Novell NetWare™ and NetApp NAS: NetWare and eDirectory Solutions Using NAS Technologies

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Abstract

This paper will present a high-level overview of several solutions for integrating Network Appliance™ filers running NFS and CIFS protocols into Novell NetWare environments. Implementation of these solutions will be discussed in high-level terms.

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1) Purpose and Scope

This document covers the software involved in utilizing NetApp filers running the Common Internet File System (CIFS) and Network File System (NFS) protocols in environments utilizing Novell NetWare and eDirectory authentication. Specifically, the following topics will be addressed:

Using the domain support in Windows NT® style included in NetWare 6.5 support pack 2 and later

Using Novell software suites to implement Microsoft® Active Directory and eDirectory integration

Using an NFS-enabled filer as storage for a NetWare server

A discussion on using eDirectory LDAP and NetApp filers

2) Requirements and Assumptions

For the solutions described in this document to be useful to the reader, several assumptions are made:

The reader has at least basic NetWare administration skills and has access to the administrative login for the server and the server console

The reader has at least basic Network Appliance administration skills and has administrative access to the filer via the command-line interface

The filer has the licenses necessary to perform the activities outlined in this document

The target system has the required network connectivity and software to support the solutions outlined in this document

3) Integrating the Filer with eDirectory-Hosted Windows NT Domains

Starting with NetWare 6.5 SP2, the included eDirectory software has the ability to act as a domain controller in Windows NT style. The eDirectory tree can host an unlimited number of Windows NT domains. Users and groups are managed using the standard directory management tools.

Configuration of the domain controller software is straightforward.

1. Enable the domain controller software.

   ```
   SERVER> cifs domain enable
   CIFS domain add-on functionality successfully enabled.
   ```

2. Create the domain instance at a chosen context within the tree.

   ```
   SERVER> cifs domain create NTDOMAIN root "My domain is all I survey"
   username> admin.root
   password> admin
   Domain created.
   ```

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3. On the filer, run "cifs setup".

```
fas250> cifs setup
Do you want this system to be visable via WINS? [no]
The default name of this filer will be 'NTAP250'.
Do you want to modify this name? [no]:
CIFS supports three types of user authentication:
        1. Windows Domain authentication.
        2. Windows Workgroup authentication using the filer's user accounts.
        3. /etc/passwd and/or NIS/LDAP based authentication.
What type of authentication will this filer use? [1]: 1
        The filer will use Windows Domain authentication.
Enter the Windows Domain for the filer []:NTDOMAIN
        CIFS cannot find NTDOMAIN in DNS, and so must assume that
        this is not a Windows 2000 domain. If you continue with
        CIFS setup, this filer will attempt to join NTDOMAIN as an
        NT4 server. If NTDOMAIN is a Windows 2000 domain, try specifying
        a fully qualified domain name, as in 'NTDOMAIN.company.com'.
Do you wish to continue and join NTDOMAIN in NT4 mode? [yes]:
CIFS - Connecting filer to the NT4 domain.
Mon Aug  9 16:29:22 MST [rc:info]: Starting DC address discovery for NTDOMAIN.
Mon Aug  9 16:29:22 MST [rc:info]: Starting WINS queries.
Mon Aug  9 16:29:22 MST [rc:info]: Found 1 BDC addresses through WINS.
Mon Aug  9 16:29:22 MST [rc:info]: Found 1 PDC addresses through WINS.
Mon Aug  9 16:29:22 MST [rc:info]: DC address discovery for NTDOMAIN complete.
1 unique addresses found.
Mon Aug  9 16:29:23 MST [rc:info]: Connection with \\NW65SP2-W established
Mon Aug  9 16:29:23 MST [rc:info]: CIFS - machine password changed on DC
\\NW65SP2-W
CIFS - Connecting to domain controller.
Welcome to the NTDOMAIN domain.

CIFS local server is running.
```

Once the domain has been created, the filer can then authenticate clients accessing its CIFS shares using the standard Windows NT domain APIs, hosted within the eDirectory tree.

4) Integrating the Filer with Mixed eDirectory–Active Directory Environments

Novell publishes software that is specifically designed to integrate disparate directory services. The Nsure Identity Manager (formerly DirXML) has connectors that perform two-way synchronization with multiple directory services. In environments where Active Directory and eDirectory run in parallel, the two services can be connected to propagate authentication information.

In this type of environment, the filer can be joined to the Active Directory. Users mapped from eDirectory will be granted appropriate access to CIFS shares and files on the Network Appliance storage system in the Active Directory domain.

5) NFS Gateway for NetWare 6.5

NetWare version 6.5 includes the NFS Gateway product, which allows a Network Appliance filer to serve as storage for a NetWare server. The filer's NFS file system is presented to clients of the NetWare server as a full-featured NSS file system. The filer is not accessed directly by the clients; all client requests are passed through the NetWare server.

For environments that implement this functionality, it is recommended that the best practices for Snapshot™ backup design and volume layouts published by Network Appliance still be followed, as with any NFS environment.

6) NetApp Filers and eDirectory LDAP

LDAP functionality exists in both Novell eDirectory software and the Data ONTAP™ operating system. However, LDAP on the filers is designed to map user credentials to UNIX® UID/GID pairs for NFS via the RFC2307 schema extensions and does not apply to the CIFS authentication and authorization process. Thus, it is not possible as of this writing to directly integrate the filer into eDirectory environments using LDAP alone.

6) Conclusions

A Network Appliance filer offers the Novell NetWare administrator compelling advantages for network-attached storage and flexibility to integrate into many environments. For more detailed information, see the references cited at the end of this report. NetApp has not tested these procedures with all of the combinations of hardware and software options available. There may be significant differences in your configuration that will alter the procedures necessary to accomplish the objectives outlined in this paper. If you find that any of these procedures do not work in your environment, please contact the author immediately.

7) References

Nsure Identity Manager product description:

http://developer.novell.com/dirxml/

NetWare 6.5 CIFS domain controller documentation:

www.novell.com/documentation/nw65/index.html?page=/documentation/nw65/native/data/bqls7eg.html

NetWare 6.5 NFS Gateway documentation:

www.novell.com/documentation/nfsgynw65/index.html