

We Are Here For You

AFP and CIFS Protocol Support in OES 2 Support Pack 1

This article first appeared in the September 2008 issue of *Novell Connection* magazine.

Later this year, Novell intends to release the first support pack for Novell Open Enterprise Server 2. As you talk to those involved with it, they'll tell you that the primary objectives of this support pack are to enable even greater interoperability and simplicity. The interoperability objective manifests itself in the addition of protocol support for Apple Filing Protocol (AFP) and Common Internet File System (CIFS). (See Figure 1.)

Even though greater interoperability is the main focus of the new protocol support for Novell Open Enterprise Server 2, it also delivers some other nice side benefits, with performance and scalability at the top.

AFP and CIFS are network protocols that provide native network file services for Mac OS and Windows clients, respectively. While NetWare has long provided AFP and CIFS support as part of its Native Access File Protocols, when Novell Open Enterprise Server was initially released, similar protocol support was already available from Samba and Netatalk open source solutions. Samba provides native file access services to Linux servers for Windows clients, and Netatalk provides native file access services for Mac OS clients. Based on feedback from customers, however, Novell Open Enterprise Server will inherently support both AFP and CIFS on Linux servers in the upcoming support pack. (See Figure 2.)

AFP and CIFS support on Linux also provides Mac and Windows clients with universal password support of up to 64 characters.

> Scaled Up Performance

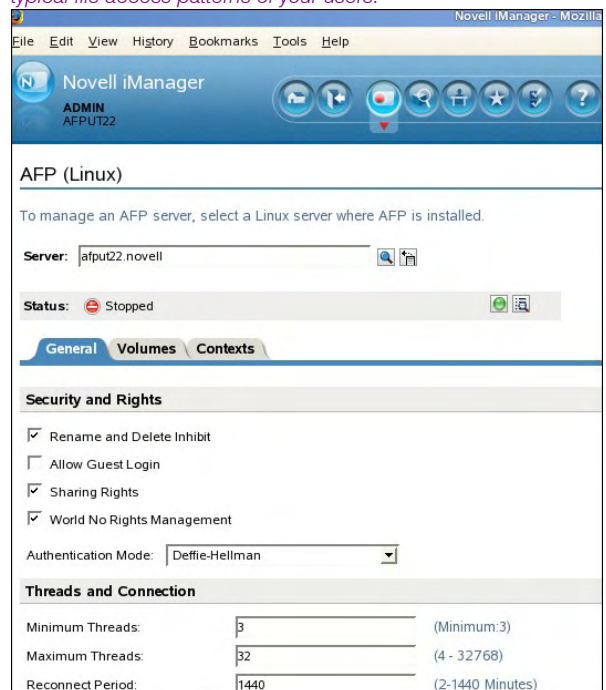
Even though greater interoperability is the main focus of the new protocol support for Novell Open Enterprise Server 2, it also delivers some other nice side benefits, with performance and scalability at the top. While Samba and Netatalk do a good job of providing native file access, the solutions don't provide the level of scalability

that Novell customers are accustomed to. Customers found that Samba couldn't scale much beyond 800 concurrent Windows clients, and Netatalk performance topped out after about 15 concurrent Mac clients. The need to address performance and scalability for these clients became one of the driving forces for Novell to incorporate CIFS and AFP protocol support in this first update to Novell Open Enterprise Server 2. (See Figure 3.)

As part of its latest round of beta testing for Support Pack 1, Novell put the scalability and performance of its new protocol support under close scrutiny. In Superlab testing, Novell engineers found that with its new AFP protocol support, Linux servers could easily handle 500 concurrent Mac connections. Superlab testing of CIFS demonstrated the ability to support more than 1,500 concurrent Windows connections. In both cases, the new protocol support on Linux servers not only matches what customers have enjoyed on NetWare, but in many cases, exceeds it.

One of the reasons that the new protocol support will enable your native Windows and Mac users to enjoy even higher performance on Linux than they could on NetWare is the addition of both multicore and multiprocessor

Figure 1: *With new support for AFP on Linux in OES 2, you have greater flexibility in setting minimum and maximum threads, enabling you to optimize system performance based on the typical file access patterns of your users.*



support. AFP and CIFS on NetWare do not provide support for either, but Support Pack 1 provides it for Linux, thus delivering even higher performance levels for Windows and Mac users. But the added benefits don't stop at performance and scalability.

> More than Interoperability and Performance

AFP and CIFS support on Linux also provides Mac and Windows clients with universal password support of up to 64 characters. The AFP protocol supports the DHX authentication scheme used by Apple. CIFS uses Microsoft's NTLM v1 authentication scheme. Clear text passwords are disabled by default for both protocols. And passwords are case sensitive. In the future, Novell plans to provide Kerberos support for both protocols, as well as DHX2 and NTLM v2 authentication support for AFP and CIFS, respectively.

The AFP support in this support pack also gives you greater flexibility in setting minimum and maximum threads, so you can optimize system performance based on the typical file access patterns of your users. If your users do a lot of video sharing, you might want to increase the server threads. If they deal mainly with smaller files, you have the ability to decrease the threads. With this support pack, adding new AFP volumes is more administrator- and user-friendly as well. When you added

Figure 2: *The CIFS support in OES 2 support pack 1 enables users to access a Linux server from a Windows client with the same look and feel as if they were accessing a NetWare server.*



For organizations planning to move from NetWare to Linux on Novell Open Enterprise Server 2, the AFP and CIFS support in Support Pack 1 delivers an unexpected benefit that can significantly simplify migration efforts.

a new AFP volume on NetWare, your AFP users would lose their connections during the process, interrupting their work and forcing them to reauthenticate. But user connections will stay intact when you add a new AFP volume on Linux. Users will simply need to do a refresh in order to see the new volume.

If you set storage quota limits for your users, the AFP support on Linux is more conducive than what you have likely experienced on NetWare. Since AFP version 3.1 does not support user quota limits, when Mac users who had exceeded their storage quotas on a NetWare volume tried to save a new file, the file would not be saved and no explanatory message would be given. This could cause significant heartburn for users who thought they had saved a file, but couldn't find it when they later wanted to open it.

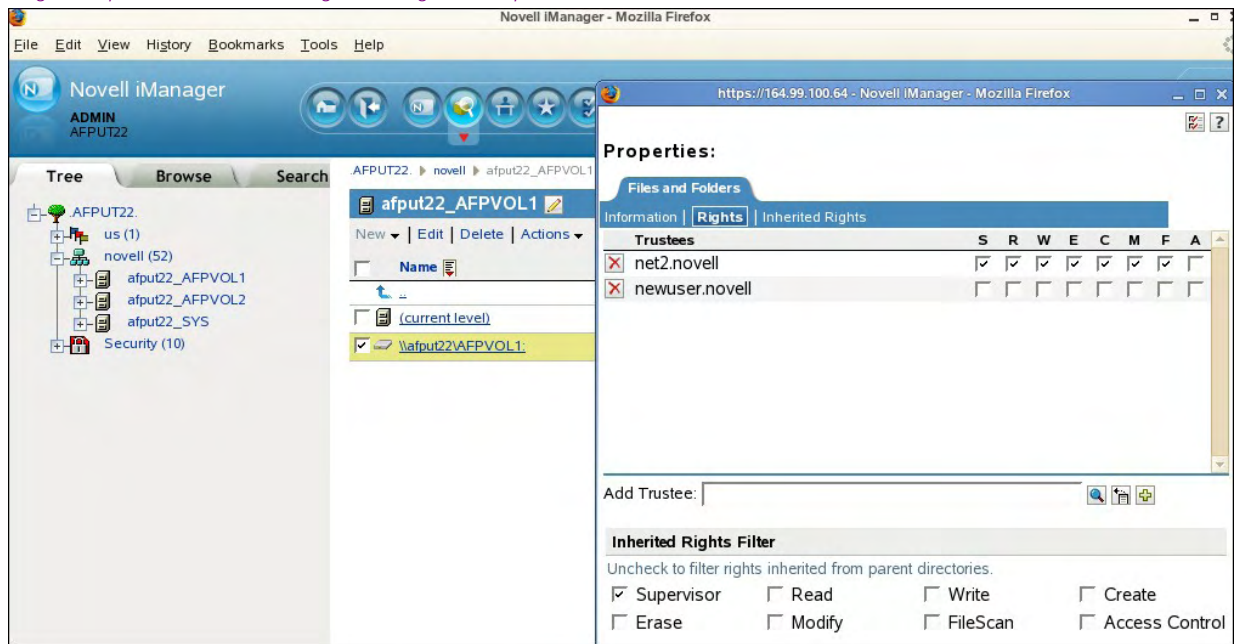
While the AFP protocol support in this support pack is based on AFP version 3.1, which still does not support user quota limits, Novell has added the ability to have an alert notify users when they are trying to save a file and have exceeded their quota limit. Additionally, Novell plans to support AFP version 3.2 in a future support pack. This will deliver support for user quota limits, as well as a number of other new capabilities that will be inherited by Mac users in Novell Open Enterprise Server 2 environments running Linux.

For organizations planning to move from NetWare to Linux on Novell Open Enterprise Server 2, the AFP and CIFS support in Support Pack 1 delivers an unexpected benefit that can significantly simplify migration efforts. Prior to this support pack, migrating to Linux meant you had to Linux-enable (also known as LUM-enable, since the procedure uses the Linux User Management service) every Samba user in order to transfer their rights from the NetWare environment to the Linux environment. When you have thousands of Samba users, this can be quite a daunting task. Novell Open Enterprise Server 2 Support Pack 1 eliminates the need to LUM enable users (though you can still do so if you choose), making migration from NetWare to Linux even easier.

> What You Need to Know

Aside from superior performance and the other enhancements we've discussed, the new protocol

Figure 3: *The protocol support for both CIFS and AFP provides tight integration with NSS for permissions, trustee rights, quotas, longnamespaces and other NSS rights management capabilities.*



support on Linux is similar to what AFP and CIFS users experienced on NetWare. Accessing a Linux server from a Windows client will have the same look and feel as if you were accessing a NetWare server. Novell eDirectory integration is basically the same for both clients. Both clients support Novell Cluster Services. And the NetWare command sets you've used for these protocols are basically the same on Linux.

Be aware that there are a few differences in this release. First, there is no support for cross-platform file locking between CIFS and AFP, or between CIFS and NetWare Core Protocol. Novell plans to add cross-platform file locking support in a future support pack, but for now you should avoid shared volumes that CIFS users, Mac users and NetWare Core Protocol users can access. Ignoring this recommendation increases the potential for file corruption. Even though cross-platform file locking is not supported between CIFS and AFP, file locking is supported between AFP and NetWare Core Protocol. So you can enable file sharing between native Mac users and Novell client users.

By default, both CIFS and AFP support Novell Storage Services. In fact, both protocols are tightly integrated with Novell Storage Services for permissions, trustee rights, quotas, long namespaces and other Novell Storage Services rights management capabilities. In future support packs, Novell plans to provide AFP and CIFS support for other Linux file systems, including ext3, XFS and JFS.

Specific to Mac users, AFP support for this release is limited to Mac OS versions 10.3, 10.4 and 10.5 with only limited support for Mac OS 10.5, because it leverages a

lot of the features of AFP v3.2. When Novell adds support for AFP v3.2 in a future support pack, it will automatically inherit the ability to support those features as well.

On the Windows side, CIFS users will only be able to print using iPrint. Also, if you're looking to take advantage of a CIFS volume on Linux as a Domain Emulator, you'll need to wait at least until the next support pack, which promises to provide that support. And one last important note: because CIFS and Samba share the same port, you have to choose between CIFS and Samba for native client access. You can't have them both running at the same time.

> **Enhanced Interoperability**

Novell Open Enterprise Server 2 provided an excellent transition point from NetWare to Linux, and the new support pack makes that transition even easier with its protocol support for both CIFS and AFP native client access. Not only does it match, and often exceed, performance and scalability for native Mac and Windows access, but it adds functionality those clients wouldn't otherwise have. In other words, not only does Open Enterprise Server 2 enable interoperability, it enhances it. **N**

Installing AFP and CIFS

You install both the AFP and the CIFS protocols from Novell Open Enterprise Server 2 Support Pack 1 as a YaST-based server installation.

To install AFP, select *Novell AFP Services* from the Open

Enterprise Server Services group, accept it, and then all of the protocol's dependent modules and packages will be installed. After it finishes installing, you'll be prompted to configure the protocol by supplying an AFP proxy user name, AFP proxy user password, the eDirectory context for the AFP server, and the credential storage location where user credentials for the AFP proxy server will be stored.

Installing CIFS is similarly straightforward, but you do need to know that CIFS has product interdependencies that you need to address. CIFS depends on Novell Modular Authentication Services for name resolution and authentication of CIFS users. Additionally, Novell Modular Authentication Services is dependent on Novell International Cryptographic Infrastructure for encryption and decryption services. These products need to be

installed and operating properly; otherwise, CIFS users will be denied access to your Novell Open Enterprise Server 2 Linux server.

To install CIFS from YaST, you select *Novell CIFS* from the *Open Enterprise Server Services* group, accept it, and then all of the protocol's dependent modules and packages will be installed. Once the server reboots, you'll be prompted to configure the CIFS protocol by supplying an eDirectory server address or host name, LDAP port for the CIFS Server (the default is 636), a CIFS proxy user name, CIFS proxy user password and the credential storage location.

For more details on the installation of the support pack, refer to the online documentation available at www.novell.com/beta when the open beta is released.