



Statement of Work

Storage and Backup Infrastructure

Presented for Review to:

City of Corpus Christi

Revision Date: October 18, 2013
SOW Reference Number:

Prepared by:
Contact information:

Dave Larson, Solution Architect Freeit Data Solutions
dave@freeitdata.com
(512) 695-1447 (cell)

I. Executive Summary

Client Contact information:

Organization: City of Corpus Christi
Address: 1201 Leopard St
Corpus Christi, TX 78401-2825

Primary Contact:

Title: John Speiss
Phone: (261) 880-3750
Email: johns@ci.corpus-christi.tx.us

Secondary Contact:

Title: Susan Clanton
Phone: (361) 826-2537
Email: SusanCI@cctexas.com

II. Scope of Work

Methodology:

Freeit engineers manage projects with a holistic approach. It is our goal to work within an infrastructure life cycle defined by the following three phases:

Design – Deploy – Maintain

III. Location of Work

Freeit engineers reserve the right to perform work remotely by leveraging remote access technology, per availability for Client systems. Remote access work will be done in an effort to increase efficiency and minimize billable engineering hours to the Client. On Site work will be performed at Client location and/or Client datacenter location, as needed.

IV. Period of Work

It is understood that Freeit will be working during standard business hours unless otherwise stated in this Statement of Work (SOW). Standard business hours are defined as:

- Monday through Friday, 8:00 a.m. to 5:00 p.m. local client time
- Nationally observed holidays are excluded
- Based on a forty (40) hour work week
- After hours and weekend work is included in fixed bid price, Freeit and Client will schedule these after-hours work periods with advance notice as required.

**Freeit reserves the right to modify these guidelines as needed to enable successful project completion.*

V. Assumptions

Certain assumptions will be made while specifying the services and deliverables detailed in this SOW. Upon execution of this document, it is generally understood that all enumerated assumptions below are correct. It is the client's responsibility to identify any incorrect assumptions and address them with Freeit prior to final execution of this document; or, when possible, take immediate action to render all assumptions correct.

The following assumptions have been made while specifying the services detailed in this statement of work:

- If the assumptions used to develop the statement of work are found incorrect, the parties agree to meet and negotiate, in good faith, equitable changes to the statement of work, service Levels and/or fee schedule, as appropriate.
- Client resources to perform services shall be readily available to Freeit engineering teams as needed.
- Freeit reserves the right to perform portions of the work remotely according to a schedule mutually agreed to by both the client and Freeit.
- Freeit is not responsible for resolving compatibility or other issues that cannot be resolved by the manufacturer or for configuring hardware or software in contradiction to the settings supported by the manufacturer.
- Freeit will provide compatibility matrix for products purchased as part of this solution to resolve compatibility issues.
- Freeit is not responsible for project or Service delivery delays caused by the client facility or personnel challenges.

- Work will be pre-scheduled with the client on a best effort basis. On demand support within a given services level agreement is not part of this statement of work and would require a separate agreement and contract.
- Freeit reserves the right to sub-contract portions or all of the requested Services.
- All cabling is in place and in good working order
- All hardware will be in place and accessible to Freeit with connectivity rights as needed.
- All systems will be patched with recent, if not current, updates and in good working order.
- Freeit has adequate access to and assistance from client resources.
- Active Directory is in a healthy state with no known issues.
- The network is in a healthy state with no known issues.
- Application requisites will be defined and planned for identified application during the engagement.
- Appropriate schedule window of time for any off-line work.
- All necessary access to software will be provided to Freeit for review and documentation.
- All licensing history and licensing plans will be provided to Freeit for review and documentation.
- Continuous work effort and adherence to project timeline throughout the course of the project.
- Client understanding of existing systems and knowledge of internal infrastructure
- Any information not provided to Freeit before implementation that Freeit has not specifically called out in their review that impacts design and implementation will be provided by the client. Any information not provided by the client that impacts future or existing systems and requires additional resources to correct will require a change order from the client and may result in additional charges.
- The project will involve 'transfer of knowledge'. The purpose of knowledge transfer is to explain the solution implementation and provide general operational guidance. Clients without previous experience in the technology should not expect to become proficient as a result of knowledge transfer. Proficiency can only be achieved through formal training and experience.

VI. Client Responsibilities

During this effort, client is responsible for:

- Securing space for the Freeit team to occupy during onsite work.
- Providing connectivity for the Freeit team to client location(s).
- Allowing Freeit access to and the use of all necessary documentation to understand business processes related to project.
- Airfare, car and/or hotel accommodations if required.

- Allowing Freeit access to and the use of all system and network resources required.
- Commitment to project timeline and scheduling of resources.

VII. Explicit Exclusions

- Guarantees to End-User Performance for any existing Applications or Systems
- Guarantees to the Fitness or Function of any Client Selected Software / Hardware.
- Hardware requirements or costs associated with the project.
- Software requirements or costs associated with the project.
- Analysis of environmental system (i.e. Power/Generator, A/C)

VIII. Summary of Charges

Statement of Work Summary:

This assessment is being bid on a **Fixed Bid** basis. The following summary of charges is an estimate based on data available to Freeit engineering team at the time of development of this SOW. Client will be invoiced for actual engineering hours performed in support of successful project completion in this case fixed bid. Overages, and/or anticipation of hours in excess of what is summarized below will be considered 'Out of Scope'. All Out of Scope billable time will be discussed with Client and agreed upon by all parties prior to work being performed by Freeit engineering team.

Phase 1: Nimble Install & Data Migration	\$68,688.00
Phase 2: CommVault Installation and Configuration	\$87,220.00
Total	\$155,908.00

Freeit (along with CommVault and Nimble Storage) and City of Corpus Christi will need to implement the best method to protect data for the Police Department that meets the data storage and protection requirements for Criminal Justice Information System (CJIS) requirements and pass will be capable of passing any CJIS audit or inspection.

This solution is in two phases. Although the phases will not be performed necessarily in this order, Freeit will describe the services in two phases.

- Phase 1 – Nimble install & Data Migration
- Phase 2 – CommVault installation and Configuration

This solution is in two phases. Although the phases will not be performed necessarily in this order, Freeit will describe the services in two phases.

Phase 1 - Nimble install & Data Migration

Deploy Nimble storage systems

- Rack, Stack, IP Nimble storage systems
- Verify all ports are reachable
- Test failover
- Connect storage system to old and new ESXI servers
- Place test virtual machine on Nimble storage
- Test connectivity to virtual machine during failover
- Test connectivity to virtual machine after unplugging Nimble network ports one at a time
- Configure and test replication

Assess current infrastructure

- Review network configuration
- Review servers to be migrated
- Determine Applications requiring migration by data type (Structured & Unstructured data)
- Obtain number of virtual machines to be migrated
- Obtain list of servers that have LUNs on legacy storage system
- Work with customer on downtime for each server as necessary

Create migration plan

- Work with customer on downtime schedules
- Work with customer to provide means of testing applications during and after migrations
- Document migration plan and review with customer
- Complete migration plan and give it to customer for approval

Migrate data

- Migrate virtual servers from existing legacy storage system to Nimble storage system
- Follow downtime schedules to migrate virtual servers to Cisco UCS servers
- Create LUNs on Nimble for physical servers that have LUNs on legacy storage system
- Work within scheduled downtimes to migrate each server to new LUNs

Training and Documentation

- Training customer staff on each component of the solution
- Provide customer documentation of the overall solution

*Migration Process and Steps

Data Migration will require analysis of the CoCC Systems and infrastructure. Freeit will create a list of all Servers and systems connected to existing SAN and determine Applications and Databases, and develop a joint plan with CoCC on the method of Data Migration and work out schedules for each application with sign-off by CoCC and Freeit both before Data Migration and after data migration is complete. Listed below are examples of methods that Freeit will use to migrate CoCC applications

- VMWare – will utilize Storage vMotion where applicable or Manual shutdown and copy where not
- Database
 - Oracle – Freeit will work with CoCC DBA's to determine best method of data migration from one of the following methods
 - Export/Import
 - ASM LUN Mirroring
 - Manual Shutdown and copy of Database files
 - RMAN Backup and Restore
 - SQL Server – Freeit will work with CoCC DBA's to determine best method of database migration (example of manual Database migration will be as follows)
 - Attach LUNs from Nimble Storage
 - Shutdown application services
 - Migrate data
 - Change Drive letters for old LUNs
 - Change Drive letters for new LUNs to old LUNs
 - Restart Server
 - Verify application
 - Remove old LUNs
 - Informix – Freeit will work with CoCC DBA's to determine best method of database migration.
- Window File Server – Freeit will utilize a copy utility like RoboCopy or Secure Copy to perform datamigration
- Other Applications – will determine best migration method based on Application data type and outage windows.

Phase 2 – CommVault installation and Configuration

CommVault services will be performed by CommVault Professional Services and the estimated time to implement and deploy CommVault Simpana Software is 22 days

Assessment and Design

Current-state data will be collected via an onsite or offsite discovery process as previously confirmed with the customer. This includes CommVault's examination of the Customer's existing server and network infrastructure, applications, data distribution, and requirements for data retention. CommVault will work with the Customer to identify any technical barriers that prevent components from being installed. CommVault and the Customer will work together to accomplish any of the following applicable tasks:

- **Current-State Assessment / Storage Architecture Review** – Servers, applications, data quantities, and storage media are identified. Business requirements relative to the project objectives and end-user service level agreements are discussed in order to create the proper data movement Policies.
- **Data Flow Analysis** – Data demands are calculated based on job window constraints, bandwidth availability, data volume, and maximum time-to-restore requirements. These demands are load-balanced based on recommendations from CommVault and in accordance with the Customer's directions, across storage policies and scheduled by each application and file system type. Specific recommendations are provided for hardware upgrades (server, network, tape library), if necessary to accommodate the final design requirements.
- **Enterprise Scheduling** – CommVault assists in developing a complete data movement schedule based on Customer needs and business and data retention requirements for each server. Recommendations for frequency of full backups, incremental backups, and auxiliary copy requirements for off-site/redundant protection are reviewed.
- **CommVault Singular Information Management® Architecture Diagram(s)** – The recommended, site-specific, CommVault application architecture will be provided by CommVault and will include the CommServe, MediaAgents, storage libraries, and / DataAgents throughout the Customer enterprise.

CTE Deployment

CommServe® and Media Agent Installation

- Complete installation of the CommVault® CommServe® binaries on the designated CommServe.

- Complete initial configuration of CommVault software on the CommServe
- Configure the CommServe database
 - Register CommCell® ID
- Configure storage targets
- Install site-appropriate CommVault Service Packs, patches and configure CommServe for automatic updates.
- Configure CommVault Media Agent(s)
 - Configure connectivity to storage targets
 - Define storage target(s) to the CommVault Media Agents
- Test local backup and recovery
 - Backup and restore operations for CommServe DR backup
 - Backup and restore operations for test data through the CommVault Media Agent(s)

Data De-Duplication Configuration

CommVault will install and configure De-Duplication as part of Implementation Services. These services cover the implementation and verification of the Single Instance Storage deployment in the environment. CommVault and the Customer will work together to accomplish the following tasks:

- Validation of the customers data storage configuration for De-Duplication at the database and magnetic library levels.
- Configure the De-Duplication database.
- Enable De-Duplication on the Storage Policy.
- Configure the De-Duplication Storage Policy.
- Verify the De-Duplication deployment.
- Configure and test SILO option if required by the Solution Design.

Microsoft Windows File System iDataAgent

CommVault will install and configure Microsoft Windows File System iDataAgent(s) as part of Implementation Services. The Microsoft Windows File System iDataAgent is designed to provide comprehensive load balancing and failover among storage resources within the customer environment. These services cover the implementation

and verification of the Microsoft Windows File System iDataAgent(s) in the environment. CommVault and the Customer will work together to accomplish the following tasks:

- Install and Configure Microsoft Windows File System iDataAgent on customer designated host or group of hosts.
- Configure Microsoft Windows File System iDataAgent specific settings in accordance with Solution Design.
- Associate Storage Policy with installed Microsoft Windows File System iDataAgent.
- Associate Schedule Policy with installed Microsoft Windows File System iDataAgent.
- Perform test backup of subclient(s) on customer-designated host or group of hosts.
- Perform test restore of a file or folder from a client within the customer-designated host or group of hosts.

Unix File System iDataAgent

CommVault will install and configure Unix File System iDataAgent(s) as part of Implementation Services. The Unix File System iDataAgent is designed to provide comprehensive load balancing and failover among storage resources within the customer environment. These services cover the implementation and verification of the Unix File System iDataAgent(s) in the environment. CommVault and the Customer will work together to accomplish the following tasks:

- Install and Configure Unix File System iDataAgent on customer-designated host or group of hosts.
- Configure Unix File System iDataAgent specific settings in accordance with Solution Design.
- Associate Storage Policy with installed Unix File System iDataAgent.
- Associate Schedule Policy with installed Unix File System iDataAgent.
- Perform test backup of subclient(s) on customer-designated host or group of hosts.
- Perform test restore of a file or folder from a client within the customer-designated host or group of hosts.

Virtual Server iDataAgent

CommVault will configure the Virtual Server backups as part of Implementation Services. These services cover the implementation and verification of the integrated CommVault and Virtual Server deployment in the environment. CommVault and the Customer will work together to accomplish the following tasks:

- Verify the ratio of datastores to subclients to identify the distribution of VM data over the number of Proxy Servers allocated for this deployment.
 - Install the Virtual Server Agent on the VMware Virtual Consolidated Backup Framework (VMware) server and the Microsoft Hyper-V host server (Hyper-V)
 - Configure Virtual Server Instances
 - Configure Guest Discovery Rules
 - Configure Virtual Guest subclients
 - Add Guests to subclients
- NOTE:** Requires a pre-installed and fully functioning Virtual Server host server with SAN connectivity
- Test File, Image and Disk (whichever are configured in customer environment) Full and differential backups of the virtual machine(s).

Database Protection Services

As part of Field Implementation, the CommVault Database Protection Service provides comprehensive services for the configuration of database backup and recovery operations in the Customer's environment. These services will cover the implementation and verification of the database iDataAgent(s) in the environment. CommVault and the Customer will work together to accomplish the following applicable tasks:

- Database Environment Review – Includes a review of Client System(s) CPU, Memory and IPC Resources, Database, Application, Logs, and User dynamics to determine a backup and recovery configuration which meets user requirements.
- Installation of CommVault Database iDataAgent module(s) – Includes the installation and configuration of services necessary to deploy the Database iDataAgent module(s). Within the scope of this engagement, this service will include CommVault iDataAgent cluster support in a supported SAN / NAS environment.

NOTE: The Windows database instance(s) must be down for the brief installation of the iDataAgent module(s).

NOTE: Following configuration of the database iDataAgent Windows servers require a reboot. UNIX based servers do not.

- Configuration of Database APIs with the Commvault iDataAgent – Includes database API integration configuration and verification – which involves configuration of the database network connections to the CommServe and Media Agent(s), and communication between targeted databases to be protected.
- Scheduling and Storage Management – Includes configuration of database backup scheduling, storage policy configuration, user alert notification, and job reporting for the Customer's database environment.
- Validation of CommVault iDataAgent module(s) – Includes the verification of the configuration database module(s) by the parties, including selected data protection and data recovery.

Active Directory iDataAgent

CommVault will install and configure the Active Directory iDataAgent and perform test data recovery. The CommVault Active Directory iDataAgent is designed to provide comprehensive coverage of the Active Directory backup and recovery requirements in the customer environment. These services cover the implementation and verification of the Active Directory iDataAgent (s) in the environment. CommVault and the Customer will work together to accomplish the following tasks:

- Install and Configure Active Directory iDataAgent on customer-designated domain controller.
- Configure Agent Specific settings in accordance with Solution Design.
- Associate Storage Policy with installed Active Directory iDataAgent.
- Associate Schedule Policy with installed Active Directory iDataAgent.
- Perform test backup of subclient on customer-designated Domain Controller.
- Perform test restore of an object.

CommVault File System Archiver

CommVault will install and configure the DataArchiver File System iDataAgent and perform test data recovery. These services cover the implementation and verification of the DataArchiver File System iDataAgent (s) in the environment. CommVault and the Customer will work together to accomplish the following tasks:

- Configure DataArchiver File System stores (logical) onto storage hardware infrastructure.
 - Define Magnetic Disk Libraries
 - Define Secondary Storage Tiers

- Install and applicable CommVault indices, Archiving and Retrieval Services
- Configure Agent-specific settings in accordance with Solution Design
- Configure and test base DataArchiver File System functionality

Please note: CommVault cannot and does not make recommendations regarding internal corporate data management and retention policies. The determination and establishment of data retention periods are solely the responsibility of the customer. CommVault is not in any way responsible for a company's data or their compliance with applicable laws and rules. Any guidelines provided to the customer regarding data management and retention periods are for informational purposes only.

Resident Support Engineer

The CommVault Resident Support Engineer (“RSE”) offering is designed to ensure that an installed CommVault solution continues to meet Service Level Agreements based on a customer’s functional, operational, and business requirements. A skilled CommVault Support engineer is provided to monitor and support the day-to-day operations of the CommVault solution for the Customer. The CommVault RSE offering provides support in any, or all, of the following activities:

- System Administration Services.
- Schedule and Monitor Backups.
- Monthly/Quarterly Review of Backup Strategies.
- Customer assistance with Restore Strategies and Procedures.
- Media Management Support for CommVault Solutions.
- Ongoing Knowledge Transfer.
- CommVault-specific issues support escalations.
- Assist CommVault Support Team with CommVault issue resolution by providing onsite access to customer systems and personnel.
- Provide the Customer with a CommVault-trained systems operator administering CommVault software.

CommVault® Project Management

The CommVault Project Manager provides Project and Technical leadership for this engagement. Working with Customer personnel in the location , the Project Manager is responsible for the success of Customer’s CommVault deployment. This resource

directs the tactical activities of the CommVault personnel associated with this effort. Additionally, this resource liaises directly with the Customer Project Leaders or Project Office to advise on project status and escalate project issues.

Client Responsibilities

The Customer agrees to provide resources necessary to facilitate this engagement. The Customer agrees to accept the responsibility for completing the following tasks prior to arrival of the Consulting Engineer. The Customer acknowledges that the success of this engagement is dependent upon completion of these tasks and any delays in completing these tasks will adversely impact the engagement's outcome. The CommVault Professional Services Manager reserves the right to delay or postpone the Services if, for any reason, these facilities are not in place:

The Customer Personnel Resource Assumptions

1. A dedicated the Customer Technical Resource is requested to work with the Consulting Engineer during the course of the work completed by CommVault;
2. The Customer personnel will provide all necessary documentation (scripts and logins) that relate to the access of each server and / or workstation involved in this project;

The Customer Work Environment Assumptions

1. The Customer will supply a designated work area for the Consulting Engineer, to include a desk, chair, telephone, and network access (guest or local) and login;
2. The Customer will supply Data Center access to the Consulting Engineer in the form of a swipe card, escort, or keyed access to the server room(s) in each Data Center location;

The Customer Site Preparation Requirement Assumptions

1. The Customer is solely responsible for:
 - a. The protection of its legacy data during the performance of the Services, to include such tasks as the management of offsite media storage, provision of scheduling for restore / Disaster Recovery Testing;
 - b. Policy and strategic implementation decisions, such as setting control parameters, back-up schedules and data retention rules, and
 - c. Changes in requirements for retention of data written to magnetic and tape media for data protection and / or archive and recovery operations.

2. Prior to the start of any services associated with this engagement, the Consulting Engineer will complete an initial validation of the environment to confirm engagement readiness. This review will be completed offsite;
3. CommVault assumes that there are no KNOWN gross defects with the media and hardware associated with the solution proposed by CommVault;
4. CommVault assumes that the Customer has contracted for hardware installation support, and that this installation will be completed prior to the start of any software integration effort associated with this engagement;
5. The Customer personnel, only, will complete the following outlined tasks:
 - i. Storage Target (disk / tape) connectivity at each Data Center location for connection to the CommVault MediaAgent(s);
 - ii. Server HBA installation for CommVault MediaAgent(s);
 - iii. Physical connection of tape and disk devices to the MediaAgent(s) at each Data Center;
 - iv. Installation of tape media in tape libraries / drives AND / OR formatting of disk volumes associated with CommVault Magnetic Libraries at each site;
 - v. Provision of Domain Administrator access to the CommServe(s), MediaAgent(s), iDataAgent(s) at each Data Center.

CommVault assumes that all of the applicable site preparation has been performed prior to the installation of any new software and hardware components in each site. This includes, but is not limited to: local and Wide Area Network access, electrical requirements, cabling and appropriate service area floor space. These infrastructure elements for this project remain the responsibility of the Customer;

All network-related issues for the Customer's primary LAN / WAN network will be remanded to the Customer's Network Administration group for resolution;

The Customer's CommVault Project and Project Workflow Assumptions

1. The Customer will provide CommVault with a formal request for resources, through contact with the CommVault Account Manager, for any new, unique project that will arise during the course of the completion of this engagement;
2. Example: Requirement to format and provide access to SAN-attached storage and zoning of said storage to MediaAgent(s) is a new, unique project.
3. CommVault cannot be responsible for delays in the provision of the defined services stemming from lack of access to host(s), Data Center(s), or personnel deemed critical to the completion of the engagement. Substantial delays in effort will be noted by the Consulting Engineer to the Customer's Primary Project Contact; and,

4. The Customer's Primary Project Contact will be responsible for ensuring the availability of its personnel to be in attendance through the course of this engagement to ensure knowledge transfer from the Consulting Engineer to its technical and operations personnel;
 - i. **Note:** Knowledge transfer is specific to CommVault software functionality. Knowledge transfer regarding hardware functionality (disk array GUI, library CAPs, etc) are outside the scope of this engagement.

In no event shall CommVault's liability for services performed exceed the purchase price of such services. Under no circumstances shall CommVault be liable for special, indirect or consequential damages of any kind, including for lost profits, loss of data, or cost of replacement services.

IX. Acceptance Criteria

At the completion of this assessment, Freeit will deliver the following, as applicable to the activities jointly defined and agreed upon by Client and Freeit:

- Recommendation of actions to be considered by management
- Recommended solutions
- Review of conclusions and issues from Design

Upon your approval of this plan, Freeit will be retained to commence the assignment of resources and project scheduling in support of the project. Project costs and expenses will be billed out on a fixed bid fee per our proposal. This project is considered an engagement project, which assumes Company staff, may work continuous hours, both on and off-site, in order to complete the deliverables promised.

Project schedule will be collaborated by both Client and Freeit. All efforts will be made by all parties to prioritize efforts associated with this schedule throughout the course of the project. It is generally understood that any exceptions or delays need to be effectively communicated to all parties and agreed upon.

***Additional charges and/or fees may result from unscheduled deviations.*

X. Authorization Signature

By signing this document, it is understood that all parties are bound by all terms and conditions stated herein. Once executed, any and all necessary revisions must be discussed between, and agreed upon, by all parties to this SOW. Revisions must also be documented in writing, agreed upon via signature and further appended to the original, executed document for all parties to review. This document incorporates the terms and conditions of the State of Texas Department of Information Resources Contract No. DIR-SSD-2035 & DIR-SDD-1585. Freeit agrees to comply with the vendor terms and conditions of DIR Contract No. DIR-SSD-2035 & DIR-SDD-1585.

City of Corpus Christi

Freeit Data Solutions

Printed name of Executing Authority

Wayne Decidio

Printed name of Executing Authority

Title

President - FreeIT

Title

Signature

Wayne Decidio

Signature

Date

10/21/2013

Date