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1	1.2.1 (iii)	9	The Disaster Recovery cloud services regions should reside in India and should be at least 1000km apart.	All the users of Transport Department will be majorly from AP state and probably from India. The services that Transport Department users will be availing have to be run only during a man made disaster/any catastrophic disaster or natural disaster, there would be impact on entire transportation and communication system in the state. So to safeguard the business requirement and application availability, DC and DR in TIER III or above DC and can be in different cities having different fault lines/seismic zones .
2	1.2.1 (6-a)	9	Vertically: Upscale/downscale the solution to higher configuration Virtual Machines (i.e. VMs with different combinations of CPU and Memory)	VM's should scale vertically first and after reaching the defined parameters of CPU & RAM, the solution should scale horizontally. This will save the VM spinning time, complexity of deploying and managing application in horizontal scaling architecture.
3	1.2.1(7)	10	It should be possible to scale the solution in the above mentioned dimensions at any time and without prior notification to the cloud provider.	It should be possible to scale the solution in the above mentioned dimensions at any time automatically and without any manual intervention either from AP Transport team or CSP.
4	1.2.1(9)	10	The system should be modular and provide per hour/unit use based charges for the different components including but not limited to: VMs, Storage, Application and Network Load Balancer, Data transfer to and from the datacentre, VPN Gateways and firewalls and Content Delivery Networks (CDNs)	The system should be modular and provide as per consumption charges instead of per hour/unit use based charges for the different components including but not limited to: VMs, Storage, Application and Network Load Balancer, Data transfer to and from the datacentre, VPN Gateways and firewalls and Content Delivery Networks (CDNs)
5	1.2.1(15)	10	The Cloud Service provider will be able to provide PaaS for Mobile Services. A scalable cloud backend	Deleted

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			capability for building Windows Store, Windows Phone, Apple iOS, Android, and HTML/JavaScript applications. Store data in the cloud, authenticate users, and send push notifications to our application within minutes.	
6	1.2.1(17)	11	The bidder shall submit a Technical document in the proposal to the Transport Department with all the requirements to be fulfilled for ensuring smooth operations. The requirements may include: k. Storage details like IOPs, Raid details, Rpm etc.	The bidder shall submit a Technical document in the proposal to the Transport Department with all the requirements to be fulfilled for ensuring smooth operations. The requirements may include: k. Storage details like IOPs, Raid details, Rpm etc. Provider must have no single point of failure (NSPF) during orchestration with or without additional requirement (specify what you have)
7	1.2.1(18)	11	The bidder has to provide 24 hours support for all the calendar days of year to resolve issues related to cloud infrastructure.	Support provided should be including L1, L2, L3 and higher through different medium like phone, online chat, ticket on 24x7 basis.
16	1.2.2(II-2)	12	Service Management & Provisioning-Clause 2 : The proposer shall provide service availability of at least 99.9% for cloud services and virtual machines.	Service Management & Provisioning-Clause 2 : The proposer shall provide service availability of at least 99.95% for cloud services and virtual machines.
17	1.2.2(II-5)	12	Service Management & Provisioning-Clause -5 : The CSP should have the capability to provide various other services like Database, Cache, Search, Analytics, Mobile Backend, Queues, Tables, Backup, Identity Management, CDN, Client Application Analytics as a Service on pay as you go mode backed by monthly SLAs of minimum 99.5%	Service Management & Provisioning-Clause -5 : The CSP should have the capability to provide various other services like Database, Cache, Search, Analytics, Mobile Backend, Queues, Tables, Backup, Identity Management, CDN, Client Application Analytics as a Service on pay as you go mode backed by monthly SLAs of minimum 99.95% availability.

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			availability.	
17	1.2.2(II-6)	13	<p>Service Management & Provisioning-Clause 6: Intelligent Data Platform: The cloud should include data warehouse, corporate BI, self-service BI, and machine learning capabilities for both structured & unstructured data and in on-premises, cloud, and hybrid environments</p> <p>(Optional or Mandatory not mentioned)</p>	<p>Service Management & Provisioning-Clause 6: Intelligent Data Platform: The cloud should include data warehouse, corporate BI, self-service BI, and machine learning capabilities for both structured & unstructured data and in on-premises, cloud, and hybrid environments</p> <p>Mandatory</p>
19	1.2.2(II-7)	13	<p>Service Management & Provisioning-Clause 7: The CSP/ bidder should provider tools to empower operations teams to effortlessly collect, store and analyze log data from virtually any Windows Server and Linux source—regardless of volume, format or location. Separate the signal from the noise with simple, powerful log management tools and access real-time operational intelligence with improved troubleshooting, operational visibility and fast search to explore, investigate and fix incidents quickly.</p>	<p>Service Management & Provisioning-Clause 7: The CSP/ bidder should provide tools to empower operation teams to effortlessly collect, store and analyze log data virtually from any Windows Server and Linux server—regardless of volume, format or location. Separate the signal from the noise with simple, powerful log management tools and access real-time operational intelligence with improved troubleshooting, operational visibility and fast search to explore, investigate and fix incidents quickly.</p>
20	1.2.2(III-3)	13	<p>User/Administrative Management-Clause-3 Service Provider should provide multi-factor authentication for accessing the cloud infrastructure and application</p>	<p>User/Administrative Management-Clause-3 Service Provider should provide multi-factor authentication for accessing the cloud infrastructure and application with flexibility to switch over between various authentication modules.</p>

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			Optional	Mandatory
21	1.2.2(III-4)	13	<p>User/Administrative Management-Clause-4</p> <p>The CSP should be able to provide unified cloud portal with capabilities to manage various other cloud services like Database, Cache, Search, Analytics, Mobile Backend, Queues, Tables, Backup, Identity Management, CDN, Client Application Analytics as a Service.</p> <p>Mandatory</p>	<p>User/Administrative Management-Clause-4</p> <p>The CSP should be able to provide services and APIs to enable APRTA to develop the unified cloud portal with capabilities to manage various other cloud services like Database, Cache, Search, Analytics, Mobile Backend, Queues, Tables, Backup, Identity Management, CDN, Client Application Analytics as a Service.</p> <p>Mandatory</p>
22	1.2.2(IV-1)	13	<p>Integration-Clause 1 :</p> <p>The Proposer shall provide an API for each of the services that enables the development of complex automation solution for resource provisioning, configuration and de-provisioning.</p> <p>Mandatory</p>	<p>Integration-Clause 1 :</p> <p>The Proposer shall provide an API for each of the services that enables the development of complex automation solution for resource provisioning, configuration and de-provisioning.</p> <p>Mandatory</p>
23	1.2.2(IV-2)	13	<p>Integration-Clause 2 :</p> <p>The APIs should be based on Interoperable Internet standard Technologies such as REST, HTTP, JSON, XML and SOAP.</p> <p>Optional</p>	<p>Integration-Clause 2 :</p> <p>The APIs should be based on Interoperable Internet standard Technologies such as REST, HTTP, JSON, XML and SOAP.</p> <p>Mandatory</p>
25	1.2.2(V-2)	14	<p>Data Centre facilities & Network capabilities- Clause 2:</p> <p>The proposer shall have IP v6 roadmap.</p> <p>(Optional)</p>	<p>Data Centre facilities & Network capabilities- Clause 2:</p> <p>The proposer shall have IP v6 roadmap.</p> <p>(Mandatory)</p>
26	1.2.2(V-3)	14	<p>Data Centre facilities & Network capabilities- Clause 3:</p> <p>The Proposer shall provide flexible IP addressing that will support: DHCP, IP</p>	<p>Data Centre facilities & Network capabilities- Clause 3:</p> <p>The Proposer shall provide 5 static IPs, flexible IP addressing that will support: DHCP, IP address and port assignment on</p>

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			address and port assignment on external (public) interfaces, dedicated VPN connectivity between Transport Department and the vendor and the ability to map Transport Department owned domains to provider services addresses allowing services, sites and applications operating in the Proposer infrastructure to be viewed as Transport Department URLs. Mandatory	external (public) interfaces, dedicated VPN connectivity between Transport Department and the vendor and the ability to map Transport Department owned domains to provider services addresses allowing services, sites and applications operating in the Proposer infrastructure to be viewed as Transport Department URLs. Mandatory
27	1.2.2(VI-2)	14	Storage Services- Clause 2: The service will allow users to write, read, and delete an unlimited number of objects supporting a maximum object size of at least five (5) gigabytes of data. Optional	Storage Services- Clause 2: The service will allow users to write, read, and delete an unlimited number of objects supporting a maximum object size of at least five (5) gigabytes of data. Mandatory
28	1.2.2(VI-6)	14	Storage Services- Clause 6: The Service provider will ensure there are at least 2 copies of data maintained automatically in primary datacenter to avoid any HW related failures. If Transport Department choses the DR, the provider will need to ensure 2 copies of data are also maintained on the DR side. Optional	Storage Services- Clause 6: The Service provider will ensure that there are at least 2 copies of data maintained automatically in primary datacenter as well as DR to avoid any HW related failures. Optional
29	1.2.2(VI-7)	14	Storage Services- Clause 7: The service provider will provide an option to automatically keep a copy of data in a geo-redundant DC. (Optional)	Storage Services- Clause 7: The service provider will keep a copy of data in a DR in a different Seismic zone. Mandatory
30	1.2.2(VI-8)	14	Storage Services- Clause 8: The service provider should ensure data in transit from Transport Department	Storage Services- Clause 8: The service provider should ensure data in transit from Transport Department location to cloud, within primary and DR

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			location to cloud, within primary and DR and data at rest is encrypted. Mandatory	and data_@_rest is encrypted. Mandatory
31	1.2.2(VI-10)	14	Storage Services- Clause 10: Service provider should be able to provide high IOPS storage (more than 50,000) per VM (Optional)	Storage Services- Clause 10: Service provider should be able to provide SSD storage only for database server. Mandatory
32	1.2.2(VI-11)	14	Storage Services- Clause 11: New Clause added	Storage Services- Clause 11: CSP should support block and raw (Application centric) storage demanded by the applications developed by APRTA. Mandatory
33	1.2.2(VI-12)	14	Storage Services-Clause 12: New Clause added	Storage Services- Clause 12: Vaulting to APRTA to maintain a physical instance of the data on a daily basis should be supported. Mandatory
34	1.2.2(VII-2)	14	Computing Services- Clause 2: The service will offer a secure Web administration interface, which must be provided to remotely administer the virtual instances: RDP for Windows instances and SSH for Linux instances. (Optional)	Computing Services- Clause 2: The service will offer a secure Web administration interface, which must be provided to remotely administer the virtual instances: RDP for Windows instances and SSH for Linux instances. (Mandatory)
35	1.2.2(VII-3)	14	Computing Services- Clause 3: The service will allow users to copy or clone virtual machines images for archiving, troubleshooting, and testing. (Optional)	Computing Services- Clause 3: The service will allow Transport Department to copy or clone virtual machines images for archiving, troubleshooting, and testing. (Mandatory)
37	1.2.2(VII-10)	15	Computing Services- Clause 10: CSP should provide support to diverse application platforms through marketplace solutions - minimum are Tomcat, WordPress, appfog, Chef, Chyrp, django, Drupal, git,	Computing Services- Clause 10: CSP should provide support to diverse application platforms through marketplace solutions - minimum are Tomcat, WordPress, appfog, Chef, Chyrp, django, Drupal, git, Hadoop, JBoss, Joomla, Liferay, Magento, Mantis, Memcached, NGinx, OrchardCMS, Ruby

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			Hadoop, JBoss, Joomla, Liferay, Magento, Mantis, Memcached, NGinx, OrchardCMS, Ruby on Rails, Subversion, SugarCRM, X2CRM, SUSE Linux Enterprise Server, etc.	on Rails, Subversion, SugarCRM, X2CRM, SUSE Linux Enterprise Server, etc. All web servers to be hosted as demanded by APRTA application.
38	1.2.2(VII-13)	15	Computing Services- Clause 13: CSP should support multiple DB through marketplace solutions - minimum are MS SQL, MySQL, CouchDB, mongoDB	Computing Services- Clause 13: CSP should support multiple DB through marketplace solutions - minimum are MS SQL, MySQL, CouchDB, mongoDB etc.
39	1.2.2 (VIII-4)	15	Network Services- Clause 4: The service should provide controlled caching and geographic dispersion of static content to provide a Content Delivery Network (CDN) with edge locations on across continents . The service will provide a secure Web administration interface to remotely administer all the network related services. Mandatory	Network Services- Clause 4: The service should provide controlled caching and geographic dispersion of static content to provide a Content Delivery Network (CDN) with edge locations on across country . The service will provide a secure Web administration interface to remotely administer all the network related services. Mandatory
40	1.2.2(VIII-5)	15	Network Services- Clause 5: CSP should be able to provide HW / SW based firewall per customer . (Optional)	Network Services- Clause 5: CSP should be able to provide HW & SW based firewall. (Mandatory)
41	1.2.2(VIII-6)	15	Network Services- Clause 6: The service provider should provide an option of extending an MPLS to cloud. (Optional)	Network Services- Clause 6: The service provider should provide an option of extending an MPLS to cloud. (Mandatory)
42	1.2.2(IX-2)	15	Technical Support Services- Clause 2: Option for purchase of specialized deep technical support (L3 or higher) related to deployment, configuration, management and commissioning of the cloud and IaaS services	Technical Support Services- Clause 2: Option for purchase of specialized deep technical support (L3 or higher) related to deployment, configuration, management and commissioning of the cloud and IaaS services directly from the cloud services provider.

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			directly from the cloud services provider. Optional	Mandatory
43	1.2.2(IX-3)	15	Technical Support Services- Clause 3: General technical support related to usage of the cloud services to the end customer (can be provided by bidder himself) including setting up of SSO, Oracle DB (including setting up of Oracle Guard), NoSQL database etc. Optional	Technical Support Services- Clause 3: General technical support related to usage of the cloud services to the end customer (can be provided by bidder himself) including setting up of SSO, MySQL database clustering and database replication between DC- and DR etc. Optional
44	1.2.2(XII-1)	16	Managed Services- Clause 1: CSP should either offer directly or via a partner managed services for 1 year which is extendable. The managed services should cover: 1) Remote management of the current cloud environment on day to day basis 2) Involvement and assisting Transport Department while performing Test DR failover on need basis. 2) Involvement and assisting Transport Department to raise trouble ticket associated with any issues. 3) Involvement to train new Transport Department employees related to the project. 4) Involvement to assist Transport Department to conduct planned DR or Unplanned DR failover in applicable scenarios as defined by Transport Department. (Optional)	Managed Services- Clause 1: CSP should either offer directly or via a partner managed services for 1 year which is extendable. The managed services should cover: 1) Remote management of the current cloud environment on day to day basis 2) Involvement and assisting Transport Department while performing Test DR failover on need basis. 2) Involvement and assisting Transport Department to raise trouble ticket associated with any issues. 3) Involvement to train new Transport Department representatives related to the project. 4) Involvement to assist Transport Department to conduct planned DR or Unplanned DR failover in applicable scenarios as defined by Transport Department. (Optional)
45	1.2.2 (XIII-5)	16	Security/Firewall- Clause 5: Solution should have	Security/Firewall- Clause 5: Solution should have granular logging,

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			granular logging, reporting, audit and compliance management framework. (Optional)	reporting, audit and compliance management framework. (Mandatory)
46	1.2.2(XIII-10)	16	Security/Firewall- Clause 10: The CSP should have an option to pay for the cloud services through bank transfer post the invoices being charged on monthly basis.	Security/Firewall- Clause 10: The CSP shall be paid for the cloud services after rendering of the services after every Quarter.
47	1.2.2(XIII-14)	17	Security/Firewall- Clause 14: CSP should be able to offer discounts on the cloud services over the portal published pricing if customer decided to go with annual monetary commitments for cloud services. (Optional)	Security/Firewall- Clause 14: CSP should be able to offer discounts on the cloud services over the portal published pricing if customer decided to go with annual monetary commitments for cloud services. (Mandatory)
48	1.2.2(XIII-15)	17	Security/Firewall- Clause 15: CSP should offer the pricing for cloud services support for minimum 1 year, extendable to 3 years as well. (Optional)	Security/Firewall- Clause 15: CSP should offer the pricing for cloud services support for minimum 1 year, extendable upto 5 years as well. (Mandatory)
49	1.2.3(Table-clause 2)	17	1.2.3 Table 2. Operational Integrity & Security Management ISO 17799 Certified System	Deleted
50	1.2.3(Table-clause 3)	17	3. Operation- ISO 9001-2008 Certified	Operation-ISO 9001-2008 Certified or Latest version
51	1.2.3(Table-clause 8)	17	8. Transparency SOC 1 & SOC 2	Deleted
52	1.2.7	19	New Clause added below 1.2.7	<u>EXIT CLAUSES:</u> 1. CSP shall provide assistance and the tool for smooth migration of the application(s) / service(s) / its related component(s) along with its related configurations as reasonably applicable based on the change in Organization Policy / Strategy OR regulatory requirements, in case the same is to be migrated to other CSP. However, the interoperability between both the CSP shall be ensured.

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				2. CSP shall make sure that there is no dependency of application on the underlying hardware, operating system or network and shall extend its full support in moving the application to other CSP, if needed, making the migration as seamless as possible with interoperability.
53	1.4.1(a)	19	Qualification Submissions	Rs.5000/- & Rs.1,00,000/- to be given with pre bid qualification cover, those who qualified in pre bid only, technical bids will be opened.
54	1.5	20 & 21	Schedule of Bidding Process	Same as Notice Inviting Tender (page no:2)
58	Table –III IT Infrastructure related service Levels	51	Server Availability (including the Hypervisor, VM and OS running on it) Target- 99.995% of above Penalty- 99.995% SLA criteria- Rs.10,000/- The penalty shall be capped to Rs. 1,00,000/-(One lakh)	Server Availability Target- 99.95% Penalty- 99.95% SLA criteria- Rs.1,00,000/- The penalty shall be capped to Rs. 10,00,000/-(Ten lakhs)
59	Table- IV Cloud Services related Service Levels	51	Uptime of Virtual Machines Target- 99.749% Penalty- 99.749%	Uptime of Virtual Machines Target- 99.95% Penalty- 99.95%
60	Table- IV Cloud Services related Service Levels	52	Uptime of Cloud Solution including the individual Cloud Solution Midules as specified in the FRS and are mentioned in the table below Target- 99.749% Penalty- 99.749%	Uptime of Cloud Solution including the individual Cloud Solution Midules as specified in the FRS and are mentioned in the table below Target- 99.95% Penalty- 99.95%
61	Table-4 (2)	52	Sl.No 1 to 7 Target- 99.749%	Sl.No 1 to 7 Target- 99.95%
62		52	New insertion added in Note below the table-4	<u>SLA performances are not linked to payments/dues/arrears. Payment will be made after deduction of SLA based penalties.</u>
63	Reporting Requirements:	53	Reporting Requirements: New row added in row number 13	Report Name: Detailed Services Usage Report. Report Type: Report Frequency: Weekly, monthly, Quarterly
64	Annexure k,	68	Disaster Recovery Plan	Disaster Recovery Plan

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	Section 2(A), point -vi			(Rpo=15min, Rto=2hrs)
65	APPENDIX K2	71	Criteria: Bidder's experience in commissioning Cloud Solution in India, quantified in terms of number of projects will be evaluated. Setting-up IT infrastructure would mean where the Bidder has procured installed and commissioned Cloud Infrastructure (Hardware & Software). Only Project cost greater than Rs.2 Lakhs and set up as per the contract in the last 3 financial years will be considered.	Criteria: Bidder's experience in commissioning Cloud Solution in India, quantified in terms of number of projects will be evaluated. Setting-up IT infrastructure would mean where the Bidder has procured installed and commissioned Cloud Infrastructure (Hardware & Software). Only Project cost greater than Rs.2 Lakhs per month and set up as per the contract in the last 3 financial years will be considered.
66		78	BOM with Pricing	Existing table will be replaced as new table shown below:

BOM with Pricing

(Split individual components and price for reference of increasing decreasing requirement)

Sl.No.	Service Type	Description	Quantity-DC	Quantity-DR	Amount per year	
1	Web Frontend servers (Linux)	Type 4 - 16 core VM	4	2		
2	Database servers (Linux - postgresql)	Type 4-16 Core	2	2		
3	Storage for VM (OS, Programs, Logs etc. for Web and DB Servers)	Distributed among servers - 200 GB per server SSD with Raid 10	1200GB	800 GB		

4	Storage for Transactions for VM & DB servers and for storage documents	Database - 1TB per server with Raid 10	1 TB usable space	1 TB usable space		
5	Storage for Documents	File System Access required	8 TB usable space	8 TB usable space		
6	SSL Certificates (Wild Card Certificates)	Required for all Web servers	2			
7	Data Transfer charges	Inbound / outbound Use assumptions for pricing	1 TB			
8	VPN Gateway	Min 4000 concurrent users	1	1		
9	Load Balancer Service	GSLB/WAF and Min 1 GBps throughput	1	1		
10	Firewall security along with IPS, IDS, Web filtering and Url filtering etc.	With 1GBps throughput or higher	1	1		
11	Backup	Backup policy shall be shared to the successful bidder	9 TB			
12	Public IPs	Continuos IP pool	16	8		
13	Anti-virus	Anti-virus software for all servers	6	4		
15	Static IPs		3	2		
16	DC-DR Bandwidth	Required RPO of 15 Min shall be taken care by service provider at no additional cost.	as required	as required		

17	Router	Used for terminating MPLS of 45 mbps thruput(used till the migration is completed)	1	1		
18	Switch	L2/L3 or higher - 24 port Gigabit Ethernet	1	1		
19	Managed Services as listed in 1.2.2 - in this RFP	Per Annum cost	Lot	Lot		
20	Vaulting services to APRTA					

Note: The above prices should be inclusive of all taxes and for 1 year payable quarterly after rendering of services.

Assumptions

Past transaction statistics provide us a reasonable guidance on following assumptions:

- A. Number of Employees: 1500
- B. Number of Dealers : 1500
- C. Citizen Access: 5000 equivalent
- D. Transactions Per year:
- E. Average Content Size of Transaction: 5 MB
- F. Hours of Operation: 6 hrs
- G. Days of Operation: 300 days

Each user will have on average 1 desktops, 1 mobile device and uses a web browser to connect to the APRTA system. The desktop clients are on 6 hours a day, mobile devices connect on average every 15 minutes during the work day. - Mobile devices usually upload and download on average 4-8 MB file - Desktop devices upload and download max of 10 MB file.

Additional BOM

#	Item	Unit Price	Quantity.	Total Amount in Rs. (INR)
1	VM's			
2	Storage			

			Service Tax – 14.50%	
			CST – 5.5%	
			Swachh bhara t cess 0.5%	
			Krishi Kalyan cess 0.5%	
			Total amount including all taxes	

Additional BOM prices will carry a weight age in the overall financial evaluation. The bidder has to propose the best possible model as per the project need.