Use IPv6 for SMB access and SMB services

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Use IPv6 for SMB access and SMB services

Requirements for using IPv6

Before you can use IPv6 on your SMB server, you need to know which versions of ONTAP and SMB support it and what the license requirements are.

ONTAP license requirements

No special license is required for IPv6 when SMB is licensed.

SMB protocol version requirements

- For SVMs, ONTAP supports IPv6 on all versions of the SMB protocol.

NetBIOS name service (NBNS) over IPv6 is not supported.

Support for IPv6 with SMB access and CIFS services

If you want to use IPv6 on your CIFS server, you need to be aware of how ONTAP supports IPv6 for SMB access and network communication for CIFS services.

Windows client and server support

ONTAP provides support for Windows servers and clients that support IPv6. The following describes Microsoft Windows client and server IPv6 support:

- Windows XP and Windows 2003 support IPv6 for SMB file sharing.

  These versions provide limited support for IPv6.

- Windows 7, Windows 8, Windows Server 2008, Windows Server 2012 and later support IPv6 for both SMB file sharing and Active Directory services, including DNS, LDAP, CLDAP, and Kerberos services.

  If IPv6 addresses are configured, Windows 7 and Windows Server 2008 and later releases use IPv6 by default for Active Directory services. Both NTLM and Kerberos authentication over IPv6 connections are supported.

  All Windows clients supported by ONTAP can connect to SMB shares by using IPv6 addresses.

For the latest information about which Windows clients ONTAP supports, see the Interoperability Matrix.

Interoperability Matrix

NT domains are not supported for IPv6.

Additional CIFS services support

In addition to IPv6 support for SMB file shares and Active Directory services, ONTAP provides IPv6 support for

the following:

- Client-side services, including offline folders, roaming profiles, folder redirection, and Previous Versions
- Server-side services, including Dynamic home directories (Home Directory feature), symlinks and Widelinks, BranchCache, ODX copy offload, automatic node referrals, and Previous Versions
- File access management services, including the use of Windows local users and groups for access control and rights management, setting file permissions and audit policies using the CLI, security tracing, file locks management, and monitoring SMB activity
- NAS multiprotocol auditing
- FPolicy
- Continuously available shares, Witness protocol, and Remote VSS (used with Hyper-V over SMB configurations)

Name service and authentication service support

Communication with the following name services are supported with IPv6:

- Domain controllers
- DNS servers
- LDAP servers
- KDC servers
- NIS servers

How CIFS servers use IPv6 to connect to external servers

To create a configuration that meets your requirements, you must be aware of how CIFS servers use IPv6 when making connections to external servers.

- Source address selection

  If an attempt is made to connect to an external server, the source address selected must be of the same type as the destination address. For example, if connecting to an IPv6 address, the storage virtual machine (SVM) hosting the CIFS server must have a data LIF or management LIF that has an IPv6 address to use as the source address. Similarly, if connecting to an IPv4 address, the SVM must have a data LIF or management LIF that has an IPv4 address to use as the source address.

- For servers dynamically discovered using DNS, server discovery is performed as follows:
  - If IPv6 is disabled on the cluster, only IPv4 servers addresses are discovered.
  - If IPv6 is enabled on the cluster, both IPv4 and IPv6 server addresses are discovered. Either type might be used depending upon the suitability of the server to which the address belongs and the availability of IPv6 or IPv4 data or management LIFs. Dynamic server discovery is used for discovering Domain Controllers and their associated services, such as LSA, NETLOGON, Kerberos, and LDAP.
- DNS server connectivity

  Whether the SVM uses IPv6 when connecting to a DNS server depends on the DNS name services configuration. If DNS services are configured to use IPv6 addresses, connections are made by using IPv6. If desired, the DNS name services configuration can use IPv4 addresses so that connections to DNS servers continue to use IPv4 addresses. Combinations of IPv4 and IPv6 addresses can be specified when

configuring DNS name services.

- LDAP server connectivity

  Whether the SVM uses IPv6 when connecting to an LDAP server depends on the LDAP client configuration. If the LDAP client is configured to use IPv6 addresses, connections are made by using IPv6. If desired, the LDAP client configuration can use IPv4 addresses so that connections to LDAP servers continue to use IPv4 addresses. Combinations of IPv4 and IPv6 addresses can be specified when configuring the LDAP client configuration.

  > The LDAP client configuration is used when configuring LDAP for UNIX user, group, and netgroup name services.

- NIS server connectivity

  Whether the SVM uses IPv6 when connecting to a NIS server depends on the NIS name services configuration. If NIS services are configured to use IPv6 addresses, connections are made by using IPv6. If desired, the NIS name services configuration can use IPv4 addresses so that connections to NIS servers continue to use IPv4 addresses. Combinations of IPv4 and IPv6 addresses can be specified when configuring NIS name services.

  > NIS name services are used for storing and managing UNIX user, group, netgroup, and host name objects.

Related information

Enabling IPv6 for SMB (cluster administrators only)

Monitoring and displaying information about IPv6 SMB sessions

Enable IPv6 for SMB (cluster administrators only)

IPv6 networks are not enabled during cluster setup. A cluster administrator must enable IPv6 after cluster setup is complete to use IPv6 for SMB. When the cluster administrator enables IPv6, it is enabled for the entire cluster.

Step

1. Enable IPv6: `network options ipv6 modify -enabled true`

   For more information about enabling IPv6 on the cluster and configuring IPv6 LIFs, see the *Network Management Guide*.

   IPv6 is enabled. IPv6 data LIFs for SMB access can be configured.

Related information

Monitoring and displaying information about IPv6 SMB sessions

Network management

Disable IPv6 for SMB

Even though IPv6 is enabled on the cluster using a network option, you cannot disable IPv6 for SMB by using the same command. Instead, ONTAP disables IPv6 when the cluster administrator disables the last IPv6-enabled interface on the cluster. You should communicate with the cluster administrator about management of your IPv6 enabled interfaces.

For more information about disabling IPv6 on the cluster, see the *Network Management Guide*.

Related information

Network management

Monitor and display information about IPv6 SMB sessions

You can monitor and display information about SMB sessions that are connected using IPv6 networks. This information is useful in determining which clients are connecting using IPv6 as well as other useful information about IPv6 SMB sessions.

Step

1. Perform the desired action:

If you want to determine whether…	Enter the command…
SMB sessions to a storage virtual machine (SVM) are connected using IPv6	`vserver cifs session show -vserver vserver_name -instance`
IPv6 is used for SMB sessions through a specified LIF address	`vserver cifs session show -vserver vserver_name -lif-address LIF_IP_address -instance` *LIF_IP_address* is the data LIF's IPv6 address.

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