

Annexure A - Work Package Descriptions

For

Data Protection (Backup and Replication) and Data Storage (Storage Array and Storage Networking) Services

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1.0 Work Package – Storage Tiering Archiving

1.1 Short Description

Airports Company South Africa (ACSA) has adopted a centralised shared storage design at the data intensive sites. This consolidates management and simplifies management and control. In order to retain the high levels of performance required for system from the shared storage, solid state or all flash storage systems are being used. These provide fast and reliable performance for often used data.

However, not all data within the environment will always be used and as such does not require to be hosted on high performance storage. For this purpose, this work package will implement lesser performing storage systems to host static or cold data. Data will be monitored and moved according to pre-defined policies to the higher or lower tiers, depending on usage and access. Information that require to be archived and not be amended, will also be hosted and locked on these devices. Moving information to cloud supported platforms should also be supported.

1.2 As is environment

Currently no tiering or archiving environments exist within the environments.

1.3 To/be Business Requirements

Implement hybrid Unity XP storage systems with SAS and NL-SAS disks to enable moving less utilised files to lower, cheaper tiered storage. Storage will be connected to existing SAN fabrics and utilize rules to classify and migrate data based on frequency of use and defined performance requirements.

Work Package Special Notes / Terms:

- Provide Documentation (as built and update of existing documents / drawings)
- Asset tag of hardware
- Follow ACSA capitalisation process
- Labelling as per ACSA standards
- Include project management services
- Work will be afterhours and must be costed accordingly
- Physical installation, configuration and commissioning of work package equipment
- Decommissioning, unracking, packaging and moving to storeroom of replaced equipment
- Mandatory pre-deployment site inspection

2.0 Work Package – DR SAN Storage Replacement

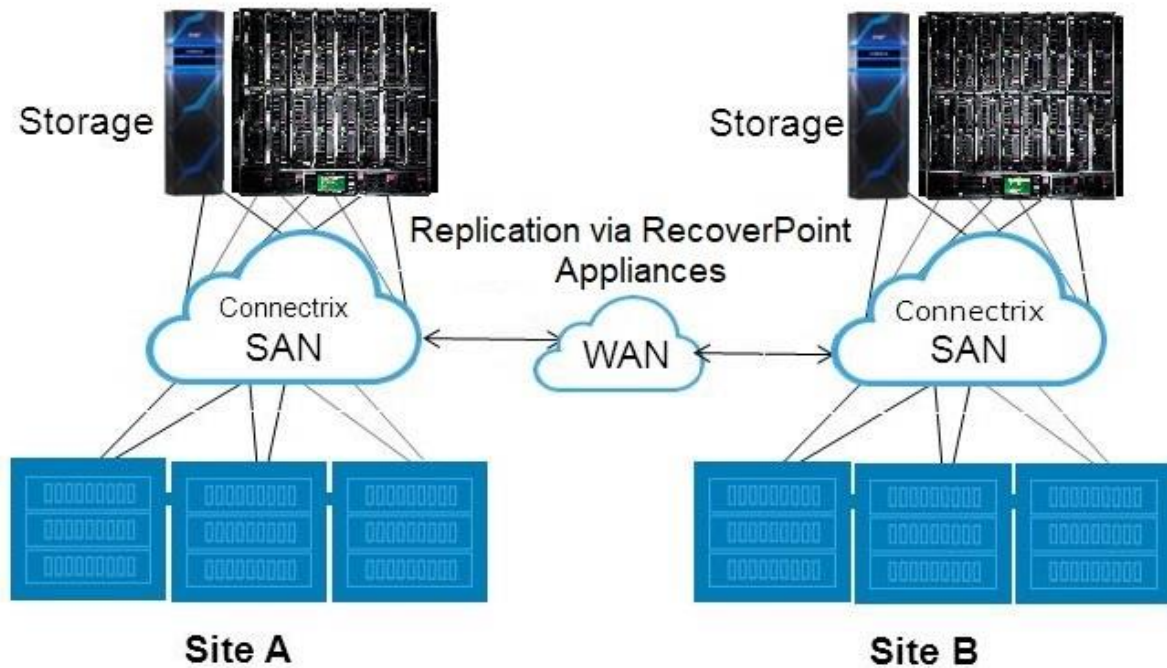
2.1 Short Description

ACSA has identified disaster recovery as an extremely important business objective as such has ensured that disaster recovery hardware and software is in place and kept up to date with production system.

Cape Town International Airport (CIA) was designated as the official disaster recovery site for OR Tambo International Airport (JNB), King Shaka International Airport (DUR) as well as ACSA Corporate Office (COR). OR Tambo International Airport (JNB) will be the disaster recovery site for Cape Town International Airport (CIA). This means that both JNB and CIA have disaster recovery hardware and capabilities.

2.2 As is environment

Both sites have a duplicate disaster recovery design. This consists of a centralised Unity storage array utilising Connectrix FC SAN switches to connect to HPE BladeSystem servers.



The solution consists of the following:

Site	Host Name	Serial Number	Make	Model Number
JNB	ORTIARPACLST1-RPA1	FC6RP154600030	RecoverPoint	Gen5 Server
JNB	ORTIARPACLST1-RPA2	FC6RP154500160	RecoverPoint	Gen5 Server
JNB	JNBDC1VNX0211	CKM00120800211	VNX	VNX 5500
CPT	CTIADC_RP_CLS1-RPA1	FC6RP154600038	RecoverPoint	Gen5 Server
CPT	CTIADC_RP_CLS1-RPA2	FC6RP154600017	RecoverPoint	Gen5 Server
CPT	CPTDC1VNX0961	CKM00121100961	VNX	VNX 5500

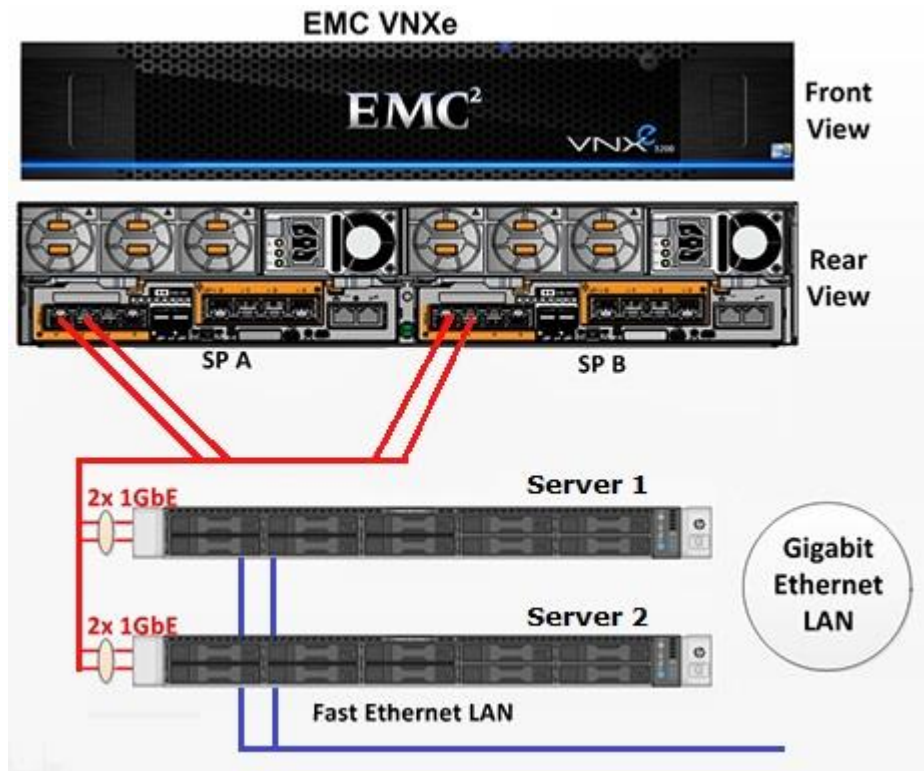
2.3 To/be Business Requirements

At OR Tambo International Airport (JNB) and Cape Town International Airport (CIA), replace the existing VNX 5500 storage array with an appropriate Unity storage array and replace the Connectrix DS-300B FC SAN switches with Connectrix DS-6620B FC SAN switches.

Work Package Special Notes / Terms:

- Provide Documentation (as built and update of existing documents / drawings)
- Asset tag of hardware
- Follow ACSA capitalisation process
- Labelling as per ACSA standards
- Include project management services
- Work will be afterhours and must be costed accordingly
- Physical installation, configuration and commissioning of work package equipment
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3.0 Work Package - CCTV Storage Replacement



3.1 Short Description

Security systems at any airport is paramount to keeping it safe and secure. For this purpose, Airports Company South Africa has made significant investment into system that will provide these services.

3.2 As-is environment:

Security systems consist of cameras, cabling infrastructure, servers and dedicated storage. These systems are deployed at all sites. Currently there are two (2) CCTV storage systems in use: VNX-VSS 100 and VNXe-VSS 1600 storage arrays.

The following design is followed at all sites: Two (2) servers are directly connected via multi-mode fiber to a storage system. The capacity of the arrays is split and allocated to each server.

The solution consists of the following:

Site	Host Name	Serial Number	Make	Model Number
JNB	JNBDC1VSS0046	CKM00174600046	VNXe	VNXe1600
JNB	JNBDC1VSS2274	CKM00174702274	VNXe	VNXe1600
JNB	JNBDC1VSS0047	CKM00174600047	VNXe	VNXe1600
JNB	JNBDC1VSS2040	CKM00174502040	VNXe	VNXe1600
JNB	JNBDC1VSS2039	CKM00174502039	VNXe	VNXe1600
JNB	JNBDC1VSS2184	CKM00174502184	VNXe	VNXe1600
JNB	JNBDC1VSS0292	CKM00173500292	VNXe	VNXe1600
JNB	JNBDC1VSS2043	CKM00174502043	VNXe	VNXe1600

Site	Host Name	Serial Number	Make	Model Number
JNB	JNBDC1VSS2046	CKM00174502046	VNXe	VNXe1600
JNB	JNBCR1VSS2277	CKM00174502277	VNXe	VNXe1600
JNB	JNBCR1VSS2389	CKM00174702389	VNXe	VNXe1600
CPT	CPTDC1VSS2824	CKM00155102824	VNX	VNX-VSS
CPT	CPTDC1VSS2823	CKM00155102823	VNX	VNX-VSS
CPT	CPTDC1VSS2825	CKM00155102825	VNX	VNX-VSS
CPT	CPTCR3VSS0938	CKM00154100938	VNX	VNX-VSS
CPT	CPTCR3VSS2944	CKM00155202944	VNX	VNX-VSS
CPT	CPTCR3VSS3893	CKM00155003893	VNX	VNX-VSS
CPT	CPTDC1VSS0045	CKM00174600045	VNXe	VNXe1600
CPT	CPTDC1VSS2183	CKM00174502183	VNXe	VNXe1600
CPT	CPTDC1VSS2273	CKM00174702273	VNXe	VNXe1600
CPT	CPTDC1VSS2042	CKM00174502042	VNXe	VNXe1600
CPT	CPTDC1VSS2365	CKM00174502365	VNXe	VNXe1600
CPT	CPTCR3VSS2041	CKM00174502041	VNXe	VNXe1600
CPT	CPTCR3VSS2367	CKM00174502367	VNXe	VNXe1600
CPT	CPTCR3VSS2272	CKM00174702272	VNXe	VNXe1600
CPT	CPTCR3VSS2390	CKM00174702390	VNXe	VNXe1600
DUR	DURCR1VSS2271	CKM00174702271	VNXe	VNXe1600
DUR	DURCR1VSS0290	CKM00173500290	VNXe	VNXe1600
DUR	DURCR1VSS1368	CKM00174501368	VNXe	VNXe1600
DUR	DURCR2VSS2185	CKM00174502185	VNXe	VNXe1600
DUR	DURCR2VSS2181	CKM00174502181	VNXe	VNXe1600
COR	CORCR1VSS1911	CKM00151401911	VNX	VNX-VSS
COR	CORCR3VSS2182	CKM00174502182	VNXe	VNXe1600
PLZ	PLZCR1VSS1910	CKM00151401910	VNX	VNX-VSS
PLZ	PLZCR2VSS4116	CKM00145104116	VNX	VNX-VSS
ELS	ELSCR1VSS2959	CKM00144802959	VNX	VNX-VSS
ELS	ELSCR1VSS2965	CKM00144802965	VNX	VNX-VSS
BFN	BFNCR1VSS1408	CKM00151301408	VNX	VNX-VSS
KIM	KIMCR1VSS2960	CKM00144802960	VNX	VNX-VSS
KIM	KIMCR1VSS0050	CKM00174600050	VNXe	VNXe1600
GRJ	GRJCR1VSS2364	CKM00174502364	VNXe	VNXe1600
GRJ	GRJCR1VSS2366	CKM00174502366	VNXe	VNXe1600
UTN	UTNCR1VSS0758	CKM00144300758	VNX	VNX-VSS

3.3 To/be Business Requirements

Replace the 43 distributed CCTV storage arrays with two (2) centralised shared storage arrays per site connected via two (2) redundant fiber channel fabrics. There is multiple Dell EMC storage solution that caters for this and will be determined when more detailed security requirements are done. These devices are: Dell EMC Unity / Isilon / ECS and will make provision for cloud connectivity as well. The tow (2) shared storage systems will provide

redundancy as well as consolidate all storage into less devices to manage and maintain. Connectivity between storage and server devices will be done via Connectrix FC SAN switches via two (2) dedicated redundant fabrics.

Work Package Special Notes / Terms:

- Provide Documentation (as built and update of existing documents / drawings)
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4.0 Work Package – SAN Storage Capacity Growth

4.1 Short Description

Storage system used in Airports Company South Africa are scalable to keep up with capacity demands. Since the devices has a long lifecycle, it requires for additional storage shelves and disks to be added to cater for operational and project requirements.

4.2 As-is environment:

Production and DR Dell EMC Unity storage arrays all make use of all flash disks. Expansion storage needs to match this requirement.



4.3 To/be Business Requirements

Add additional Unity Disk Array Enclosures (DAEs) populated with the required number of disks as capacity requirements indicate. All models support 2U twenty-five drive and 3U eighty drive trays for 2.5" drives.

Work Package Special Notes / Terms:

- Provide Documentation (as built and update of existing documents / drawings)
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5.0 Work Package – Storage Management Tools

5.1 Short Description

Airports Company South Africa manages 9 airports and a head office located in Bedfordview. All of these sites have a combination of backups, storage and SAN networking which requires monitoring and management on a 24/7/365 basis. For this reason, troubleshooting and management tools require to be kept up to date or refreshed/replaced throughout the product lifecycles.

5.2 As-is environment:

Various built in tools are available to assist with managing the environments. Gathering and coordinating health checks and reports in this way does not make sense across more than 100 backup clients, 50 storage arrays and 30 SAN switches. Centralised monitoring and reporting provide this in a quick and efficient way as well as global trending and analysis functions. These are listed below as it pertains to the various areas:

- Data Protection (Backups & Replication)
 - Data Protection Advisor (DPA)
 - Data Protection Central (DPC)
 - Data Domain Management Center (DDMC)
- Data Storage (SAN Storage & Networking)
 - Unisphere Central
 - Connectrix Manager Converged Network Edition (CMCNE)
 - Connectrix SANnav Portal
 - AppSync
 - PowerPath
- Multi-monitoring / management tools
 - Storage Resource Manager (SRM)
 - CloudIQ
 - ClarityNow

5.3 To/be Business Requirements

Upgrade above mentioned already installed tools and provide OEM validated configurations. Install new tools made available or replacing existing tools.

Work Package Special Notes / Terms:

- Provide Documentation (as built and update of existing documents / drawings)
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- Labelling as per ACSA standards
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6.0 Work Package – General Supply

6.1 Short Description

From time to time there might be items required that do not form part of the above work packages. This section defines those items.

A list of general supply items not covered in any of the other work packages:

Category	Item Description	UOM	QTY
Data Protection	Dell EMC PowerProtect DD3300	Each	1
	Dell EMC PowerProtect DD6900	Each	1
	PowerProtect X400 - Hybrid	Each	1
	Dell EMC IDPA DP4400	Each	1
	Dell EMC IDPA DP5800	Each	1
Data Storage	Unity Four-Port 16 Gb/s Fibre Channel Module	Each	1
	Unity Four-Port 1 GBASE-T Module	Each	1
	Unity Four-Port 10 GBASE-T Module	Each	1
	Unity Two-Port 10 Gb/s Optical Module	Each	1
	Unity Four-Port 10 Gb/s Optical Module	Each	1
	Unity Four-Port 12 Gb/s SAS Module	Each	1
	Unity 25 x 2.5" Drive DAE	Each	1
	Unity 80 x 2.5" Drive DAE	Each	1
	Unity 400GB SSD	Each	1
	Unity 800GB SSD	Each	1
	Unity 1,6TB SSD	Each	1
	Unity 3,2TB SSD	Each	1
	Unity 3,84TB SSD	Each	1
	Unity 7,68TB SSD	Each	1
	Unity 15,36TB SSD	Each	1
	VPLEX Dual VS2	Each	1
	VPLEX Dual VS6	Each	1
	vSAN Ready Nodes PowerEdge R440	Each	1
	vSAN Ready Nodes PowerEdge R640	Each	1
	vSAN Ready Nodes PowerEdge C6420	Each	1
	vSAN Ready Nodes PowerEdge R740	Each	1
	vSAN Ready Nodes PowerEdge R740xd	Each	1
	vSAN Ready Nodes PowerEdge FC430	Each	1
VxFlex Appliance R740XD	Each	1	
VxFlex Appliance R840	Each	1	
Software	Data Protection Suite: Backup, Archive and Collaboration Software	Each	1
	AppSync Advanced	Each	1
	RecoverPoint EX	Each	1
	PowerPath for Windows, AIX, Linux (RedHat)	Each	1
	PowerProtect	Each	1

Category	Item Description	UOM	QTY
	ClarityNow	Each	1
	Connectrix SANnav Portal	Each	1