



Statement of Work

Cisco Unified Computing System (UCS) HyperFlex

May 7, 2018

Prepared for:

Hidalgo County
Information Technology Department

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Project Summary

The Hidalgo County Information Technology Department (or “Client”), headquartered in Edinburg, TX, requested that Netsync Network Solutions (“Netsync”) submit a statement of work (SOW) outlining Client’s upcoming addition of Cisco Unified Computing System (UCS) HyperFlex (HX) project.

Project Objectives

- Engage Client in a planning and discovery meeting to review technical details required for the implementation
- Deploy four Cisco UCS HX nodes, one Cisco UCS S3260 storage node (3260) and two Cisco UCS Fabric interconnects (FI)
- Configure the newly installed Cisco UCS HX, 3260 and FI’s to a new Cisco UCS environment
- Install VMware vSphere on the newly install Cisco UCS HX nodes
- Install VMware vCenter appliance and add the newly installed Cisco UCS HX nodes
- Install Veeam Availability Suite Enterprise Plus software on a single virtual machine
- Perform testing and validation of successful implementation

Project Scope and Phases

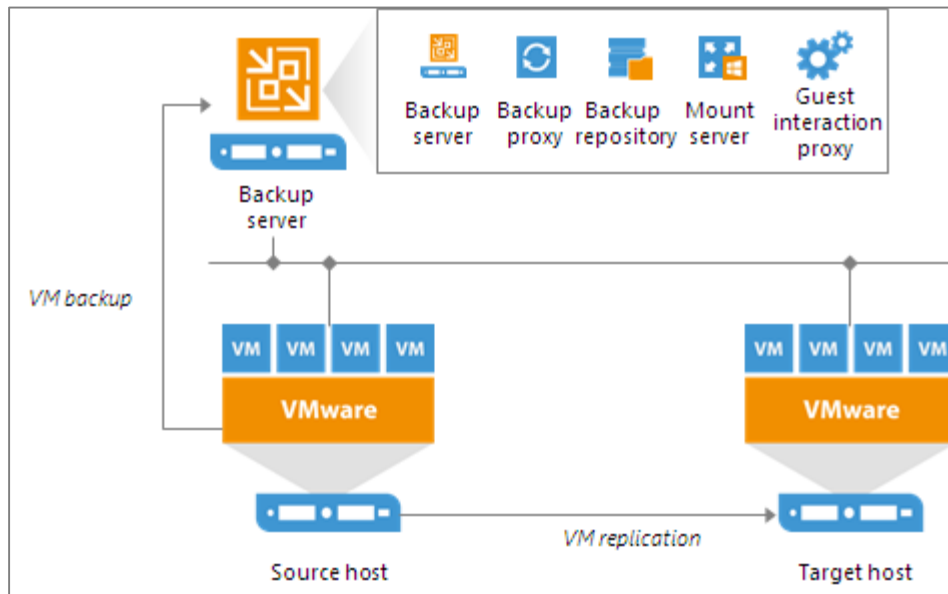
Discovery

Netsync will verify the following information:

Software Requirements

1. Netsync will participate in a design session with Client's staff. This meeting will cover the overall design of the Veeam architecture. Based on the results of this meeting, Netsync will create a detailed implementation plan document and ensure that Client's staff is in agreement with all tasks before beginning the installation.
2. Netsync will want to review at least the following areas during this meeting:
 - a. Platforms supported:
 - i. Veeam is supported on several different hypervisors. Client currently uses VMware vSphere. It must meet the following requirements:
 1. Platform – vSphere 6.x
 2. Hypervisor – ESXi 6.x
 3. Management Server (optional) – vCenter Server 6.x
 4. Virtual Hardware – All types and versions of hardware are supported, including 62 TB VMDK.
 5. File-level restore:
 - a. Microsoft Windows – FAT, FAT32, NTFS, ReFS (only if Veeam is installed on Microsoft Server 2012 or later)
 - b. Linux – ext2, ext3, ext4, ReiserFS, JFS, XFS, Btrfs
 - c. BSD – UFS, UFS2
 - d. Mac – HFS, HFS+ (up to 2TB volumes)
 - e. Novell OES
 - f. Solaris – UFS, ZFS
 - ii. Netsync will review the requirements of each Veeam component needed for Client's design. Netsync's suggestions are based on the published "Veeam Platform Support" document. If you would like to review this document in advance, it is located at the following URL: [Platform Support](#)
 - b. System requirements:
 - i. Veeam Availability Suite Enterprise Plus has specific system requirements that may vary depending on the size and scope of the particular installation.
 1. In a simple deployment scenario, one instance of Veeam Backup & Replication is installed on a physical or virtual Windows-based machine. This installation is referred to as a backup server.
 2. Simple deployment implies that the backup server performs the following roles:
 3. It functions as a management point, coordinates all jobs, controls their scheduling and performs other administrative activities.

4. It acts as the default backup proxy for handling job processing and transferring backup traffic. All services necessary for the backup proxy functionality are installed on the backup server locally.
5. It is used as the default backup repository. During installation, Veeam Backup & Replication checks volumes of the machine on which you install the product and identifies a volume with the greatest amount of free disk space. On this volume, Veeam Backup & Replication creates the *Backup* folder that is used as the default backup repository.
6. It is used as a mount server and guest interaction proxy.



3. Netsync will review the requirements of each Veeam component needed for Client's design. Client's suggestions are based on the published "Veeam Systems Requirements" document. If you would like to review this document in advance, it is located at the following URL: [System Requirements](#)
 - a. Required Permissions - Veeam Availability Suite Enterprise Plus has specific system permissions that may vary depending on the size and scope of the particular installation:
 - i. Accounts used for setting up and managing the Veeam installation include:
 1. Setup Account - The account used for product installation must have the Local Administrator permissions on the target machine.
 2. Veeam Availability Suite Enterprise Plus Console - The account used to start the Veeam Backup & Replication console must have the Local Administrator permissions on the machine where the console is installed.
 3. Veeam Backup Service Account - The account used to run the Veeam Backup Service must be a Local System account or must have the Local Administrator permissions on the backup server.
 4. Target/Source Host Permissions - Root permissions on the source ESX(i) host.

5. Microsoft SQL Server - The account used to run Veeam Backup Service requires *db_datareader* and *db_datawriter* roles as well as permissions to execute stored procedures for the configuration database on the Microsoft SQL Server. Alternatively, you can assign *db_owner* role for this database to the service account.
 6. Veeam Backup Enterprise Manager - Local Administrator permissions on the Veeam Backup Enterprise Manager server to install Veeam Backup Enterprise Manager.
 7. Veeam Backup Search - Local Administrator permissions on the Microsoft Search Server to install Veeam Backup Search.
 8. Veeam Explorer for Active Directory – Account permissions needed to access Microsoft Active Directory.
 9. Veeam Explorer for Microsoft Exchange - Full access to Microsoft Exchange database and its log files for item recovery.
 10. Veeam Explorer for Microsoft SharePoint - The account used for work with Veeam Explorer for SharePoint requires membership in the sysadmin fixed server role on the staging Microsoft SQL Server.
 11. Transaction logs backup (Microsoft SQL Server) - The user account that you specify for guest processing of the Microsoft SQL Server virtual machine (VM) in the backup job must have the sysadmin fixed role assigned on this Microsoft SQL Server.
4. Netsync will review the requirements of each Veeam component needed for Client’s design. Netsync’s suggestions are based on the published “Veeam Required Permissions” document. If you would like to review this document in advance, it is located at the following URL: [Required Permissions](#)
- a. Required network ports:
 - i. Veeam Availability Suite Enterprise Plus uses specific network ports that may vary depending on the size and scope of the particular installation.
 - ii. Depending on the Client environment, various network ports will need to be made available. Several industry standard and Veeam specific ports will be required by default. There are several additional ports that may be required based on Client’s needs and existing environment. For specific port requirements Netsync will provide details during the Discovery phase.
 - iii. Netsync will review the requirements of each Veeam component needed for Client’s design. Netsync’s suggestions are based on the published “Veeam Used Ports” document. If you would like to review this document in advance, it is located at the following URL: [Used Ports](#)
 - b. Required third party software:
 - i. Veeam requires several third-party applications to be installed based on required and optional components. Below is a list of software not included in the Veeam installation, and is the responsibility of Client to provide:
 1. Microsoft 64-bit operating system (2008 and newer)
 2. Microsoft SQL server (2008 and newer)
 3. Microsoft .NET Framework 4.5.2

4. Microsoft Windows Installer 4.5
5. Microsoft SQL Server Management Objects
6. Microsoft SQL Server System CLR Types
7. Microsoft Visual C++ 2010 Service Pack 1 redistributable package
8. Microsoft PowerShell 2.0 or later (optional).
9. Firefox, Google Chrome, Microsoft Edge or Microsoft Internet Explorer 10.0 or later.
10. For a vSphere 5.5 or later backup proxy server running on Microsoft Windows Server 2008 or earlier: Microsoft Visual C++ 2008 SP1 Redistributable Package (x64)
11. Microsoft Search Server 2008 (including Express Edition).
12. Microsoft Search Server 2010 (including Express Edition).
13. Microsoft Internet Information Services 7.0 or later
14. Microsoft Excel 2003 or later

Physical Requirements

The power requirements listed are typical power cords used in these types of installations. If Client's server racks require different types of connections, then this will be identified in Discovery and Planning, and Netsync and Client will agree on a remediation plan:

1. Netsync will require the following Rackspace for the implementation:
 - a. 2 RU for each Cisco UCS HX node.
 - b. 2 RU for each Cisco UCS S3260 node.
 - c. 2 RU for each pair of Cisco UCS FI.
2. Netsync will require the following power connections (per rack) for the implementation:
 - a. C13-C14 plugs for each Cisco UCS HX node – qty. 2
 - b. C13-C14 plugs for each Cisco UCS S3260 node – qty. 2
 - c. C13-C14 plugs for each Cisco UCS FI – qty. 2

Documentation Requirements

1. Netsync will request any network diagrams available that may be needed to install the solution. If these diagrams are not available, then Netsync will work with Client's staff to create the documentation needed to ensure a successful project delivery.
 - a. Some of the documents that Netsync may need include:
 - i. **Data Center Local Area Network (LAN) Diagrams** – A data center network diagram describes the data connections within the data center environment. Details such as speed, distance, utilization, and media type may be required for each connection.
 - ii. **Data Center Rack Diagrams** – A rack diagram describes the physical data center rack designs. Details such as the server name, location within the rack, power cabling, and data cabling may be required for each rack to be used within the scope of this project.

Planning

1. Netsync will engage Client in a kickoff meeting to discuss:
 - a. Information gathered during Discovery.
 - b. Project timeline and expectations.
 - c. Any technical issues that must be addressed before beginning Implementation.

Implementation

Note: Implementation will begin only after Discovery and Planning are 100% complete. Netsync will physically install and configure all of the hardware needed to complete the work included within the scope of this project at the production data center.

1. Netsync will provision the four newly installed Cisco UCS HX nodes and the one newly installed Cisco UCS 3260 using Cisco and Netsync recommended best practices. Based on the information discovered during Discovery and Planning, this will include the following:
 - a. Configure all administrative interfaces.
 - b. Configure network uplinks.
 - c. Configure any virtual server configurations, pools, and nodes.
 - d. Configure storage settings.
 - e. Create initial service template and profile.
 - f. Deploy newly created service template and profile to newly installed Cisco UCS HX and 3260 nodes.
2. Netsync will install and configure the latest version of VMware ESXi on the new provisioned Cisco UCS HX nodes, and install and configure one instance of the latest version of VMware vCenter appliance using VMware and Netsync recommended best practices. Based on the information discovered during Discovery and Planning, this will include the following:
 - a. Install ESXi on each node.
 - b. Configure networking for VMware.
 - c. Configure storage for VMware.
 - d. Install VMware vCenter appliance.
 - e. Add newly installed nodes to the newly installed VMware vCenter.
3. Netsync will install and configure the latest version of Veeam Availability Suite Enterprise Plus on a newly provisioned virtual server(s) residing on the new Cisco UCS HX nodes using Veeam and Netsync recommended best practices. Based on the information discovered during Discovery and Planning, this will include the following:
 - a. Install Veeam Availability Suite Enterprise Plus 9.5 with:
 - i. Backup Server role.
 - ii. Backup & Replication Console role.
 - iii. Backup Proxy role.
 - iv. Gateway Server role.
 - v. Mount Server role.
 - vi. WAN Accelerator role (if needed).

- vii. Veeam Backup Enterprise Manager role (if needed).
- viii. Veeam Backup Search role (optional).

Note: Each role may be installed on one server or multiple server instances. Detailed server requirements will be provided during Discovery and Planning.

- b. Configure Veeam Availability Suite Enterprise Plus with:
 - i. Up to 5 user roles.
 - ii. Up to 3 backup repositories (no more than 1 remote repository).
 - iii. Up to 5 backup jobs (not to contain more than 5 VMs per job).
 - iv. Up to 5 backup-copy jobs.
 - v. Up to 3 backup schedules.
 - vi. 1 VM-copy job.
 - vii. 1 file-copy job.
 - viii. 1 Veeam Zip job.

Note: Each role may be installed on one server or multiple server instances. Detailed server requirements will be provided during Discovery and Planning.

- c. Configure networking for VMware.
- d. Configure storage for VMware.
- e. Install VMware vCenter appliance.
- f. Add newly installed nodes to the newly installed VMware vCenter.
- g. Availability Suite Enterprise Plus

Testing and Validation

1. Netsync will perform operational testing on all newly installed systems. This testing will include at least the following:
 - a. Execute Cisco UCS test plan and remediation, as necessary.
 - b. Execute VMware test plan and remediation, as necessary.
 - c. Execute Veeam test plan and remediation, as necessary.

This phase will also include Day 1 operational support required to ensure Client's IT staff have sufficient knowledge to administer the systems installed as part of this project. This support includes up to 8 hours of hands-on administrative Day 1 support.

Note: Administrative support session(s) may not provide Client all of the necessary knowledge and skills to successfully manage, monitor, and maintain the solution. Netsync recommends formal training from the solution vendor(s) to address these needs.

Knowledge Transfer

1. Netsync will provide 12 hours of knowledge transfer for up to 5 Client attendees. Before the project start, Netsync will work with Client to define the specific location, the schedule, and any additional topics for the knowledge transfer session(s). The following topics will be covered:
 - a. Features of all products and technologies deployed in the solution.
 - b. Review of the as-built documentation to familiarize Client with the overall solution and key configuration details.
 - c. Basic administration and common operational tasks.
 - d. Reinstallation and/or reconfiguration in case of failure.
 - e. Monitoring, testing, and maintaining the products deployed in the solution.
 - f. Warranty and support procedures for all products deployed in the solution.
 - g. Additional Client questions or topic requests.
2. If it is determined that the duration of knowledge transfer requested by Client will exceed the hours stated above, then Netsync can provide supplementary session(s) at an additional hourly rate.

Note: Knowledge transfer is intended to provide familiarity and conceptual understanding of the specific technologies deployed within this SOW. It is not intended to be comprehensive technical training. The included session(s) may not provide Client all of the necessary knowledge and skills to fully manage, monitor, and maintain the solution. Netsync recommends formal training from the solution vendor(s) to address those needs.

Project Prerequisites

1. Client will fulfill cabling requirements, if applicable. (Netsync will coordinate.)
2. Client will provide Netsync all necessary hardware and information on current environment.
3. Client will provide Netsync local and remote administrative credentials (root access) to all equipment to be assessed during the process of this SOW.
4. Client will make available authorized personnel during the project with a working knowledge of existing network infrastructure for facility access, questions, and clarification of issues.
5. Client will provide Netsync access to all work locations, along with safety, access, security, and emergency protocols.
6. Client will obtain all necessary work permits.
7. Client will provide a work area for Netsync to use, as needed, during on-site activities to include internet and public phone access.
8. Client will provide parking passes and adequate parking for the Netsync project team.
9. Client will comply with all physical and environmental requirements per vendor specifications.

Project Management

Netsync approaches all projects using standard Project Management Institute (PMI) methodologies and processes. Depending on the size of the project and agreements between parties, a Project Manager (PM) is either assigned by Netsync or provided by Client.

Should a Netsync PM be assigned, a project kickoff conference call or meeting will be held with Client, the PM, the Account Manager (AM), and assigned resource(s) to ensure each party is in alignment with all aspects of this SOW. When applicable, the PM will also perform the following project management activities throughout the engagement to ensure Client expectations are consistently met and the project is delivered on time and within the established budget:

- Create the Project Plan.
- Ensure that accurate and timely status updates, action items, and scheduled tasks are received by the assigned resource(s) and uploaded as entries to the applicable Netsync SharePoint project portal. The PM will ensure status information clearly reaches Client to also include supplemental budget and milestone updates.
- Manage the Notes-Status-Issues Log portal web part and ensure timely updates.
- Lead recurring project status meetings with Client and the Netsync project team to communicate overall progress.
- Oversee a quality assurance review of documentation-based deliverables before providing to Client.

Project Updates

- Client will receive email alerts indicating an update has been made to the Notes-Status-Issues Log portal web part for the following communication entry types:
 - Meeting Notes
 - Engineering Status Update(s)
 - Issue tracking
- If Client wishes not to use the Netsync SharePoint project portal, then Client has the option to request direct email correspondence from the Netsync PM for all communication and updates.

Project Scope Change Requests

Netsync is fully committed to completing this project on time and within the established budget. All scope changes and out-of-scope (OOS) requests must be clearly communicated to the AM or PM before those changes or requests are acted on or performed by the assigned resource(s). The following outlines the scope change or OOS request procedure:

1. Client will notify the AM or PM regarding the requested change, add, or move.
2. The PM will submit a Change Request (CR).
3. The assigned Netsync Lead Engineer will verify the technical accuracy of the CR.
4. The PM will submit the CR to Client for subsequent approval and sign-off.
5. Client will return a signed copy of the CR to either the AM or PM.

All other terms within the original SOW, in addition to the signed CR, will remain intact.

Project Documentation

Netsync will provide Client the following documentation:

Included (Yes/No)	Document Type	Owner	Description	Frequency
Project Management Documentation				
Yes	Microsoft Project Plan	PM and Senior Lead Engineer	Task list and timeline of project work activities and scoped deliverables; may or may not require a formal Gantt chart	Once
Yes	Status Entry	PM and Senior Lead Engineer	Summary of technical accomplished, outstanding, and planned activities	Log entry, as needed
Yes	Issues Log Entry	PM and Senior Lead Engineer	List of tracking issues, action items, reminders, or questions	Log entry, as needed
Yes	Meeting Notes Entry	PM	Recap directly following a meeting outlining status, issues, and events discussed	Log entry, as needed
Closeout Documentation				
Yes	As-Built	Engineer	Post-implementation technical documentation of new configuration(s) and applicable support information	Once
Yes	Network	Engineer	Visio diagram(s) illustrating current/post-implementation design	Once

High-Level Design (HLD)

Based on presales discussions, preliminary walkthroughs, and data gathering sessions, an HLD is included within this document. The purpose of the HLD is to present and illustrate the overall solution from an industry best-practice and conceptual level. The HLD is subject to change and will eventually be replaced by a more in-depth and technically accurate low-level design (LLD).

Low-Level Design (LLD)

The LLD will replace all existing HLDs upon receipt of a purchase order and subsequent full walkthroughs and formal post-sales planning and design sessions. The LLD will be a fully executed document agreed to by both parties before implementation begins.

Project Risks and Assumptions

1. Client will participate in all design and planning sessions and be prepared to sign off on all milestones.
2. Client will provide Netsync with full access to the relevant functional, technical, and business resources with adequate skills and knowledge to support the performance of services.
3. Netsync will secure access points (APs) with plastic cable zip ties placed through the mounting bracket, unless Client declines this service in writing via email.
4. Multiple outages may occur due to the nature of this project; however, they will all occur at scheduled and approved times.
5. Client delays to provide Netsync the necessary data to accomplish each task may result in timeline changes.
6. Netsync is not responsible for project delays caused by other vendors and/or manufacturing issues that may impede progress and/or closure of Netsync SOW deliverables.
7. If Client requires a copy of Netsync's standard Certificate of Insurance (COI) with Client-added endorsements, then it should allow up to 10 business days for delivery.
8. Anything not specifically stated in this document is outside the scope of this SOW.

Service Level Agreement

Hours of Operation

- Standard hours of operation are **8:00 AM to 5:00 PM Central Time Monday through Friday**. Netsync understands that due to the nature of the industry and work performed, after-hours and weekend availability are often required. In the event Netsync resources are required to perform work outside of the standard hours of operation, agreed-upon work windows will be discussed and subsequently documented via email. A Client project stakeholder or technical contact must be either on location or on call during the agreed-upon after-hours and/or weekend work window(s).

Agreed By

By signature below, Client and Netsync acknowledge and agree to this statement of work (SOW).

Client Contact Signature

Netsync Contact Signature

Printed Name

Printed Name

Title

Title

Hidalgo County
Information Technology Department

Netsync Network Solutions

Company Name

Company Name

Date

Date

About Netsync Network Solutions

Netsync Network Solutions is a HUB-certified, minority-owned, value-added reseller (VAR), specializing in collaboration and unified communications, data center and cloud, network infrastructure, wireless and mobility, physical and network security, end-user computing and VDI, optical/WAN, managed services, and staffing solutions. Based in Houston, with sales and engineering assets in Austin, Dallas, El Paso, McAllen, and San Antonio, Texas, Netsync uses a true business consultative approach to determine clients' requirements and architects innovative and synergistic IT solutions to meet clients' needs. Holding the most prestigious industry certifications, our highly skilled and seasoned engineering team is available 24 hours a day, 7 days a week.

Netsync's primary objective is to protect clients' current investments, while helping them achieve expected growth. This approach has earned Netsync various customer service excellence awards and recognition as a progressive partner that introduces the newest, best-of-breed products and solutions to clients.

As a Cisco Gold and Master Collaboration Partner, an HP and Intel Platinum Partner, and holding certifications and specializations from many of the industry's top best-of-breed manufacturers, Netsync has built its reputation serving the public sector/SLED market, most notably K-12. In recent years, Netsync's growing enterprise division has diversified the company's client base by tackling large-scale and complex projects in industry verticals, such as energy, healthcare, retail, and finance.

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