for trend and pattern analysis

Enhanced ability to detect crime patterns and modus operandi across the state and communicate to the state police departments for aiding in crime prevention

### **4.2 FUNCTIONAL SCOPE:**

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The functional scope also includes that the system should be UID compliant. SI is required to do the study and incorporate the functionality in order to make the system compliant with UID. All other scope as mentioned in the section 4.2 of the RFP remains unchanged.

### **Annexure 3 –Service Levels:**

Infrastructure Availability: RPO (zero data loss in case of failure of primary DC) should be zero minutes – This clause stands deleted.

### 3. REQUEST FOR PROPOSAL VOLUME - 2

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#### **6. PRE-QUALIFICATION CRITERIA:**

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- g. vii The bidder (System Integrator) must meet at least one of the below criteria:
- a. The bidder must have been assessed and certified for CMMI Level 5 or above. The certificate should be valid for at least a period of one year from the date of submission of the bid.
  - b. The bidder must have been assessed and certified for ISO 9001 or above.
  - c. The bidder must have been assessed and certified for ISO 27001.

*Stands amended as*

- g. vii The bidder (System Integrator) must meet all of the below criteria:
- a. The bidder must have been assessed and certified for CMMI Level 5 or above. The certificate should be valid for at least a period of one year from the date of submission of the bid.
  - b. The bidder must have been assessed and certified for ISO 9001 or above.

The bidder must have been assessed and certified for ISO 27001.

#### **8.6 Milestones and Payment Schedule for Operation and Maintenance Phase**

The operations and maintenance phase is for a period of five years post Go-Live in the last district. 40% of the total cost quoted by the bidder will be paid during the Operations and Maintenance Phase. It will be divided into 10 or X equated installments and made as 10 or X equal payments upon satisfactory adherence to the SLAs (where X is not less than 2 per year). The successful bidder will be required to submit a compliance report at the end of every month and a consolidated compliance report at the end of 6 months based on which these payments would be made.

*Stands amended as*

The operations and maintenance phase is for a period of five years post Go-Live in the last district. The lump sum cost quoted for the Operations and Maintenance Phase will be divided into 6 equal monthly installments and made as 6 equal payments upon satisfactorily adhering to SLAs. The payments during the Operations and Maintenance Phase will be made at the end of every six months after the delivery of the services upon satisfactorily adhering to the SLAs defined in the volume 1 of this RFP. The successful bidder will be required to submit a compliance report at the end of every month and a consolidated compliance report at the end of 6 months based on which these payments would be made.

## 8.7 PRE-QUALIFICATION REQUIREMENT PROPOSAL:

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### 5. Part V – Proof of Certification:

- a. Assessment and Certification of the required certification (CMMI Level 5 , ISO 9001 or above and ISO 27002)

*Stands amended as*

- a. Assessment and Certification of the required certification (CMMI Level 5 , ISO 9001 or above and ISO 27001)

### 8.7.4 RELEVANT e-GOVERNANCE PROJECT EXPERIENCE:

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<b>Relevant e-Governance project experience (provide no more than 2 projects in the last 5 years)</b>	
General Information	
Name of the project	
Client for which the project was executed	
Name and contact details of the client	
Project Details	
Description of the project	
Scope of services	
Service levels being offered/ Quality of service (QOS)	
Technologies used	
Outcomes of the project	
Other Details	
Total cost of the project	
Total cost of the services provided by the respondent	
Place (town, state) where the project was executed (deployment, operations and maintenance)	
Duration of the project (no. of months, start date, completion date, current status)	
Other Relevant Information	
Mandatory Supporting Documents: a) Letter from the client to indicate the successful completion of the projects b) Letter from the client to indicate the successful completion of the projects (setting up software, hardware and network infrastructure and building and deploying the application)	

**Relevant e-Governance project experience  
(provide no more than 2 projects in the last 5 years)**

c) Copies of the CMMI level 5,ISO 9001 or above, ISO 27001 or above assessments.

**Project Capability Demonstration**

Complete details of the scope of the project shall be provided to indicate the relevance to the pre-qualification criterion (which is part of minimum qualification criteria).

Following are the capabilities essential for the project. These capabilities may be spread over the 2 projects (which are part of minimum qualification criteria) and not essentially in this project alone. However, demonstration of these capabilities is compulsory. Respondents are required to provide information substantiating their qualification related to the any/ all of the capabilities. The capabilities are:

1. Online Portal Applications using SOA/Web Services with Service Orchestration – Software Architecture, Design, Development, and Maintenance:
  - Should have demonstrated this in multiple large-scale projects
  - Should have implemented in situations requiring high availability, security and scalability
  - Should have demonstrated capabilities to meet and exceed performance levels and service levels
2. System Integration:
  - Should have demonstrated ability to deliver turnkey projects successfully from design through deployment
  - Should have a demonstrated ability to integrate with legacy systems as well as other new software systems
  - Should have demonstrated experience in installation, commissioning and provisioning of hardware, software, network in Data Centre environments
3. Project and Program Management:
  - Should have extensive experience in large scale project and program management
  - Should have experience handling multiple stakeholders and locations
  - Should have extensive experience in implementing and supporting projects for users in multiple locations.
4. Financial Strength:
  - Should have financial capability to mobilize resources for large multi-year e-governance projects
5. Capacity Building and Change Management, Awareness and Promotion:
  - Should have demonstrated capability in conducting capacity building and change management programs for government stakeholders
  - Should have demonstrated capability in conducting promotion and awareness campaigns for user communities

### 10.3 FORM: DETAILED COMPONENT-WISE PRICING

The Detailed Component – Wise Pricing format is revised and amended. The same is given below.

Sl. No.	Category	Component	No of Components/ Units of Service (X)	Rate (per unit) (Y)	Total Cost (= X*Y)
<b>A. Hardware Related Costs with the AMC for the period of 5 years from the Go-Live of the project</b>					
1	Infrastructure Hardware /	PCs			
		Printers			
		Electronic Pen			
		Finger Print Reader			
		Digital Camera			
		UPS – 5 KVA			
		Duplex Laser Printer			
		Multi-Function Laser (Print/ Scan/ Copy)			
		Others			
2	Infrastructure Installation and Testing / Miscellaneous Charges /				
		Others			
<b>Total A:</b>					
<b>B. Networking (LAN) related Costs</b>					
1	Network Infrastructure related	Routers			
		32 port Switch			
		NT1 Box			
		VSAT Hardware			
		LAN Cabling			
2	Network Testing / Bandwidth / Miscellaneous Challenges /				
		Others			
<b>Total B:</b>					
<b>C: Application Development &amp; Database Creation</b>					
1	Application and Portal Development				

Sl. No.	Category	Component	No of Components/ Units of Service (X)	Rate (per unit) (Y)	Total Cost (= X*Y)
<b>Total C:</b>					
<b>E. Operations and Maintenance Costs (Quarterly Expenses for 5 years of contract after "Go-Live") – as detailed in RFP Volume 1</b>					
1	Application Maintenance & Operational Expense including up gradation, deployment of patches, fixes etc.				
2	Infrastructure Maintenance Expense (Helpdesk, deployed hardware & network infrastructure etc.)				
<b>Total E:</b>					
<b>F: Support Manpower</b>					
1	Programmer				
2	System Analyst				
3	Database Administrator				
4	Project Manager				
5	Any other				
<b>Total F:</b>					
<b>G: Data Digitization</b>					
1	Cost of digitization of data (data entry of the Master data and minimum historical transactional data entry)		2 person for 3 months (6)		
2.	Cost of scanning of existing files for the Integrated Workflow and Documents Management System		1 person for 6 months (6)		
<b>Total G:</b>					
<b>H: Training</b>					
	<b>Training Cost Per Person for</b>				
1	Advanced training on the application modules	100 resources	M		100*M
<b>Total H:</b>					

## 4. REQUEST FOR PROPOSAL VOLUME - 3

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### **6.4 TERMINATION FOR CONVENIENCE**

The GOA POLICE may, by prior written notice sent to the SI at least 3 months in advance, terminate the Agreement, in whole or in part at any time for its convenience. The notice of termination shall specify that termination is for the Department's convenience, the extent to which performance of work under the Agreement is terminated, and the date upon which such termination becomes effective.

*Stands amended as*

The GOA POLICE may, by prior written notice sent to the SI at least 3 months in advance, terminate the Agreement, in whole or in part at any time for its convenience. The notice of termination shall specify that termination is for the Department's convenience, the extent to which performance of work under the Agreement is terminated, and the date upon which such termination becomes effective. All Payments due to the client till the effective date would be paid according to the contract.