TENDER BAGI KERJA-KERJA MENAIK TARAF DAN MENYELENGGARA INFRASTRUKTUR HYPER-CONVERGED DENGAN TEKNOLOGI VIRTUALIZATION UNTUK KEGUNAAN APLIKASI-APLIKASI ICT DI PERBADANAN PUTRAJAYA

No. Tender: PPj/JK/T/9/2020

TAKLIMAT TENDER - TEKNIKAL

SCOPE OF WORK

1.0 Deliver and install new Hyper-Converged (HCI).

1.1 The Successful Tenderer shall diligently and professionally undertake the supply, delivery, installation, testing, commissioning and maintenance of hardware and platform software for new Hyper-Converged Infrastructure (HCI) at Central Server Farm (CSF), Presint 3.

1.2 The Successful Tenderer shall also perform software and database installation and migration exercise of application and data from existing servers to the new infrastructure for Putrajaya Geospatial Information System (PutraGeoInfo).

1.3 The Successful Tenderer shall also perform database installation, configuration and migration exercise of data from existing servers to the new infrastructure for Sistem Pangkalan Data Berpusat.

1.4 The Successful Tenderer shall create and configure virtual machine (host in new HCI) needed to perform physical-to-virtual and virtual-to-virtual

SCOPE OF WORK - CONTINUE

1.5 The work to be carried should satisfy Perbadanan Putrajaya's requirement to,

a) Setting up a new Microsoft SQL database for Sistem Pangkalan Data Berpusat.

b) Migrate the existing applications and data of Sistem PutraGeoInfo to the new virtual machines.

c) Setting up of disaster recovery environment and functionalities (active-active or active–passive) for application / system at Perbadanan Putrajaya Disaster Recovery Center, Presint 15.

d) Provide new backup infrastructure for all system hosted in HCI.

e) Setting up virtual machines as when necessary.

f) Do such other things which are necessary or incidental to the work as listed above.

SCOPE OF WORK - CONTINUE

1.6 The works and process for Deliver and install new HCI shall include as below but not limited to:

- new HCI.
- software licenses.
- the migration works for PutraGeoInfo.
- deployment and configuration of the Sistem Pangkalan Data Berpusat.

SCOPE OF WORK - CONTINUE

2.0 Migration works for existing HCI.

2.1 The Successful Tender shall deploy and configure of disaster recovery environment and functionalities with make use of the existing Hyper-Converged Infrastructure.

2.2 The Successful Tenderer shall relocate the hardware of existing HCI from Central Server Farm (CSF), Presint 3 to Perbadanan Putrajaya Disaster Recovery Center (DRC), Presint 15.

2.3 The Successful Tenderer shall also diligently and professionally undertake the migration for existing HCI platform software from Nutanix to Microsoft Azure Stack HCI / Storage Spaces Direct or any equilvelent HCI platform.

3.0 Maintenance Services.

3.1 The Successful Tenderer shall also diligently and professionally undertake the maintenance services of hardware and software

SCOPE OF WORK - CONTINUE

4.0 The scope of tender shall generally include the following: -

4.1 Hardware

a) Supply and install ONE (1) set of Hyper-Converged Infrastructure (3 nodes) by setting up of high-availability server infrastructure with the minimum specification and capacity requirement as stated in Vol 1 Part 3 Section C Form 3 – Schedule of Technical Specification Compliance (Hardware) at the production site (CSF).

b) To relocate existing HCI hardware from Central Server Farm (CSF), Presint 3 to Perbadanan Putrajaya Disaster Recovery Center (DRC), Presint 15.

c) Supply and install ONE (1) set of backup solution and ensure all system can be backup with the minimum specification and capacity requirement as stated in Vol 1 Part 3 Section C Form 3 – Schedule of Technical Specification Compliance (Hardware) at the production site (CSF).

d) Supply and install Top of Rack Switch with the minimum specification and capacity requirement as stated in Vol 1 Part 3 Section C Form 3 – Schedule of Technical Specification Compliance (Hardware) at the production site (CSF).

e) Configure virtual machines, install database and migrate all data, documents and applications from existing servers to the new HCI.

SCOPE OF WORK - CONTINUE

4.2 Software and License

a) Supply and install software and license as per stated below:-

- Microsoft Windows Server 2019 Datacenter Edition or latest release version for the physical hosts and virtual machines.
- Microsoft SQL Database 2019 Standard (Core) Edition or latest release version.
- Adequate backup software license (Veeam Availability Suite Enterprise Plus – Public Sector software or equivalence).
- All costs related to Microsoft products must be from valid Microsoft License Service Provider.

SCOPE OF WORK - CONTINUE

4.3 Migrate existing data and applications for Sistem PutraGeoInfo.

4.4 Install antivirus (provided by Perbadanan Putrajaya) for all physical host and guest virtual machines.

4.5 Configure system replication, perform testing and commissioning.

4.6 Provide failover plan for DR in case of equipment failure, data corruption or other catastrophe within a month after User Acceptance Test (UAT).

4.7 Perform recovery test once a year.

4.8 Supply and install all fiber patch cord, UTP Cat6, power cables, power point and necessary equipment.

4.9 All equipment must support the IPv6 protocol.

4.10 Supply and install all related accessories so that it can be mounted on a standard 42U rack provided by Perbadanan.

4.11 Provide Comprehensive Corrective and Preventive Maintenance Services for the purpose of achieving full operability of the System.

4.12 Provide training and documentation.

SCOPE OF WORK - CONTINUE

5.0 The Successfull Tenderer shall propose the best strategy and design to apply during new HCI implementation and migration for existing HCI to ensure it will be completed within six (6) months after the commencement date with minimum downtime. A comprehensive explanation shall be given for evaluation purposes.

6.0 Provisional Sum

6.1 The Succsessfull Tenderer shall propose, supply, install, configure, testing and commission any upgrading work for the HCI node when instructed by Perbadanan Putrajaya.

6.2 The price of the upgrading work shall base on the Schedule of Rates.

6.3 If the price is not listed in the Schedule of Rates, the price shall base on three (3) quotations from three (3) different vendors for Perbadanan Putrajaya approval.

SCOPE OF WORK - FOR MIGRATION WORKS FOR PUTRAGEOINFO

- Migration of data, documents, and application from existing servers to the new Hyper-Converged Infrastructure for Sistem Perbadanan Putrajaya Geospatial Information (PutraGeoInfo).6.0 Provisional Sum
- Provide needed virtual server environment (in Windows based environment) for PutraGeoInfo Production Geodatabase, PutraGeoInfo Staging Geodatabase, PutraGeoInfo Web App1 and PutraGeoInfo Web App2.6.2.
- Installing and configure ArcGIS for server, Portal for ArcGIS, ArcGIS Web Adapter, PostgreSQL Database Server, PostgreSQL Database Client, ArcGIS License Manager, Autodesk License Manager, FME Desktop License Manager, FME Server License Manager, Apache Web Server, antivirus on new virtual server suite to the operating system architecture.
- The abovementioned licence for PutraGeoInfo System shall be provided by Perbadanan Putrajaya.
- Perform the migration activity needed for the GIS Database (from Oracle to PostgreSQL) and the database configuration must support spatial data storing function. Ensure all database component such as user, schema, view, dblink or others that related to database working in good condition after migration process.

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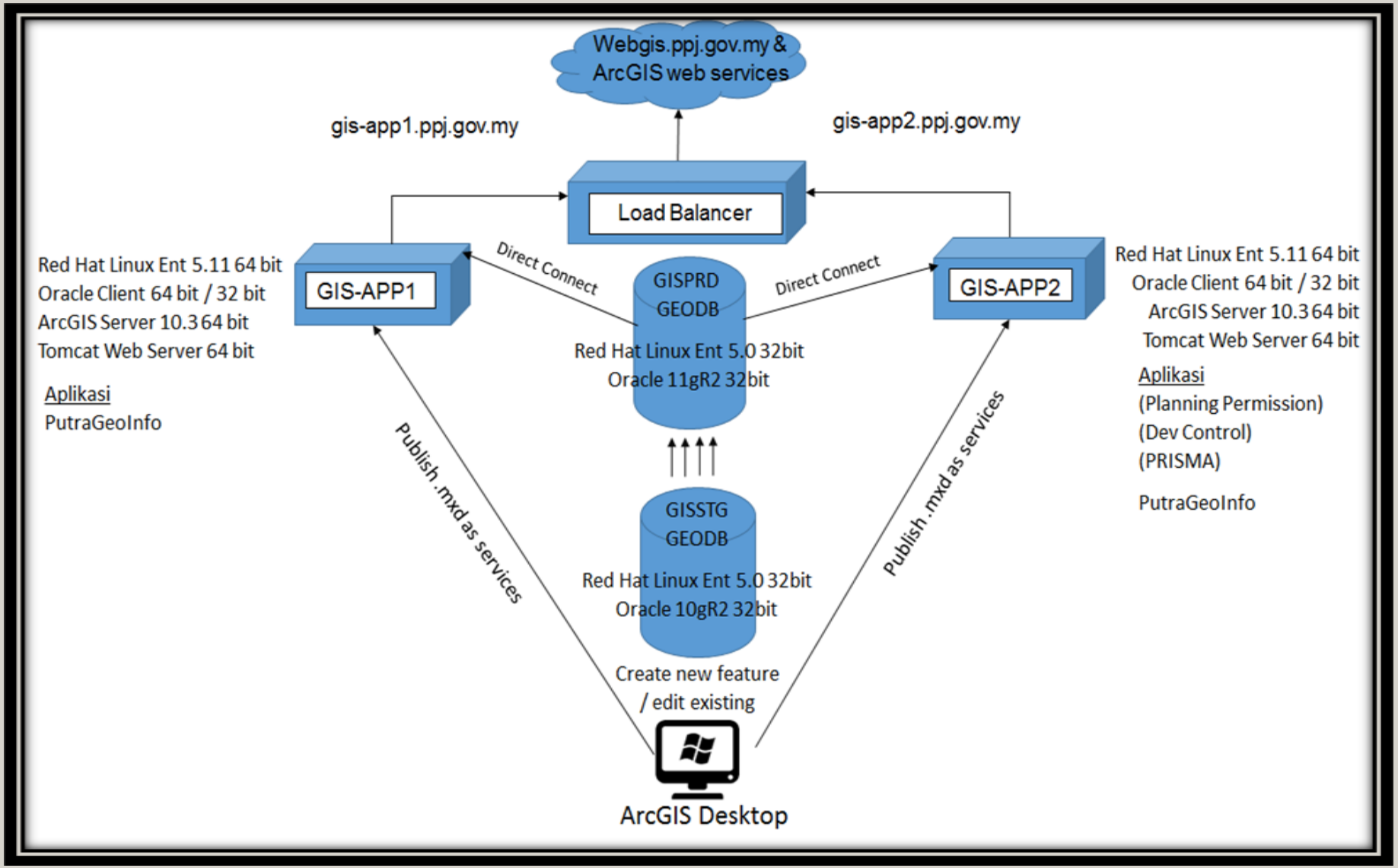
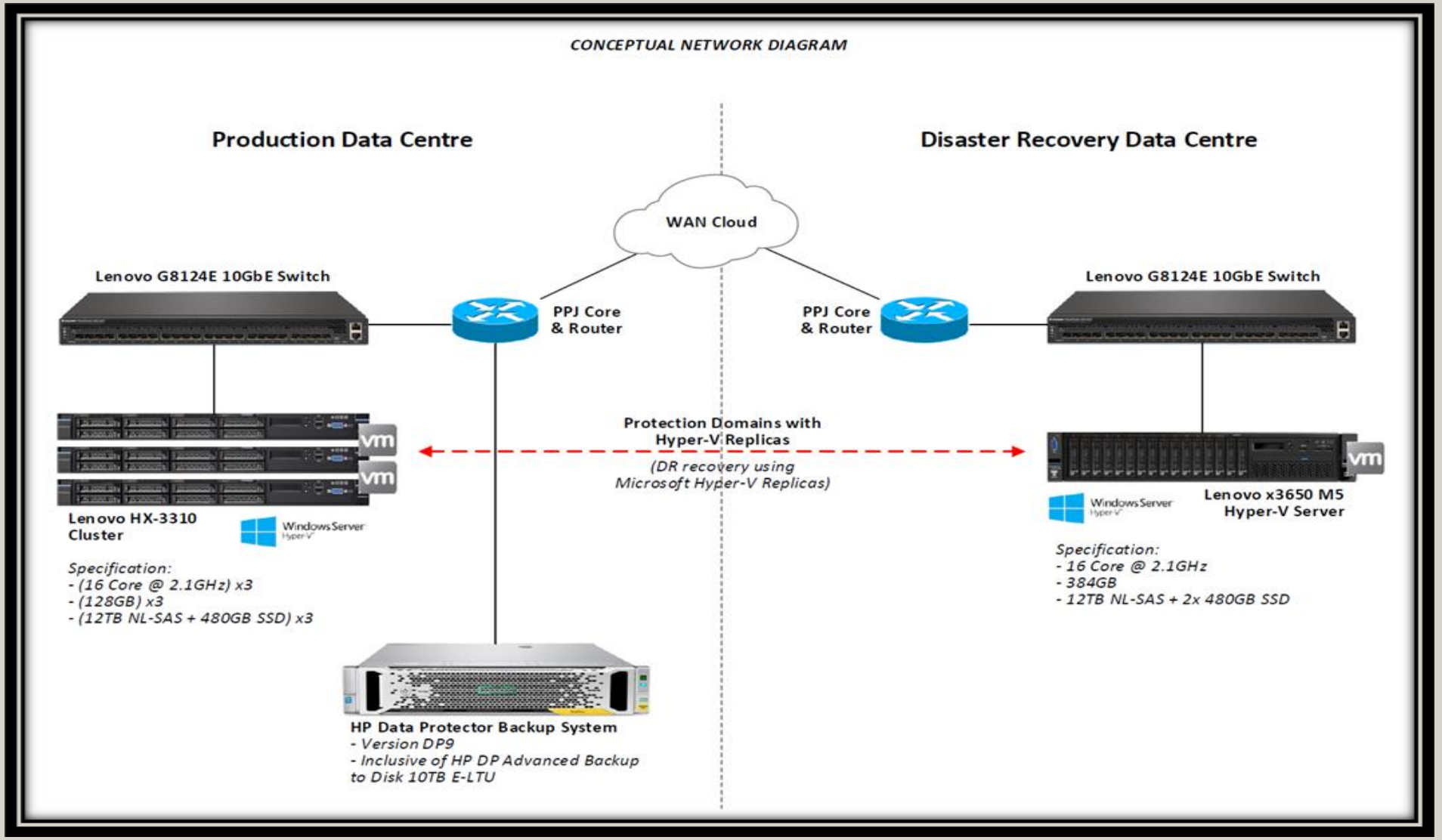
DRAWING - CURRENT PUTRAGEOINFO SYSTEM ARCHITECTURE



DRAWING - EXISTING HYPER-CONVERGED DIAGRAM



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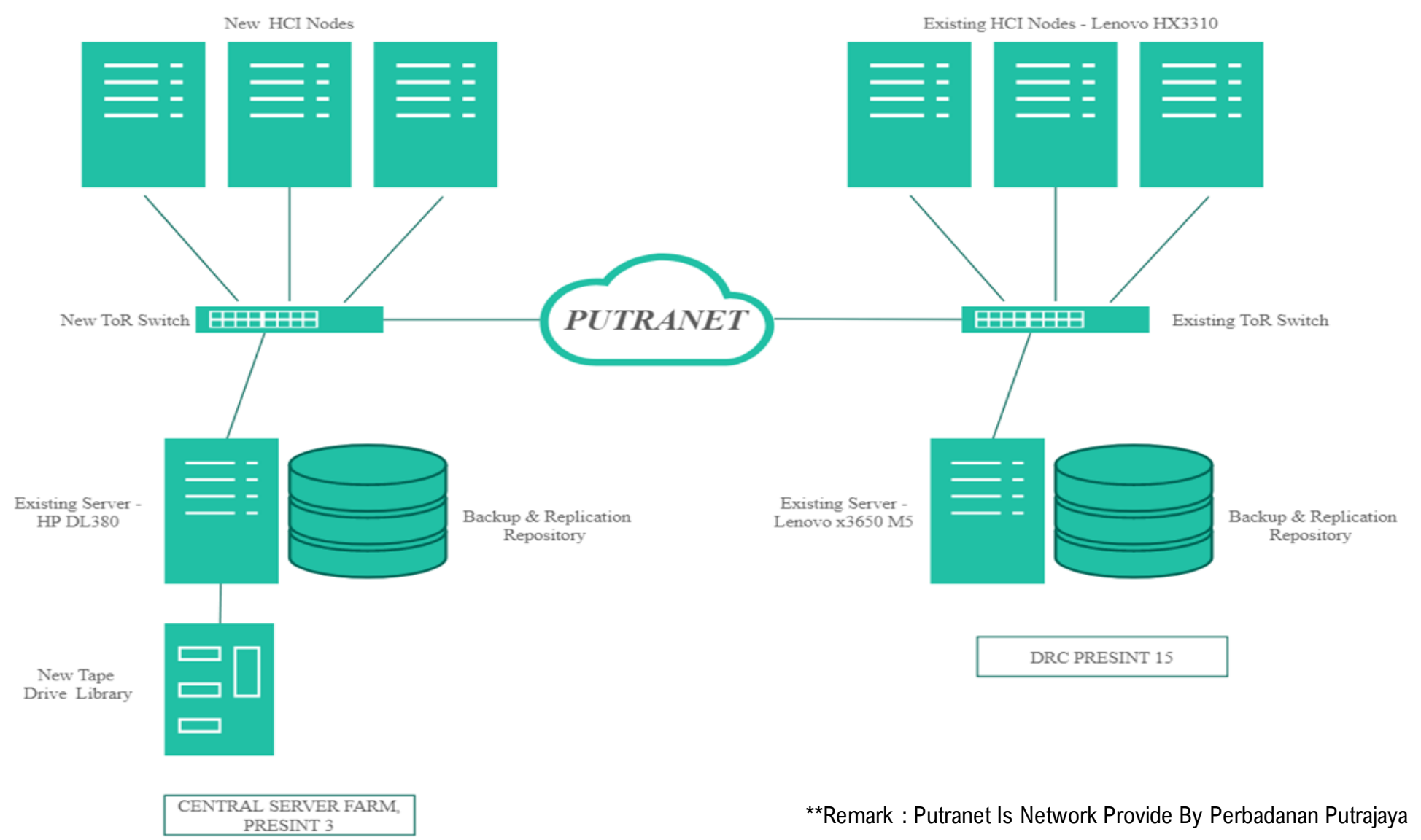
DRAWING - NEW HYPER-CONVERGED INFRASTRUCTURE ARCHITECTURE



**Remark : Putranet Is Network Provide By Perbadanan Putrajaya

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ASSET LIST - FOR EXISTING HYPER-CONVERGED HARDWARE

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No.	Server Name	Location	Serial Number	Brand / Model	Operating System	Quantity	Remark
1.	Production Server-01	CSF P3	J32VL55, J32VL57 & J32VL56	Lenovo - HX3310	Window Server 2012 R2 Datacenter	3	• To be relocate to DRC P15 • OS will be upgrade to Windows Server 2019
2.	Backup Server	CSF P3	SGH708YJAJ	HP – DL380	Window Server 2012 R2 Standard	1	• To be re-use as backup server • OS will be upgrade to Windows Server 2019
3.	Disaster Recovery Server	DRC P15	J32PPHY	Lenovo – x3650 M5	Window Server 2012 R2 Datacenter	1	• To be re-use as backup server • OS will be upgrade to Windows Server 2019
4.	Lenovo Switch	CSF P3	MM25572 & MM25551	Lenovo – 7159BR6 Ethernet RackSwitch G8123E (R-F)	NA	2	• To be relocate to DRC P15

SYSTEM BACKGROUND - PUTRAGEOINFO

1.0 Sistem PutraGeoInfo (Putrajaya Geographical Information System)

1.1 PutraGeoInfo is a system that uses ArcGIS platform server version 10.4 and Oracle 11g as a database runs on Red Hat Enterprise 5 Server.

1.2 There are two (2) servers used for database (staging – for editing, production – final data) as well as supported with ArcGIS Server Manager application to maintain data and mxd mapservices.

1.3 Also, two (2) servers using Apache Tomcat work as a JAVA web application server and Portal for ArcGIS for the purposes of the application portal ArcGIS (ArcGIS Advanced Enterprise use license). Use of ArcGIS Web Adapter on the web server for easy access from port 443 to port 80.

1.4 Portal For ArcGIS is federated with ArcGIS Server together for Single Sign On purposes and ease of management of user applications.

1.5 Applications on Portal For ArcGIS can be accessed via the web and it's stored on the web server. Server GIS-APP1 store application WebGIS (public), PP and RT whereas GIS-APP2 server serve application such as PRISMA and Facilities Management.

1.6 ArcGIS Desktop is used for the purpose of editing and update the data. There are 5 floating licenses for this software and shared using ArcGIS License Manager.

SERVICE LEVEL AGREEMENT

NO.	REQUIREMENT	SERVICE LEVEL AGREEMENT (SLA)	PENALTY
1.0	New HCI implementation and migration for existing HCI		
1.1	i) Supply, deliver, install, migrate of data, application and softcopy documents from existing servers to the virtual servers, testing and commissioning of all equipment. i) Setting up disaster recovery environment and functionalities (active-active and active-passive). i) Migration works for existing HCI.	Shall complete within six (6) months after the commencement date.	RM500/ hardware or software/day

SERVICE LEVEL AGREEMENT - CONTINUE

NO.	REQUIREMENT	SERVICE LEVEL AGREEMENT (SLA)	PENALTY
2.0	Preventive Maintenance (PM)		
2.1	Delay of executing scheduled Preventive Maintenance as per agreed schedule	Agreed Schedule	RM100/ hardware or software/day
2.2	Delay of submitting Preventive Maintenance report	Shall complete within seven (7) days from the PM completed.	RM100/month

SERVICE LEVEL AGREEMENT - CONTINUE

NO.	REQUIREMENT	SERVICE LEVEL AGREEMENT (SLA)	PENALTY
3.0	Corrective Maintenance (CM)		
3.1	Response Time	• Shall response within fifteen (15) minutes after being notified by Perbadanan through email • Shall response within five (5) minutes after being notified by Perbadanan through social media/ phone	RM100/case
3.2	Hardware/software faulty (If no spare parts needed/no third party involvement)	Corrective Maintenance of faulty equipment in the server room is within four (4) hours after being notified by Perbadanan	RM100/case/ hour
3.3	Hardware/software faulty (require spare parts replacement)	Corrective Maintenance of faulty equipment in the server room is within six (6) hours after being notified by Perbadanan	RM100/case/ hour
3.4	Interruption to the HCI system/any Perbadanan system operation due to Successful Tenderer fault or negligence.	System shall operate without any interruption	RM300 / occurrence/ day

SERVICE LEVEL AGREEMENT - CONTINUE

NO.	REQUIREMENT	SERVICE LEVEL AGREEMENT (SLA)	PENALTY
4.0	Reports and Documentation		
4.1	Delay of submitting weekly report	Shall submit to Perbadanan every Friday	RM50/week
4.2	Delay of submitting project documentation	Shall submit to Perbadanan within two (2) months from the user acceptance date.	RM100/day

TECHNICAL PROPOSAL

a. The Tenderer shall propose the best strategy and design to apply during new HCI implementation and migration of existing HCI to ensure it will be completed within 6 months timeframe with minimum downtime. A comprehensive explanation shall be given for evaluation purposes.

b. The proposal shall spell out about:

   i. The proposed new HCI hardware and platform software and how to implement, deploy and configuration.

   ii. The deploying, implementation and configuration of the migration works for existing HCI.

   iii. The deploying, implementation and configuration of Microsoft SQL database.

c. The Tenderer shall also propose the best strategy to apply for Operation and Maintenance (O&M) during the warranty period. The proposal shall meet the Service Level Agreement (SLA) requirements stated in this tender document. A comprehensive explanation is important for evaluation purposes.

d. The Tenderer shall propose a comprehensive Implementation and Maintenance Schedule in Microsoft Project Format Gantt Chart to cover Operation and Maintenance.

TECHNICAL PROPOSAL - CONTINUE

Training and Workshop

All technical training shall be completed within 2 years after the Acceptance Test.

a. The Tenderer shall provide list of courses for the system provided which will enable Perbadanan personnel to be familiar with all aspects of the system.

b. The Tenderer shall also provide training schedule to best suit the implementation schedule.

TECHNICAL SPECIFICATION

1.0 New Hyper-Converged Server

1.1 Minimum specification:

- Number of Nodes at CSF: 3 Nodes
- Number of Processors Per Node: 2
- Processors: minimum 2.9 GHz clock speed
- Processor Core: minimum 16 cores
- Number of Memory (RAM) Per Node: minimum 768GB
- Must use Windows Server Software-Defined (WSSD) for Windows Server 2019 or equivalent HCI platform software certificated component (such as RDMA Network Adapter, capacity drive, cache drive, HBA card and related accessories).
- SSD cache must only use Mixed Used 12G SAS (3DWPD and above).

TECHNICAL SPECIFICATION - CONTINUE

- Capacity hard drive must use 7.2K RPM SAS / SATA Drive.
- The number of capacity drives a multiple of the number of cache drives for the symmetry must be either 1:4 or 1:6 (for example; cache drive: capacity drive) ratio.
- Network Adapter should be minimum 25Gbps that support RoCEv2 or iWrap RDMA Solution.
- Minimum 10Gbps UTP ports.
- Should support IPv6.
- Redundant Power Supply.
- All cabling including transceiver needed must be included as bundle.
- Each server node shall have empty slot for capacity hard drive, cache drive and memory (RAM) to cater future expansion at least 25%

TECHNICAL SPECIFICATION - CONTINUE

- Server node should compatible with Azure Stack HCI / Storage Spaces Direct or equivalent HCI platform software.
- Shall include with the license of software management by principle to manage and monitor the server node.
- Server node should have 3 years principle hardware with 24 x 7 Days Onsite Support/Part & Labour and 4 hours respond.
- Shall have a nominal of five (5) years of support before major replacement is required (End of Support).

TECHNICAL SPECIFICATION - CONTINUE

2.0 New Hyper-Converged Storage

Minimum specification:

- Total minimum 60 TB of capacity storage.
- Total SSD cache size must at the minimum of 20% capacity storage size.
- Usable format should use three-way mirror configuration.

TECHNICAL SPECIFICATION - CONTINUE

3.0 Top of Rack (ToR) Switch

Minimum specification:

- Number of Top of Rack Switch at CSF: 2 unit
- Minimum 12-port 25GbE.
- Shall include all required cable and transceivers as bundle.
- Shall include all required Uplink Transceiver.
- Shall support IPv6.
- Redundant Power Supply.
- Shall include with the license of software management by principle to manage and monitor the switch.
- Shall have 3 years principal hardware support with 24 x 7 Days Onsite Support/Part & Labour and 4 hours respond.
- Shall have a nominal of five (5) years of support before major replacement is required (End of Support).

TECHNICAL SPECIFICATION - CONTINUE

4.0 Tape Drive Library

Minimum specification:

- Number of Tape Drive Library at CSF: 1 unit.
- Shall be LTO8 SAS Tape Drive Library.
- Redundant Power Supply.
- Shall house up to 40 cartridges.
- Shall include min 20 unit LTO8 Tape Media with Tape Labels, 1-200.
- Shall include all cable and transceivers as bundle.
- Shall have 3 years principle hardware support with 24 x 7 Days Onsite Support/Part & Labour and 4 hours respond.
- Shall have a nominal of five (5) years of support before major replacement is required (End of Support).

TECHNICAL SPECIFICATION - CONTINUE

5.0 Backup & Replication Repository at for each site; CSF and DRC

Minimum specification:

- Usable 46TB with RAID 6 or any fault tolerance technique.

- Shall have empty slot for hard drive to cater future expansion at least 25%.

TENDER SUBMISSION CHECKLIST - FOR TECHNICAL

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- MANDATORY SPECIFICATION
  - ✓ Support Letter (original letterhead form principle) for the proposed hardware (Hyper-Converged server, ToR switch and tape drive library).
  - ✓ Form 1 - Schedule of Technical Specification Compliance (Functional)
- GENERAL SPECIFICATION
  - ✓ Form 2 - Design and Technical Proposal
  - ✓ Form 3 - Schedule of Technical Specification Compliance (Hardware)
- Perfect Binding

**PLEASE COMPLY ALL SUBMISSION CHECKLIST

No. Tender :
PPj/JK/T9/2020

TERIMA KASIH.
SEMOGA BERJAYA

**FRIENDLY REMINDER
PLEASE COMPLY ALL SUBMISSION CHECKLIST