Lenovo Storage DX8200D
System Installation Guide
(Single Appliance / First in Server Group)

First Edition (December 2016)

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Intended Audience

This document has been prepared by DataCore Software as a guide for the benefit of DataCore Certified Installation Engineers (DCIE) who would deploy *SANsymphony™* software in the field as an integral component of the Lenovo DX8200D family of devices. It covers only the first-time installation of a new appliance. For disaster recovery restoration of a device which has been deployed previously, see the separate document "Lenovo DX8200D Disaster Recovery Guide".

The software and procedures described herein apply *only* to this specific use-case. If you are deploying systems other than one from the Lenovo DX8200D family, then other procedures will apply. If in doubt you should contact your reseller, or consult Lenovo Technical Support.

Important

It is assumed that the upgrade will be performed by a competent person with requisite training in the installation and administration of the current release of DataCore *SANsymphony™*.

Document Revision History

Recent changes made to this document

First published (December 2016) – Release V1.0

Physical Installation

The DX8200D Appliance Family

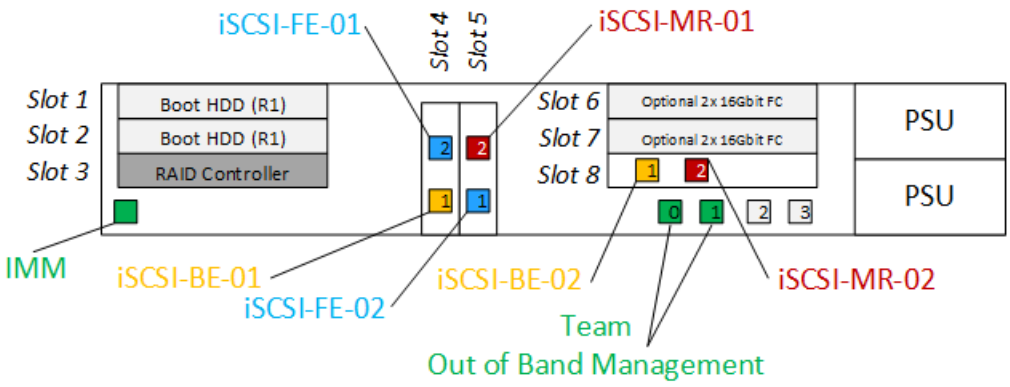
Connecting your appliance

The DX8200D family of appliances are supplied with six Ethernet network interface ports dedicated to 'storage port roles'; two 'Front-End' ports, two 'Mirror' ports and two 'Back-End' ports.

Front-End ports act only as iSCSI targets and are used to present Virtual Disks (LUNs / VVols) to host (application) servers. Mirror ports act simultaneously as both iSCSI initiator and target ports and are used exclusively to provide synchronous replication of highly available Virtual Disks ('Mirrored Disks'). Back-End ports are iSCSI initiator ports, used to connect external storage systems so that their resources can be managed by the DX8200D appliance.

Remaining Ethernet network Interface ports are used to provide "Management" ports (out-of-band communication between DX8200D appliances in highly available topologies) and for regular Windows Server administration.

If your appliance is to operate correctly it is vital that the physical connection of the storage ports is correct with respect to the DataCore topological design and the prevailing network infrastructure:



The Lenovo DX8200D family of appliances are also equipped with a second generation Integrated Management Module (IMM), providing amongst other functionality; remote KVM presence, remote power management and virtual media capabilities. It is strongly recommended that the IMM port be connected.

Optionally, some DX8200D family appliances may be additional provisioned with Fibre Channel (FC) interface ports.

Important: If your appliance has been supplied with factory installed FC interfaces, or if the field installable FC upgrade kit has been applied prior to appliance deployment, it is ***critical*** that these remain disconnected throughout the automated deployment process, or the deployment will fail. They may be connected once the appliance has been successfully deployed.

All Ethernet ports *must* be connected prior to first starting the appliance and commencing the automated deployment process.

System Setup

OverView

The DX8200D family of Lenovo virtualised io appliances are supplied with both SANsymphony™ storage virtualisation software and a factory-installed deployment utility designed to automate the initial installation and setup of the software so that the system may be brought into service quickly and with minimum administrative overhead.

The configuration utility is launched automatically upon first boot of the appliance and orchestrates all necessary aspects of the deployment of a new server appliance. It is visible to the installer in the form of a PowerShell Session which may be seen to run throughout the deployment.

The automated software installation process may be thought of in terms of approximately three logical stages.

Stage One

During the initial 'pre-flight' phase, the deployment utility will verify that the appliance hardware is properly installed and configured as expected; will validate aspects of the operating system environment and make any necessary adjustments and will un-package and prepare itself to perform the SANsymphony™ software installation and configuration.

Stage Two

Stage two is characterised by the user interview stage, during which the installation engineer / administrator (the 'installer') will be presented with a GUI for the collection of the minimum set of configuration parameters that the utility will require in order to be able to make a successful deployment. Once the necessary user input has been made, the deployment process runs to completion automatically.

Stage Three

In the final stage of the deployment, the *SANsymphony™* software is installed and prepared for first use in accordance with the settings provided by the installer in Stage Two and within the context of the installation.

Interrupting the Automated Deployment Process

The three logical installation stages may be implemented by a varying number of actual installation 'phases', each of which may be punctuated by one or more reboot cycles depending upon the actions which are required of those phases. Since the deployment process is designed to require as little user intervention as possible, reboots will be performed automatically where required. At all times, the user has the ability to cancel a requested reboot, if so desired but should this be done, the automation will not restart automatically on the return from the reboot but must instead be resumed by the user, requiring manual intervention.

The deployment utility makes use of checkpoints so that if the process is interrupted for any reason (user action or otherwise), it can be resumed by signing-in to the server appliance using the administrator account (in combination with the password credential established during the second stage) and using the "Resume Installation" shortcut which is found on the desktop.

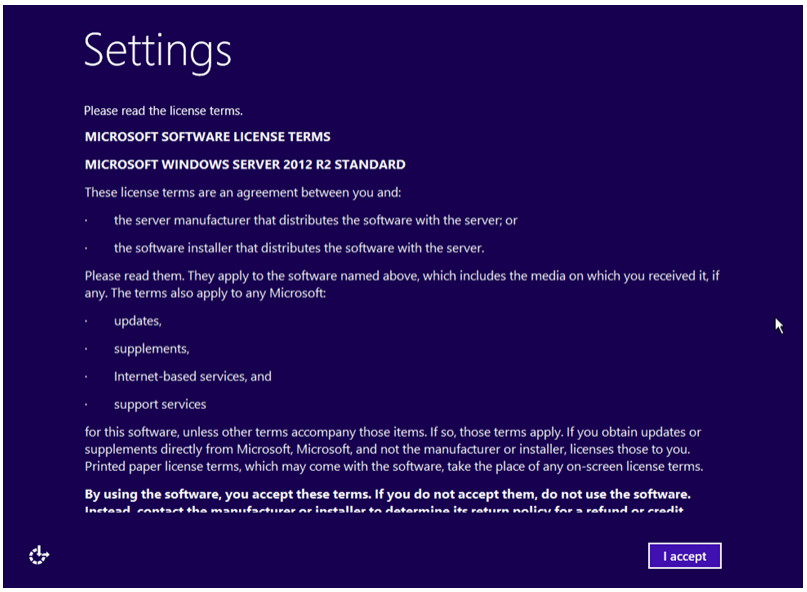
Stage One (Initial Setup)

Initial setup begins once the operating system on the appliance has booted for the first time. The first action is to finalise the factory-applied system image preparation (or 'Sysprep').

Important: For the deployment automation to succeed, you must ensure that the cabling and connectivity prerequisites have all been met, *before* starting the server appliance.

Accept the Operating System EULA

When the operating system first boots, the installer will be presented with the Microsoft Licensing Terms for the underlying Windows operating system. You must accept the EULA (click "***I Accept***") in order to continue with the deployment. If this is done, an automatic login will be performed, in the context of the local administrator account.

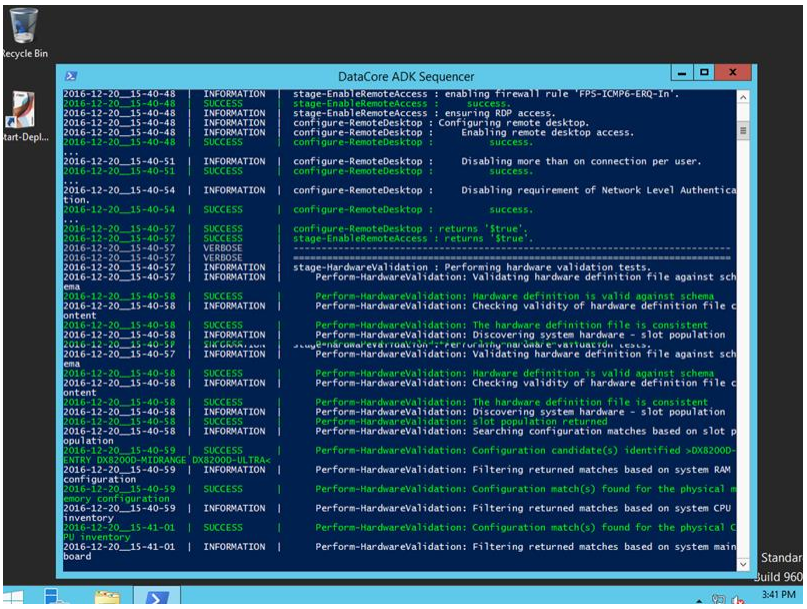


Starting the Deployment Utility

Under normal circumstances, the automated deployment utility can be expected to start automatically, after the auto-login is complete (there may be a pause of a few seconds between the login and the commencement of the "DataCore ADK Sequencer" session).

If this does not happen, start it manually by double-clicking the "Start-Deployment" icon located on the desktop.

The deployment utility is in operation when the “DataCore ADK Sequencer” window is visible.

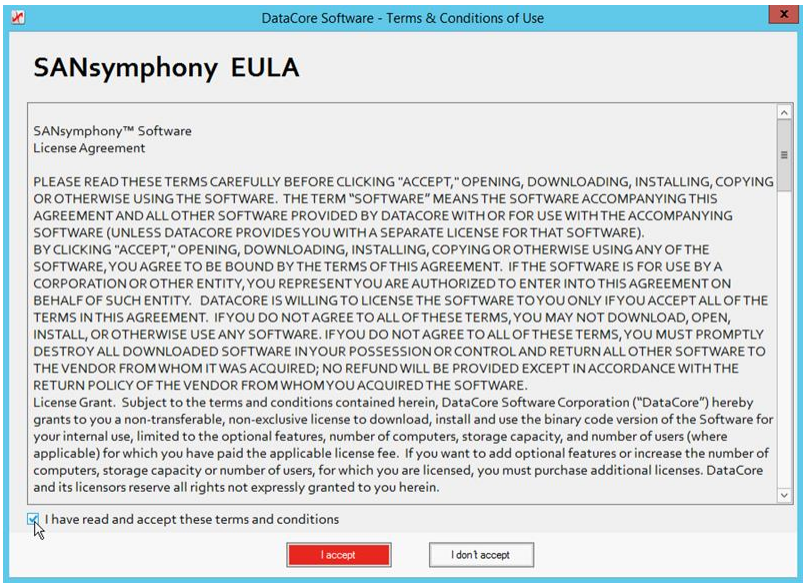


Stage Two (User Interview)

Stage Two commences with the display, by the deployment utility, of the user interview GUI. The GUI captures and validates configuration parameters essential to a successful deployment within the appropriate context.

Accept the SANsymphony software EULA

Initially, the configuration GUI will display the DataCore SANsymphony™ end user license agreement. Check the checkbox "***I have read and accept these terms and conditions***" and then click the "***I accept***" button to signify acceptance of this agreement and to continue with the deployment. If you do not accept the agreement, the deployment utility will exit and the appliance will remain un-configured.



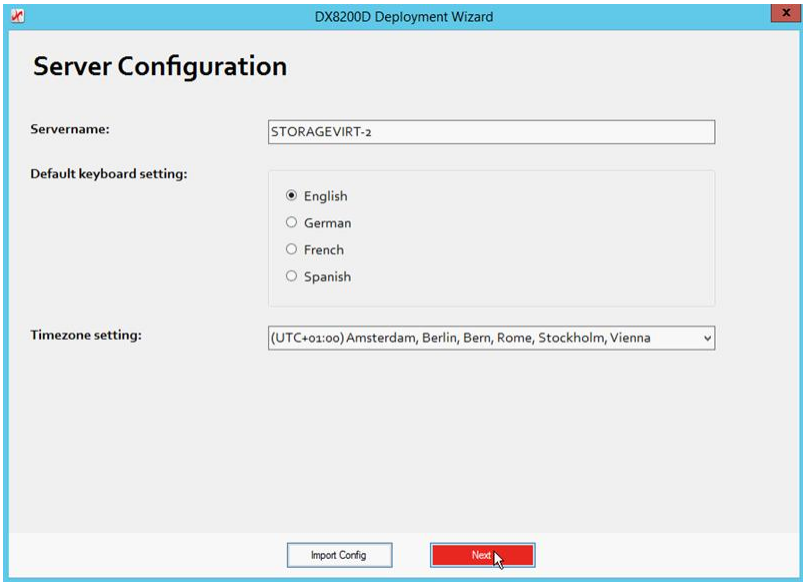
Server Configuration

The Server Configuration page allows configuration of basic server identity and regionalisation settings, which will be applied to the operating system during reconfiguration in subsequent stages. The server host name, keyboard layout and regional time zone may be configured. When setting input is complete, click "***Next***"

Important: Since subsequent pages will capture user credential information, it is essential to match the selected keyboard configuration with the physical device in use, otherwise passwords etc. may not be input as expected, leading to a failure of the device to deploy correctly.

The Server Configuration page also permits the installer to import a pre-existing 'answer file', which may have been created during the installation of another appliance or created previously on this same appliance during a subsequently aborted/suspended deployment. (The configuration details provided for this deployment may themselves be saved, upon arriving at the "Deployment Summary" page).

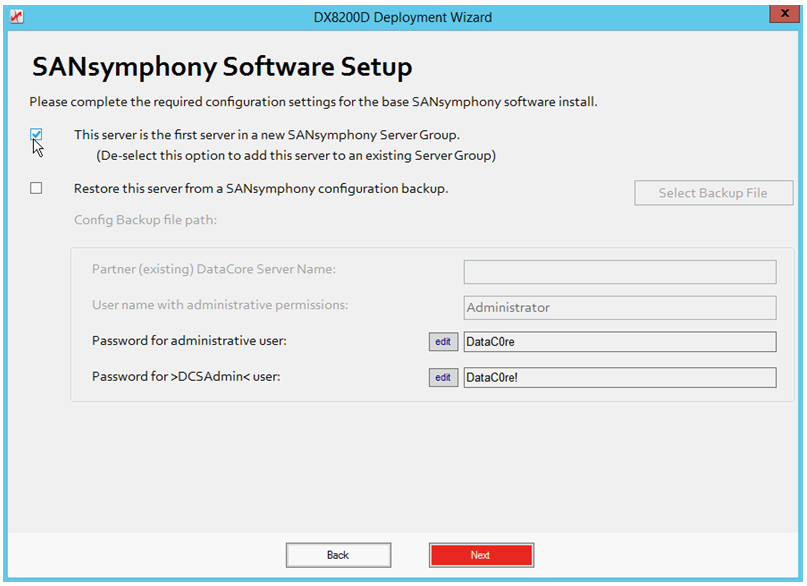
To import an existing configuration, use the "***Import Config***" button and use the resulting open file dialog box to navigate to, and to select, the desired configuration file. If the configuration file is valid, the user input fields of the GUI pages will become populated with the saved values.



SANsymphony Software Setup

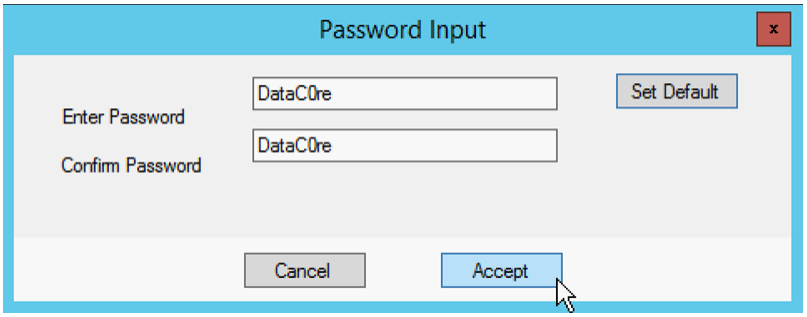
On this page of the user interview, identity and authentication settings specific to the SANsymphony software are made.

Since this will be the first server deployed, it is by definition also the first server deployed into the "Server Group". Check the "***This server is the first server in a new SANsymphony Server Group***" checkbox to signify this.



Making this selection will cause all further user-configurable settings on this page to be disabled, with the exception of the password input boxes for the (local) Administrator account and the DataCore-specific local user "DcsAdmin" which will be created as part of the automated deployment process. In both cases, default passwords will be in effect (as displayed) unless the installer chooses to change them.

To change a default password, click the "*Edit*" button beside the appropriate password, which will cause the password input dialog box to be displayed for the respective input field.



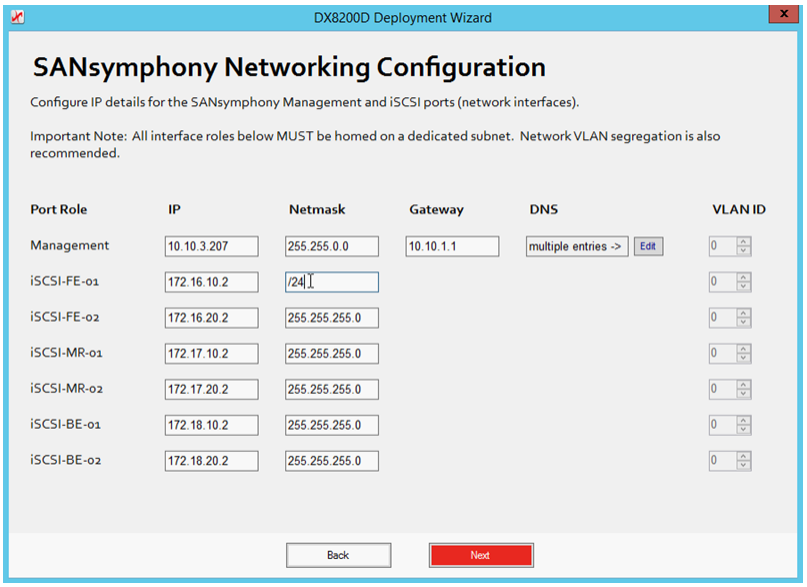
The password dialog input box allows a new password to be specified, confirmed and validated against the server's local security policy. If you ultimately decide not to proceed with a custom password after having initially changed it, the "*Default*" button on the password input dialog will restore the factory default setting if pressed.

SANsymphony Software Setup

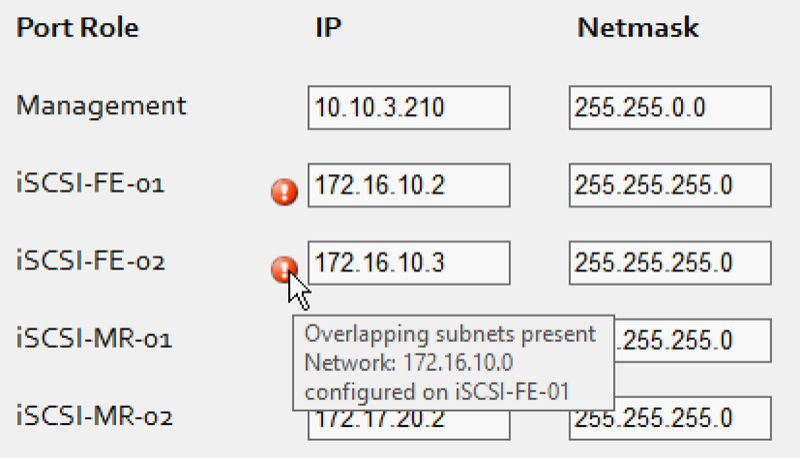
DataCore's SANsymphony™ software uses the Ethernet network interfaces provisioned within the appliance to fulfil requirements for iSCSI "storage" ports and the "management" (control plane) ports. It is vital that the network interfaces being configured are correctly connected to the physical infrastructure with respect to their intended traffic (port) roles.

It is necessary for the installer to assign appropriate IP configuration details to all interfaces as DHCP is not supported as a configuration mechanism for these ports. The installer should liaise with the appropriate DevOps networking authority to obtain the correct interface details, including IP gateway address ("management" interface only) and DNS server details. These details should be transferred to the corresponding fields within the user interview GUI, in accordance with the overall storage system topology.

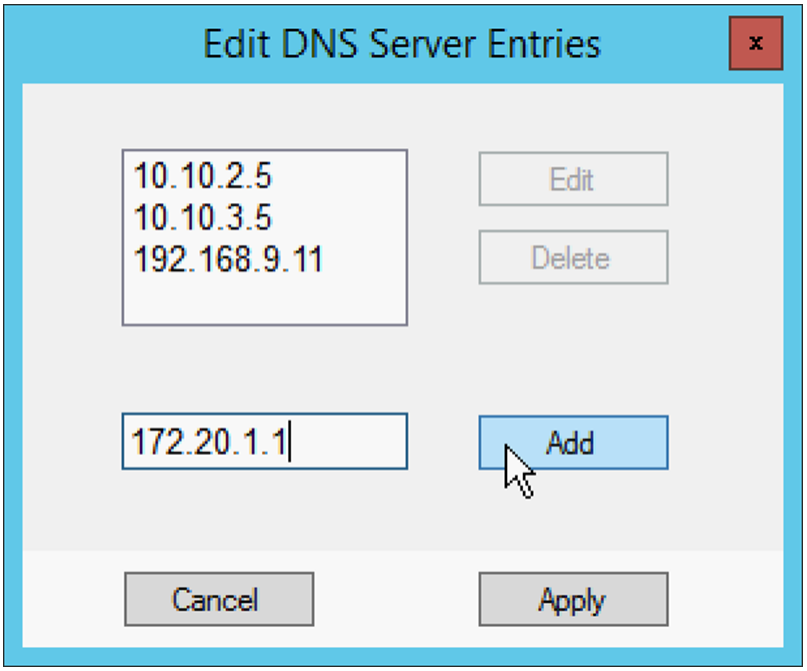
Note: Subnet mask values may be input either in dotted decimal (w.x.y.z) or network number (/xy) format.



Correct operation of the SANsymphony™ software requires that all designated port roles (target or "Front-End" ports 'FE', storage "Mirror" ports 'MR', initiator or "Back-End" ports 'BE', and the out-of-band "Management" port) must be placed on separate logical networks. The GUI enforces this requirement and will display an error message if this constraint is violated. The deployment cannot continue until such an error is corrected:



To configure DNS server settings, click the "**Edit**" button next to the DNS input field to open the 'Edit Server DNS Entries' dialog. New entries are added by completing the text box and clicking '*Add'*. An existing entry may be edited or removed by first selecting it within the entry list and then clicking '*Edit'* or '*Delete'* buttons respectively. When the entries list is configured as required, click "***Apply***" to persist the changes.



Whilst the Networking Configuration page provides controls for the assignment of VLAN IDs to Network Ports this feature is currently not implement and the controls are intentionally disabled.

When the input of all required network settings is complete, click "**Next**" to proceed to the next page.

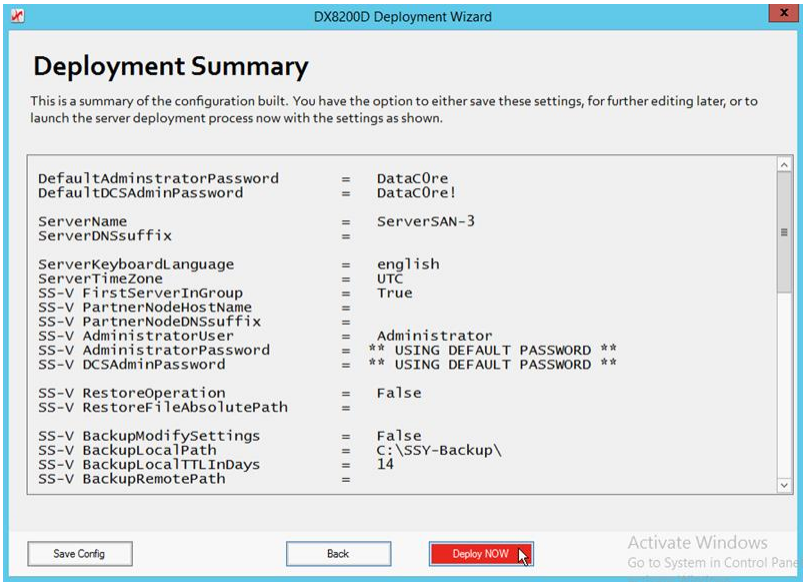
Deployment Summary

The final page of the user interview provides a summary of the responses previously given and therefore the settings that will subsequently applied to this appliance instance by the automated deployment utility once started.

If the settings are correct, clicking the "***Deploy Now***" button will cause the GUI to close and the automated deployment process to commence immediately.

If changes are required, the "Back" button (and the navigation buttons on subsequent pages) allow the installer to move between previously completed pages, where these may be applied as necessary.

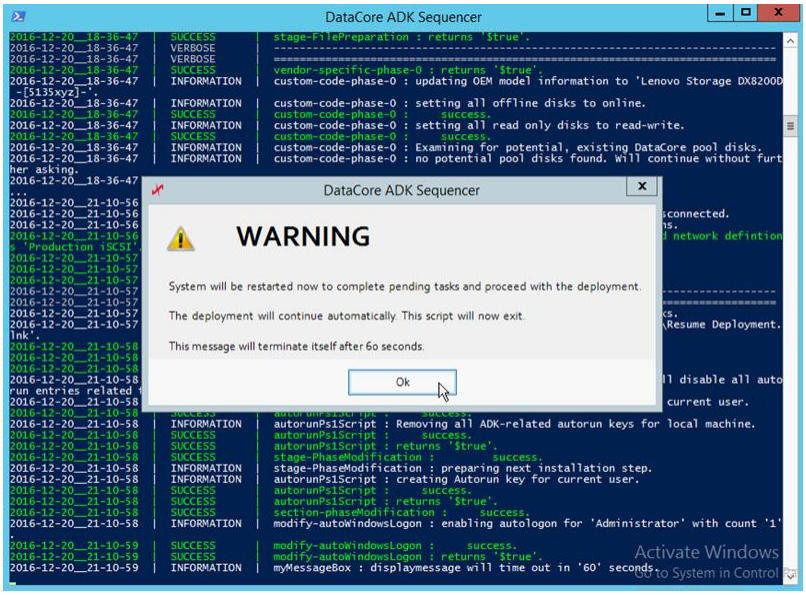
A completed configuration may be saved for later recall, either as the basis of a template for the deployment of additional appliances or for retention for application to the same appliance during disaster recovery / rebuild procedures. To save the configuration settings as an 'answer file' which may be imported by the GUI at a later time, click the "Save Config" button to open the Save File dialog.



Note: For security reasons, when a configuration file is saved using the "Save Config" feature, any user supplied passwords will be removed and therefore will need to be re-input manually when the file is imported into another instance of the user interview GUI. This is because configuration settings are saved as plain text.

Planned Reboot

Once the user interview GUI has exited, the automated deployment utility resumes and prepares to deploy the appliance in accordance with the settings received from the installer. Shortly into this process, the utility will signal one of a number of required reboots:



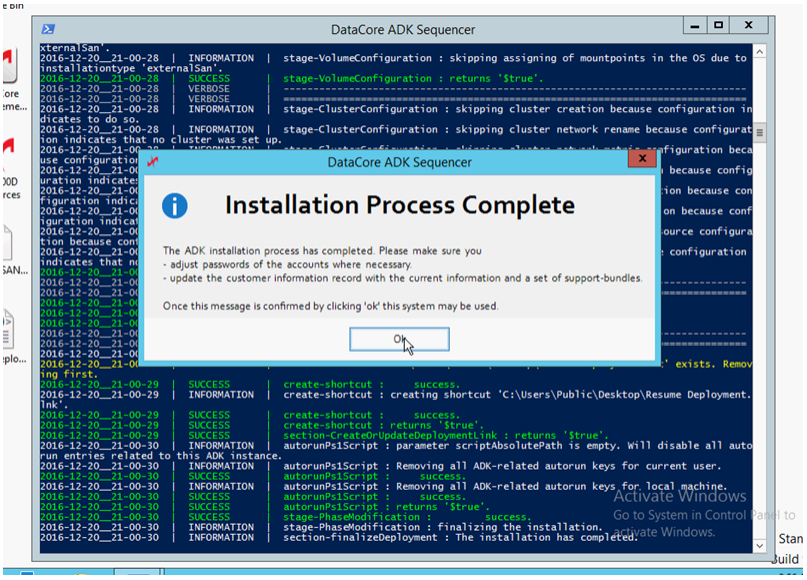
Since the deployment process is designed to operate with minimal user intervention once beyond the interview stage, all such reboots will occur automatically if not actively prevented by the installer.

Note: Clicking “Ok” at the reboot warning dialog will NOT prevent a reboot but instead will dismiss the message and expedite the reboot. To prevent the reboot from occurring, it is necessary to close the “DataCore ADK Sequencer” window. If this is done, then it will be necessary to resume the installation process manually on next login, by clicking on the “Resume-Installation” shortcut which has been placed on the desktop.

Stage Three (Software Installation and Configuration)

During stage three the SANsymphony™ software is installed and configured in line with the settings provided during the user interview. One or more reboots will be performed automatically. Upon each return from reboot the local administrator account will be used to auto-login and the deployment utility will resume its activity.

The deployment is completed when the DataCore ADK Sequencer window displays the "Installation Process Complete" dialog. At this point, the system is ready for use.



Post-Installation Steps

DataCore Management Console

As with non-automated deployments, the regular assets associated with SANsymphony™ software are installed. This includes a desktop shortcut to the DataCore Management Console, the primary administrative interface for the product.

Documentation

The automated deployment includes additional documentation assets, including documents describing disaster recovery (from bare metal) and configuration recovery (from DataCore Server backups) processes. These may be easily accessed via a link added to the desktop "DX8200D Resources".

The deployment utility also places a .CSV file on the local administrator account desktop containing details of the iSCSI storage ports, as they have been configured. This includes port roles, IQN and IP addresses for these ports.

Account Passwords

As part of the deployment, passwords will have been set for the local administrator account and for the local account "DcsAdmin", which is created automatically for the exclusive use of the DataCore SANsymphony™ software's DCSX ('executive') service.

These passwords are set to the following defaults, if the installer does did make changes in the user interview GUI.

Administrator (local):	DataC0re
DcsAdmin	DataC0re!

If these passwords have been changed as part of the deployment it is important to record this information where it may be easily retrieved in the event that an appliance must be rebuilt during disaster recovery. This is especially important in the case of the DcsAdmin password since in highly available environments, which will contain more than one DX8200D family appliance, this account must use the same password across all appliances.

Important: Do not assume that in the event that DcsAdmin password for a group of appliance has been lost, that a password reset can be made without disruption services.