

Syntax

Experience is Everything

LeSueur County

LeSueur County **Citrix XenApp 1906**

Upgrade

Statement of Work

Sep 24 2019

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1. Project Overview

LeSueur County has requested a proposal from Syntax to assist in the design and rollout of Citrix XenApp 1906 on Windows 2016 Server OS. The purpose of this project is to replace XenApp 7.14 on Windows 2008R2 environment. The site for this project will be the office of LeSueur County , with remote work being done by Syntax.

The project will serve to prove that XenApp 1808 can:

- .1. Integrate properly with the list of applications defined in [section 3.2](#) of the SOW.
- .2. Demonstrate the method of application delivery will provide the appropriate end user work flow necessary for day-to-day operations.
- .3. Demonstrate a secure application delivery solution.

The following considerations will be made during the project:

- .1. Printing will be addressed as a key day-to-day operational requirement.
- .2. Storefront will be used as the delivery method.

Syntax and LeSueur County will work towards the delivery in a phased approach:

- .1. Evaluation. Syntax will work with LeSueur County IT and its end users to develop an understanding of the end-user workflow. This may impact elements of the overall design (e.g., profiles, application delivery options, printing, peripherals, etc.).
- .2. Design and Build. Syntax and LeSueur County IT will design and build the infrastructure. Data provided by the Evaluation phase will be used to adjust build procedures and server/client configuration.
- .3. Delivery. Once the solution is finalized and a "golden image" produced, the solution will be rolled out to end-users.

Syntax and LeSueur County will work together to accomplish the rollout of the following technologies:

- .1. **Microsoft SQL.** Citrix farm information resides in a centralized database to ensure consistency and availability. An existing SQL 2014 or higher server is recommended for each of the databases.
- .2. **Microsoft Remote Desktop Licensing Service.** The Remote Desktop Licensing Service will be required to validate Microsoft licensing for access to TS/RDS. Appropriate licenses will be required for installation on this server. Windows 2016 RDS Cal's will be required.
- .3. **Windows 2016 File and Print Server.** For best results a Windows 2012 file and print server should be implemented.
 - a. Windows 2016 utilizes SMB 3.0, which provides higher performance when transferring files across a network. The Server OS and applications will be configured to use folder redirection, all profile load and unload functions would be impeded by the performance of the current file server.
 - b. To support the 64-bit printing functionality of XenApp 1808, there must be a print server capable of handling the 64-bit print drivers. This server role can be on the same server or a different server than the file server.
- .4. **Citrix XenApp 1906.** The core application virtualization platform will utilize Citrix XenApp for server OS as a delivery method for core business applications. Included infrastructure technologies provided will be leveraged for enhanced capabilities:
 - a. All Citrix XenApp servers will be virtualized. A virtual image will be created containing all applications required. This "golden image" will be used to deploy additional XenApp servers, as needed.
 - b. Citrix Storefront 3.16. The Citrix Storefront servers will be used as the application delivery method (with the Citrix Receiver client) to provide application access while ensuring centralized client administration.
- .5. **Citrix Licensing Server.** The Citrix Licensing Server will be utilized to serve licenses for all Citrix products. The appropriate licenses will be procured and installed on this server.
- .6. **Citrix User Profile Manager.** The Citrix User Profile Manager (UPM) ensures that personal settings are applied to the user's virtual desktop and applications regardless of the location and endpoint device, with the highest reliability and performance. UPM will reduce logon times and decrease profile corruption caused by traditional roaming profiles.

Syntax is proposing to provide professional services for the following aspects of this implementation:

- .1. **Infrastructure Design.** This includes, but is not limited to, the core components of the environment: SAN/NAS configuration, License Servers, Active Directory, Group Policy, etc.
- .2. **Citrix Product Installation and Configuration.** All products will be installed with Syntax best practices integrated with LeSueur County best practice guidelines:
 - a. VMware. LeSueur County will provide VMware hosts to be utilized by Syntax during the engagement.
 - b. Citrix XenApp
 - i. Citrix XenApp will be installed and configured with Syntax best practices. LeSueur County will assist with application installation and configuration for industry specific applications.
- .3. **Microsoft SQL Server.** Syntax will assist in configuration of Microsoft SQL Server to provide Citrix based functions:
 - a. Citrix XenApp databases can reside on an existing SQL Server, if available in the infrastructure.

2. Project Scope and Approach

The approach for this project will be based on Syntax methodology; its key segments are defined below.

Citrix XenApp Server / Project Build	
Project Planning	<ul style="list-style-type: none"> ▪ Deployment Strategy ▪ Microsoft Active Directory (Review these components) <ul style="list-style-type: none"> ○ Active Directory Migration ○ DNS Migration ○ DHCP Migration ○ Terminal / Citrix Server OU configuration ○ Group Policy Objects Configuration ▪ Citrix Licensing requirements ▪ Citrix Infrastructure Component Design <ul style="list-style-type: none"> ○ Citrix XenApp Server ○ Citrix Storefront ▪ User Requirements <ul style="list-style-type: none"> ○ Determine User Workflow Requirements ▪ User Rollout Strategy: <ul style="list-style-type: none"> ○ Profile and user setting review and planning ○ Client Configuration Requirements
VMware Tuning and Configuration	<ul style="list-style-type: none"> ▪ Create OS Templates and Develop Cloning Processes ▪ Tune VMware for XenApp
SQL Server Configuration	<ul style="list-style-type: none"> ▪ Database Creation (XenApp)
Core Server Image Build	<ul style="list-style-type: none"> ▪ Clone Core OS from Template ▪ Install and configure Microsoft Windows 2016 ▪ Customized settings, Syntax Best Practice configuration, and user setting management configuration (profiles) ▪ Application Installation <ul style="list-style-type: none"> ○ Install and configure applications ○ Test application functionality and workflow and inter-dependencies ▪ Test the server and client environment
Image Deployment	<ul style="list-style-type: none"> ▪ Create XenApp Template server ▪ VMware Clone will be used to deploy additional XenApp Server OS images
End-User Deployment	<ul style="list-style-type: none"> ▪ Client rollout

3. Project Deliverables

3.1 Planning and Design

The first phase of the project will consist of planning and design. The implementation and migration process will be architected and more detailed implementation plans created.

Base on number of users utilizing current farm we can combine Back end roles for Citrix implementation.

Server 1 - Citrix delivery controller, Citrix Storefront, Citrix SQL express DB, Citrix licensing server.

Server 2 - Citrix XenApp server.

Lesueur county will have File server to host Citrix users profiles and home directly.

This design will minimize Citrix foot print in VMware inventory and will have most effacing resource utilization but provide no redundancy for Citrix farm.

3.2 Design and Build

Syntax and LeSueur County IT will design and build the new Citrix server based on the requirements identified in phase one (Evaluation). The deliverable for this phase will be the "golden image" of the server.

To streamline the installation process, Syntax is requesting the creation of the following physical and virtual machines prior to starting the project:

XenApp DDC (1 VMs)	XEnapp
<ul style="list-style-type: none"> • 2 vCPU's* • 16 GB RAM** • 1000 GB HDD • Windows Server 2016 Fully Patched 	<ul style="list-style-type: none"> • 4 vCPU's • 32 GB RAM • 150 GB HDR • Windows Server 2016 Fully Patched
Microsoft SQL Server	StoreFront / License Server
<ul style="list-style-type: none"> • SQL Express Run on DDC 	<ul style="list-style-type: none"> • Run on DDC

* **CPU Note:** Syntax recommends 4 vCPU's for 64-bit Server 2016 VM's as a starting point. Syntax will work during the scalability testing phase to determine the specifications for all servers to most effectively take advantage of the multi-core processors.

** **RAM Note:** Syntax typically recommends 16GB RAM as the starting point for Server 2016. The amount of RAM can be scaled up or down depending on the requirement. Once the system is online and users connected to the farm, appropriate scaling can take place.

*** **File Server Note:** An existing file server can be utilized for this role, provided the server meets the system requirements and has available resources to support the additional profile management load.

3.2.1 Application Delivery Server

Citrix XenApp server will be installed and configured with Syntax best practices. In addition, the following LeSueur County provided applications will be installed and configured for multi-user access:

Application Name
Adobe Reader
Microsoft Office

***Additional Apps TBD

The deliverable for this phase will be the "golden image" of the XenApp OS server. Delivery Server

The Citrix components involved in this phase are as follows:

Citrix Product Name	Version
Citrix NetScaler	12.1
Storefront	3.16

The Citrix Storefront component will be installed to provide access to the applications and desktops.

4. Billing Estimates and Expenses

Assumptions

- Syntax will schedule resources as needed for the task at hand. This will include a qualified engineer to complete the task.
- LeSueur County will provide suitable workspace for these individuals (e.g., desks, chairs, etc.), as well as Internet access.
- The appropriate LeSueur County technical resources will be available to cover the topics noted in the Deliverables section of this document.
- While onsite, Syntax resources will be expected to work toward the completion of project deliverables. It is expected that LeSueur County may use a limited amount of time to assist with questions and items of an advisory nature regarding the customer's existing environment. Syntax resources will cooperate in these matters, provided it does not result in a significant deviation from the project plan. In the event that issues arise requiring a higher time commitment from Syntax, Syntax will discuss any fee and schedule impact with the appropriate LeSueur County representative prior to proceeding with the work.
- Syntax will provide telephone/remote support, on an as-needed basis, during the testing phase of the project. These support services are available Monday through Friday from 8:00 AM to 5:00 PM Central. Support inquiries should be directed to the assigned Project Manager. The Project Manager will determine how best to satisfy the request. If an onsite visit is required, it will be billed at the stated hourly rate.

Based on these assumptions and requirements gathered during our meeting, we have developed the following work plan and estimated work effort for this project:

Task	Staffing	Work Effort [hours]
Build/Optimize Windows 2016 Base Image	Syntax & LeSueur County	-
Upgrade and Configure Licensing RDS & Citrix	Syntax & LeSueur County	1
Install/Configure Citrix XenApp DDC's	Syntax & LeSueur County	1
Install Applications (XenApp Server)	Syntax & LeSueur County	2
Configure Profiles and GPO	Syntax & LeSueur County	2
Upgrade/Configure NetScaler VPX	Syntax & LeSueur County	2
Preliminary Test Application Delivery	Syntax & LeSueur County	2
Upgrade/Configure/Test SMS Passcode Integration	Syntax & LeSueur County	4
Follow-Up / Cleanup of Any Issues	Syntax & LeSueur County	2
Total Work Effort		16
Contingency (20%)		
Total Work Effort with Contingency		18

Billing Details

Expenses

5. Customer Billing Information

Company Billing Name:
Billing Address:
City, State, Country, Zip:
Billing Contact Name:
Billing Contact Telephone:
Billing Contact Fax:
Billing Contact Email:
Purchase Order Number:

Note: Indicate whether or not your organization requires a purchase order to process payments. If so, provide purchase order number and attach a copy of the purchase order.

6. Engagement Agreement

Signature indicates LeSueur County agreement to the deliverables, assumptions, billing estimates, and expenses as documented in this statement of work.

LeSueur County	Syntax, Inc.
Name:	Name:
Signature:	Signature:
Title:	Title:
Date:	Date: