RADIUS Authentication and Authorization

Technical Note

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Copyright Notices

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1 Introduction

The Remote Access Dial In User Service (RADIUS) server can be used to authenticate users who log in to the Kemp LoadMaster. The LoadMaster passes the user's details to the RADIUS server and the RADIUS server informs the LoadMaster whether the user is authenticated or not.

RADIUS in Windows Server 2008 R2 is done with network policy and access services.

> The steps in this document have been tested and validated on Windows Server 2008 R2.

1.1 Document Purpose

The purpose of this document is to provide further information and steps on configuring RADIUS authentication and authorization.

1.2 Intended Audience

This document is intended to be used by anyone who is interested in learning more about using RADIUS authentication and authorization in the LoadMaster.

1.3 Related Firmware Version

Published with LMOS version 7.2.48.4 LTS. This document has not required substantial changes since 7.2.48.4 LTS. However, the content is in sync with the latest LoadMaster LTS firmware.

2 Prerequisites for Authentication and Authorization

Before performing these steps, ensure there is an Active Directory group to add to the network policy. This needs to be done on the domain controller.

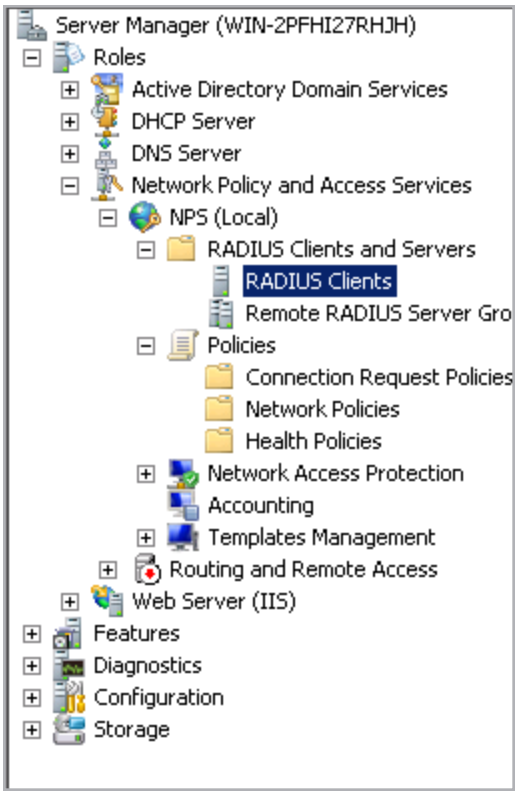
The steps in this document outline how to give the users/groups certain permissions to the Kemp LoadMaster.

> It is not possible to use RADIUS authentication and authorization if you are using a FIPS LoadMaster.

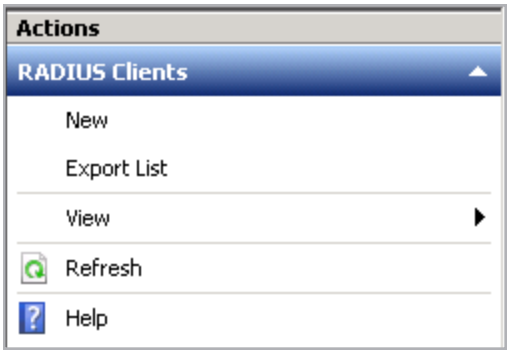
2.1 Add a RADIUS Client

A RADIUS client needs to be created so that the LoadMaster can authenticate. Create a RADIUS client by following the steps below:

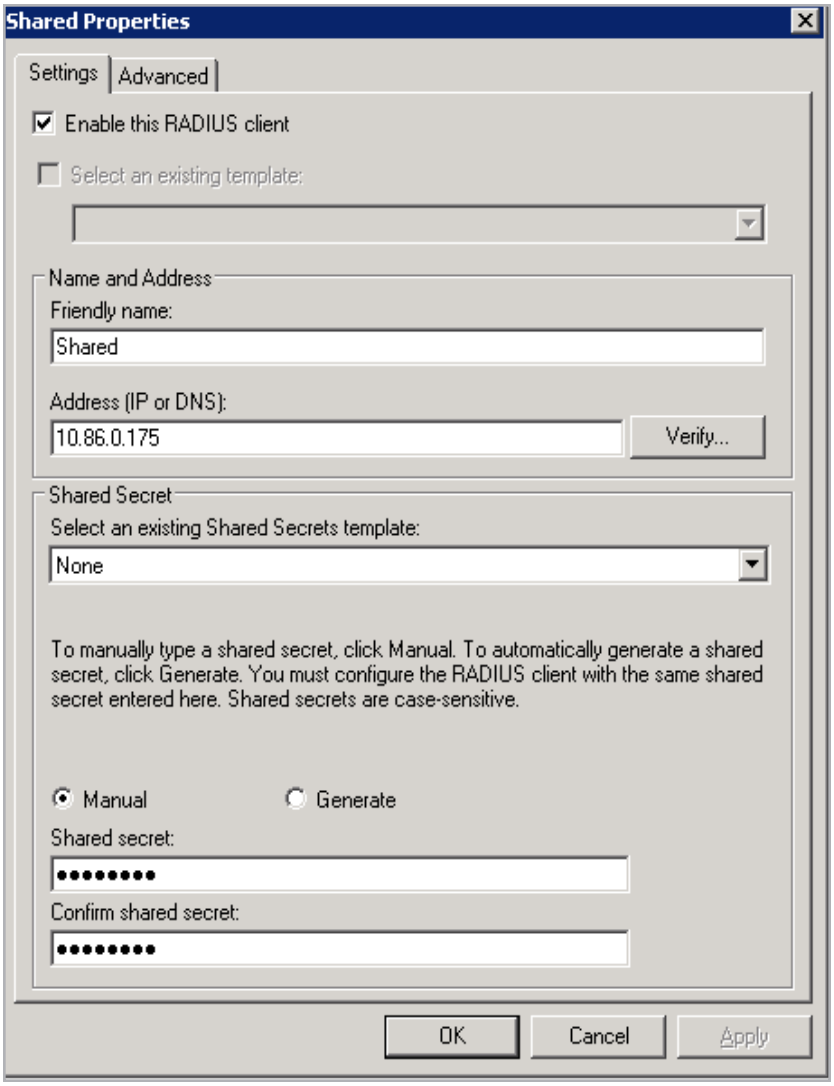
1. Open the **Server Manager** application.



2. Navigate to the following option: **Roles > Network Policy and Access Services > NPS (Local) > RADIUS Clients and Servers > RADIUS Clients**.



3. Click **New** in the panel on the right.



4. Enter a **Friendly name**.
5. Enter the IP **Address** of the LoadMaster.

   If using a High Availability (HA) pair, add all three IP addresses (unit 1, unit 2 and the shared IP address).

6. Enter a **Shared secret**.

   The **Shared secret** has a 48-character limit.

7. Enter the same shared secret in the **Confirm shared secret** text box and click **OK**.

8. When the LoadMaster contacts the RADIUS server, it uses the active physical interface. Therefore, two RADIUS clients must also be configured in addition to the shared address. Follow the steps above (using a different IP address) to create the additional RADIUS clients.

3 Configure Authentication and Authorization

LoadMaster allows the users to be authorized by either RADIUS or Local User authorization. The user's authorization decides what level of permissions the user has and what functions on the LoadMaster they are allowed to perform.

When both authorization methods are selected, the LoadMaster initially attempts to authorize the user using RADIUS. If this authorization method is not available, the LoadMaster attempts to authorize the user using the Local User authorization.

In addition to configuring RADIUS authentication in the Server Manager, the LoadMaster also needs to be configured to use it. Configuration of RADIUS authentication in the LoadMaster varies depending on what method you want to use:

- **Local Authentication and Authorization** means that the LoadMaster contacts the RADIUS server for authentication and will use local authorization.
- **RADIUS Authentication and Authorization** means that the LoadMaster contacts the RADIUS server for authentication and will use reply messages sent back from the RADIUS server to authorize.

> The maximum character length for RADIUS authentication passwords that are used to log in to the Edge Security Pack (ESP) form is 128 alphanumeric characters. If non-alphanumeric or other characters are used that require multi-byte encoding, the maximum number of characters that can be used reduces.

Follow the steps in the relevant section below, depending on the chosen method.

For further details on what each of the LoadMaster fields mean, refer to the **Web User Interface, Configuration Guide** .

3.1 Local Authentication and Authorization

Follow the steps below to configure the local authentication and authorization settings in the LoadMaster.

> Session Management must be disabled in order to use this method. If Session Management is enabled, the RADIUS server options mentioned in this section will not be available.

3.1.1 Specify the RADIUS Server Details

To enter the details of the RADIUS server, follow the steps below:

1. In the main menu of the LoadMaster Web User Interface (WUI), navigate to **Certificates & Security > Remote Access**.
2. Enter the IP address of the **Radius Server** and click the **Radius Server** button.

> If you do not see this option, ensure to disable **Session Management** in **Certificates & Security > Admin WUI Access**.

3. Enter the **Shared Secret** and click the **Set Secret** button.

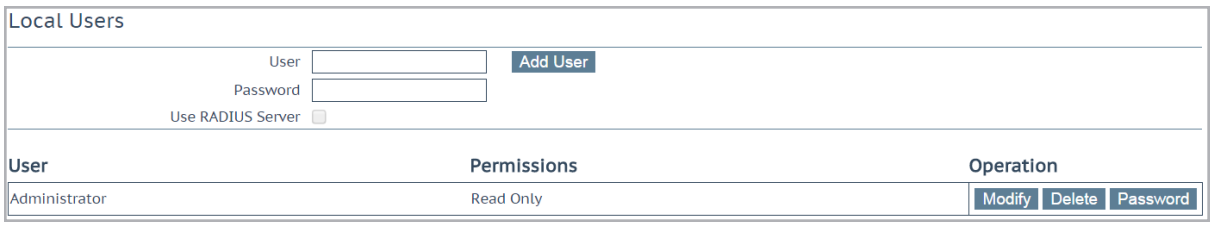
> The **Shared Secret** should be the same as the one entered in the **Add a RADIUS Client** section.

4. Enter the Revalidation Interval and click Set Interval.

3.1.2 Specifying RADIUS Authentication for an Individual User

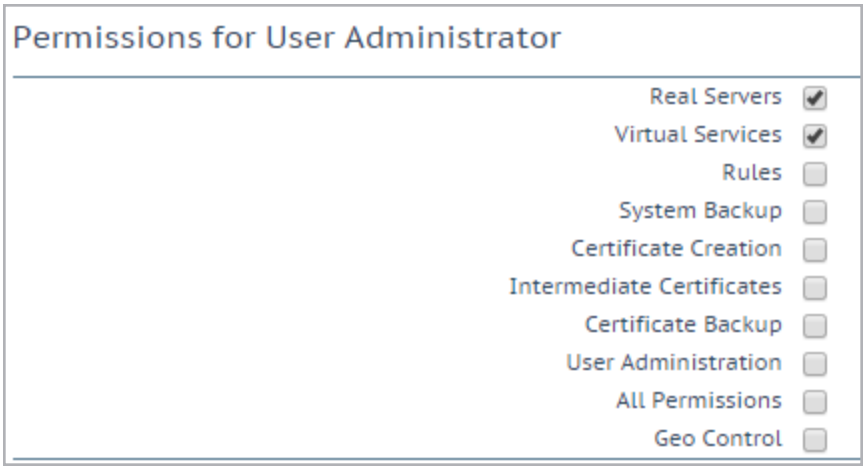
When adding a new user in the **System Configuration** > **System Administration** > **User Management** screen, the **Use RADIUS Server** check box can be selected.

Selecting this check box will mean that RADIUS authentication is used when that user logs in to the LoadMaster. The RADIUS server details must be set up before this option can be used.



3.1.3 Specifying Local Authorization for an Individual User

After a user has been added, you can specify what permissions they have by clicking the **Modify** button in the **Action** column.



The level of user permissions can be set in this screen. This determines what configuration changes the user is allowed to perform. The primary user, bal, always has full permissions. Secondary users may be restricted to certain functions.

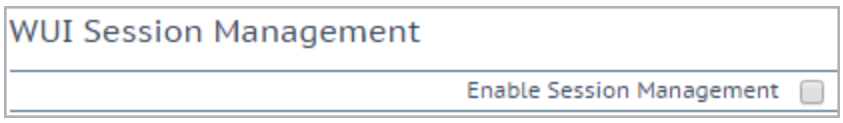
3.2 RADIUS Authentication and Authorization

This is an alternative option to using local authentication and authorization. In order to use this method, session management must be enabled. Session management settings are configurable in **Certificates & Security > Admin WUI Access**. If session management is disabled, the RADIUS options mentioned in this section will not be available.

3.2.1 Specify the RADIUS Server Details

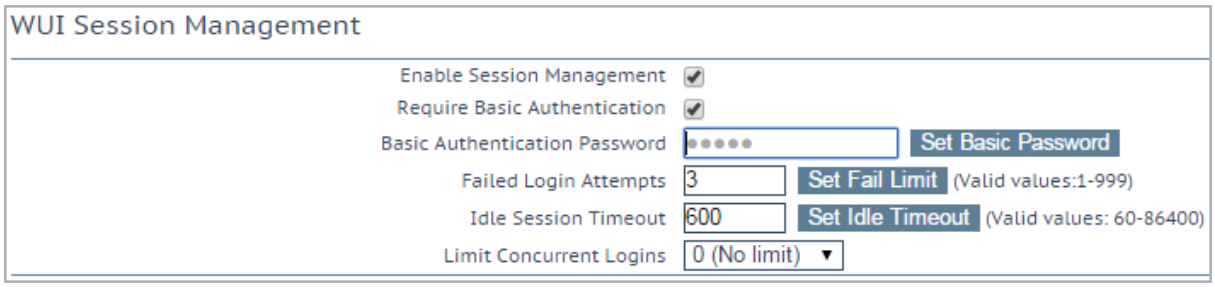
To use the RADIUS Authentication and Authorization method, **Session Management** must be enabled. To enable **Session Management**, follow the steps below:

1. In the main menu of the LoadMaster WUI, select **Certificates & Security**.



2. Select the **Enable Session Management** check box.

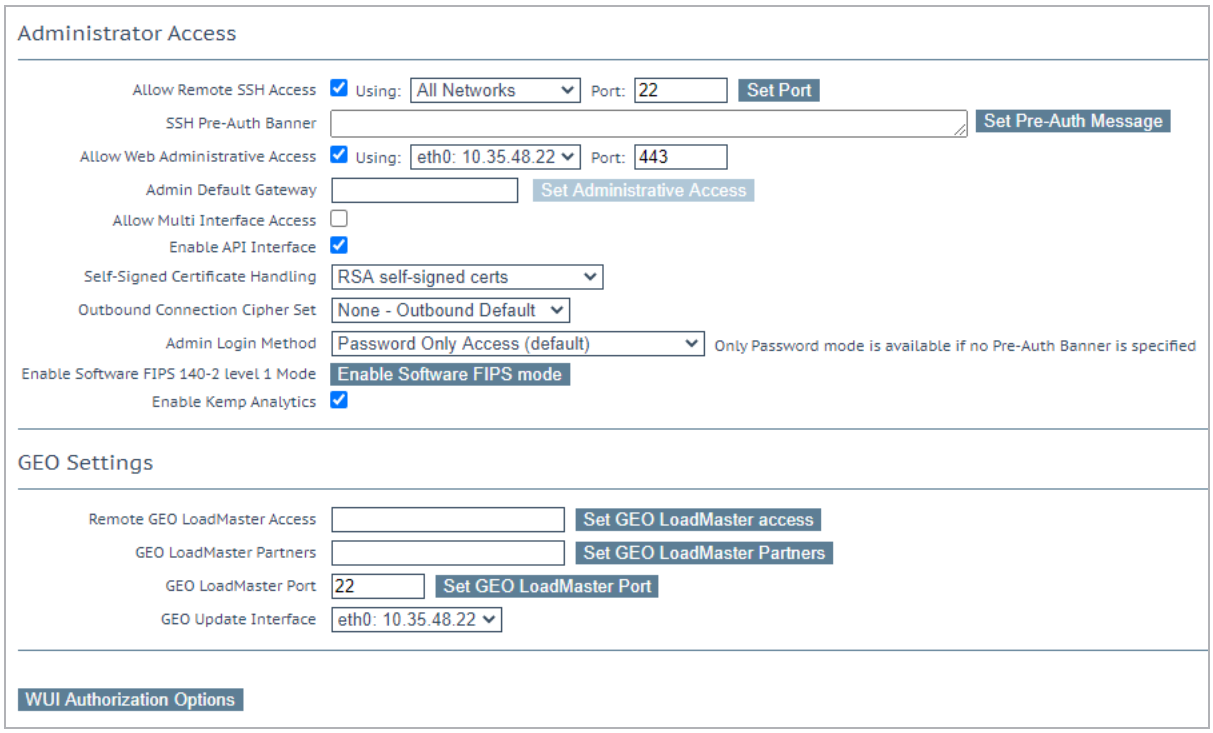
3. Enter **User** and **Password** details and click the **Login** button.



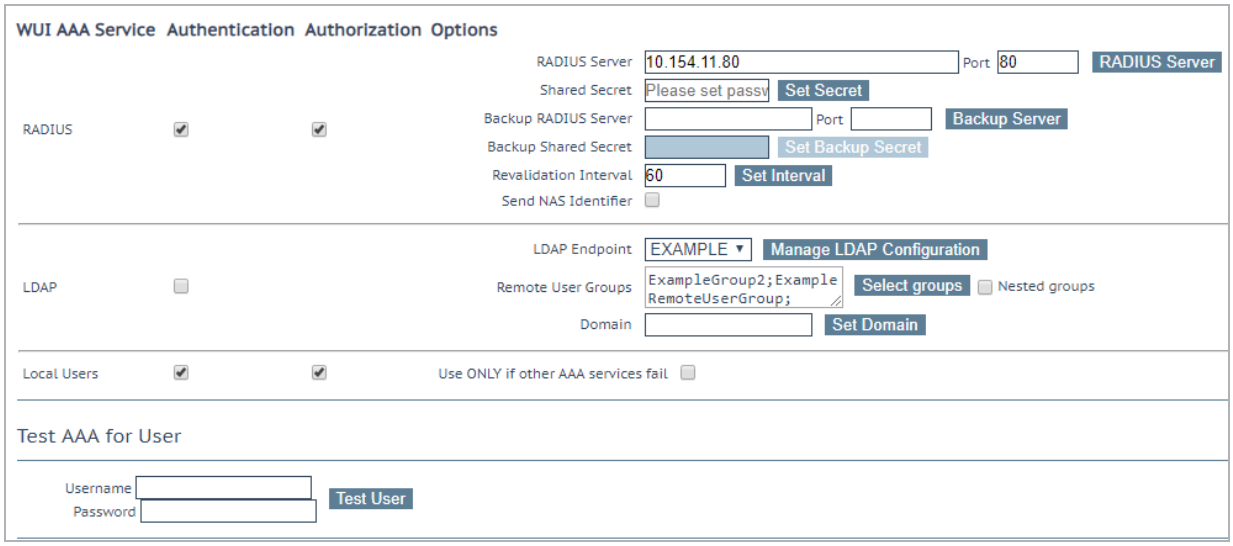
4. In the main menu of the LoadMaster WUI, select **Certificates & Security > Admin WUI Access**.

When **Session Management** is enabled on the LoadMaster, follow the steps below to configure RADIUS authentication:

5. In the main menu of the LoadMaster WUI, navigate to **Certificates & Security > Remote Access**.



6. Click **WUI Authorization Options**.



7. Enter the **Radius Server** IP address and **Port**.

IPv6 is not supported for RADIUS authentication.

8. Select the **Radius Authentication** check box.

9. Select the **Radius Authorization** check box.
10. Click **Radius Server**.
11. Enter the **Shared Secret**.

> The **Shared Secret** should be the same as the one entered during the **Add a RADIUS Client** section.

12. Click **Set Secret**.
13. If necessary, fill out details for a **Backup Radius Server**.
14. Enter the **Revalidation Interval**.
15. Click the **Set Interval** button.

> The RADIUS authorization method can only be used if the RADIUS authentication method is selected.

> There is a **Test AAA for User** section at the bottom of this screen. When session management is enabled, you can enter a valid **Username** and **Password** to test.

16. Decide whether or not to enable the **Send NAS Identifier** check box.

> If this check box is disabled (default), a NAS identifier is not sent to the RADIUS server. If it is enabled, a Network Access Server (NAS) identifier string is sent to the RADIUS server. By default, this is the hostname. Alternatively, if a value is specified in the **RADIUS NAS Identifier** text box, this value is used as the NAS identifier. If the NAS identifier cannot be added, the RADIUS access request is still processed.

17. If you enabled the **Send NAS Identifier** check box, decide whether or not to specify the **RADIUS NAS Identifier**.

> If the **Send NAS Identifier** check box is selected, the **RADIUS NAS Identifier** field is shown. When specified, this value is used as the NAS identifier. Otherwise, the hostname is used as the

NAS identifier. If the NAS identifier cannot be added, the RADIUS access request is still processed.

In LoadMaster firmware version 7.2.51 and above, there is an option to include the Kemp vendor specific attribute in the RADIUS request sent to the server doing the authentication against the user trying to log in to the LoadMaster WUI. For further details, refer to the following article: Send Kemp Vendor Specific Attribute In RADIUS Requests.

3.2.2 Specifying RADIUS permissions for Groups and All Users

Permissions can be set up to apply to all users, or to groups:

- **Connection request policies:** Sets of conditions and settings that allow network administrators to designate which RADIUS servers perform the authentication and authorization of connection request that the Network Policy Server (NPS) receives from RADIUS clients. Connection request policies can be configured to designate which RADIUS servers are used for RADIUS accounting.
- **Network policies:** Sets of conditions, constraints and settings that allow you to designate who is authorized to connect to the network and the circumstances under which they can or cannot connect. When you deploy Network Access Protection (NAP), health policy is added to the network policy configuration so that NPS performs client health checks during the authorization process.

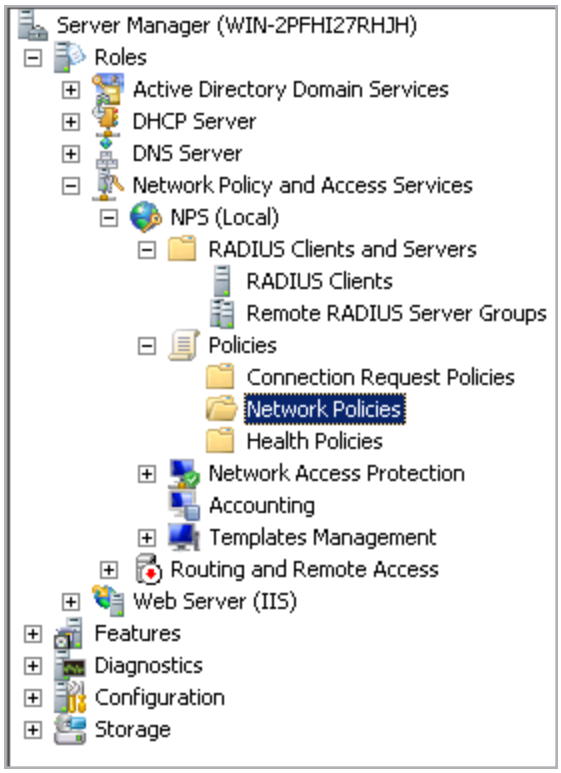
Connection request policies apply to all users. Network policies apply to groups.

Refer to the relevant section below depending on what level of permissions are needed.

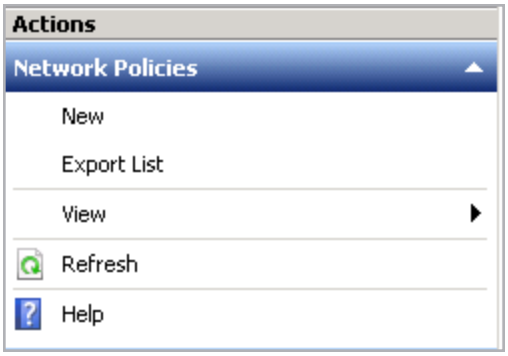
3.2.2.1 Specifying RADIUS Authentication and Authorization for a Group (Network Request Policy)

3.2.2.1.1 Specifying RADIUS Authentication for a Group

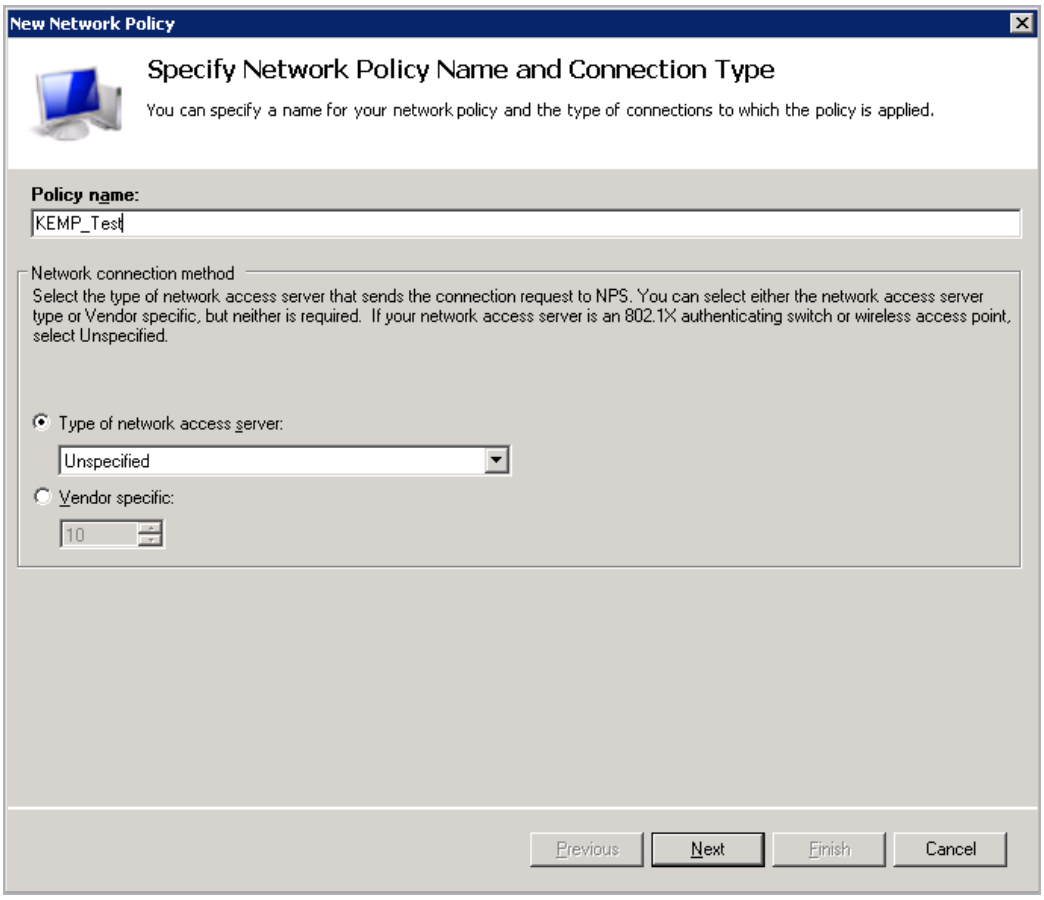
To set up a network policy, follow the steps below in the **Server Manager**.



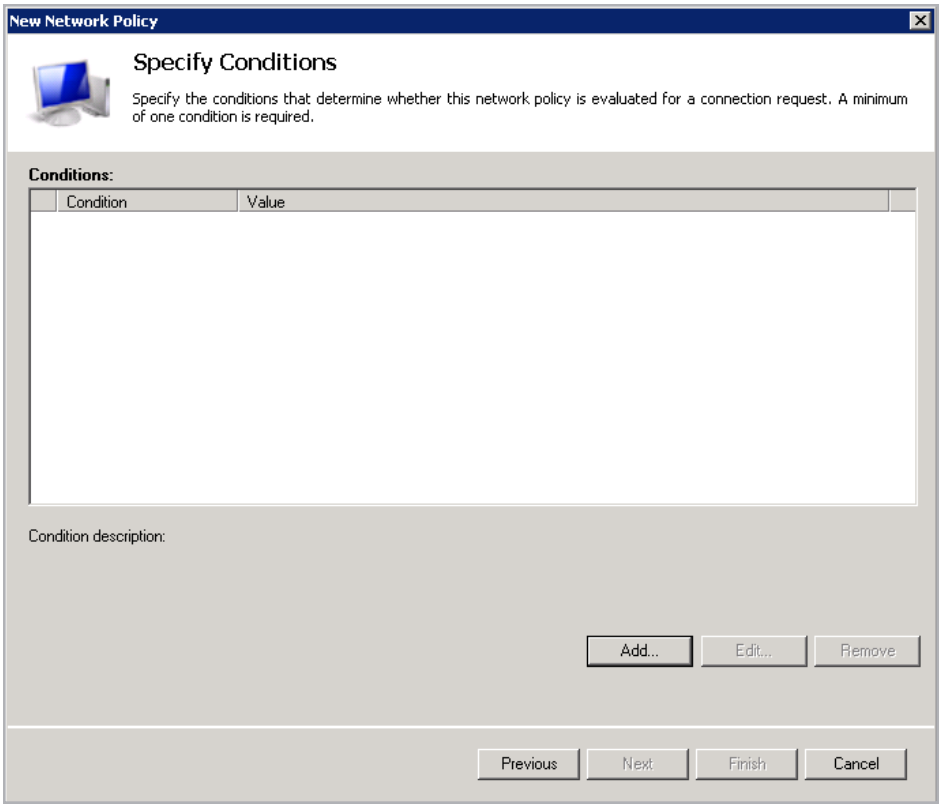
1. In the panel on the left, go to **Policies > Network Policies**.



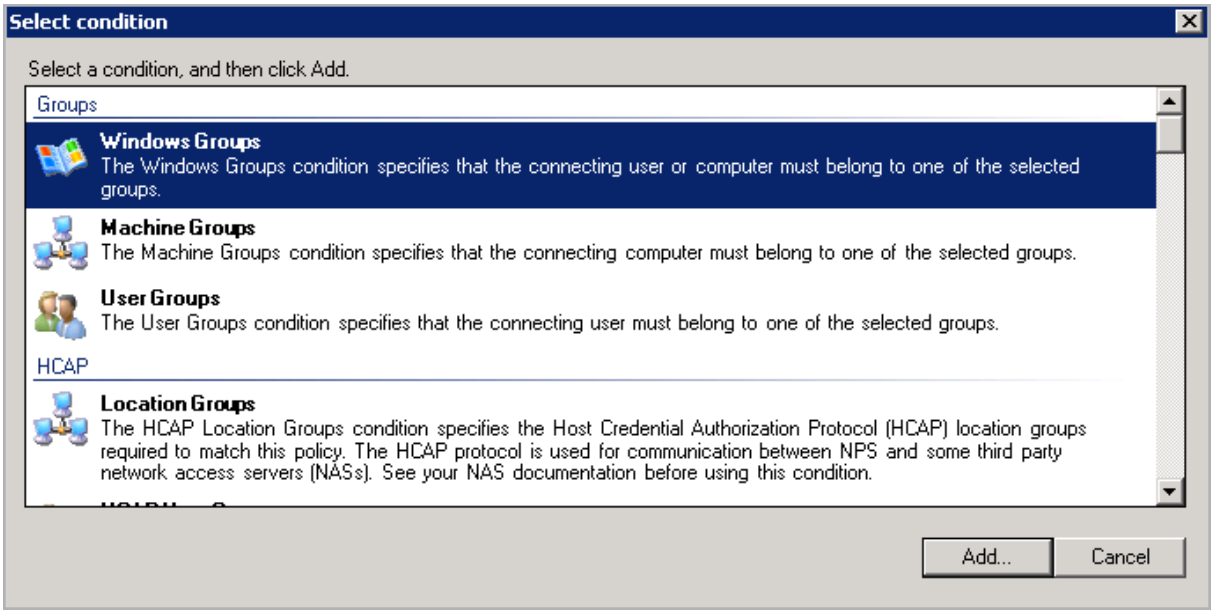
2. Click **New** in the panel on the right.



3. Enter a **Policy name**.
4. Click **Next**.

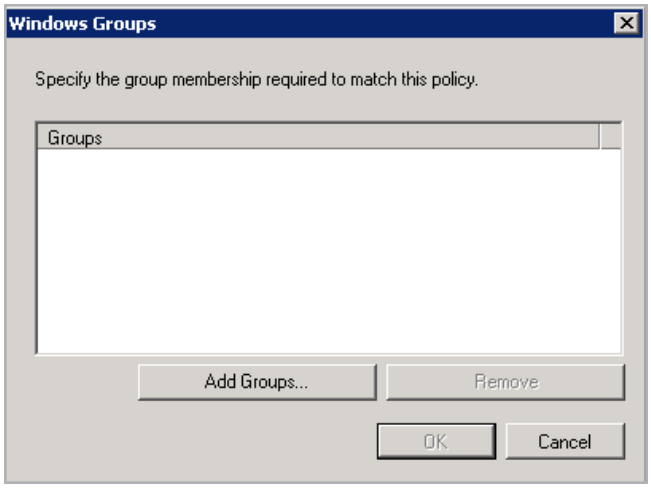


5. Click the **Add...** button.

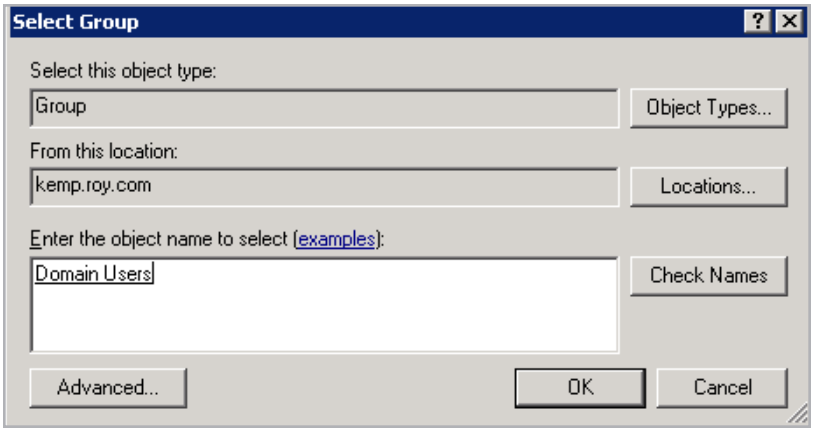


6. Select the relevant group type.

7. Click the **Add...** button.



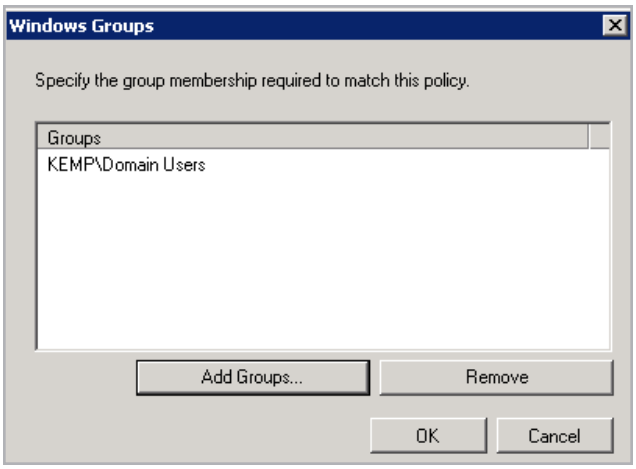
8. Click the **Add Groups...** button.



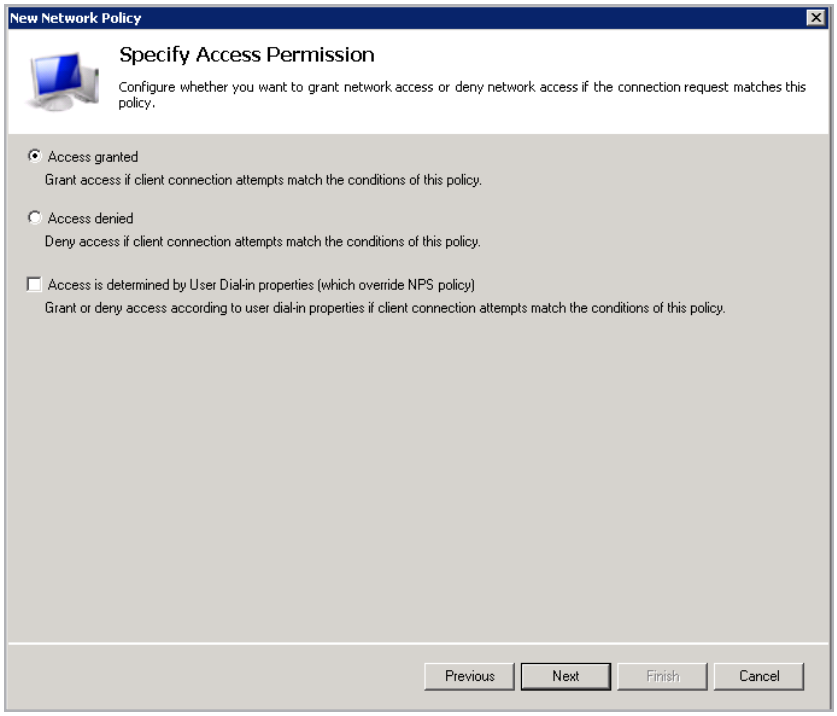
9. Enter the group name in the text area provided.

10. Click **Check Names**.

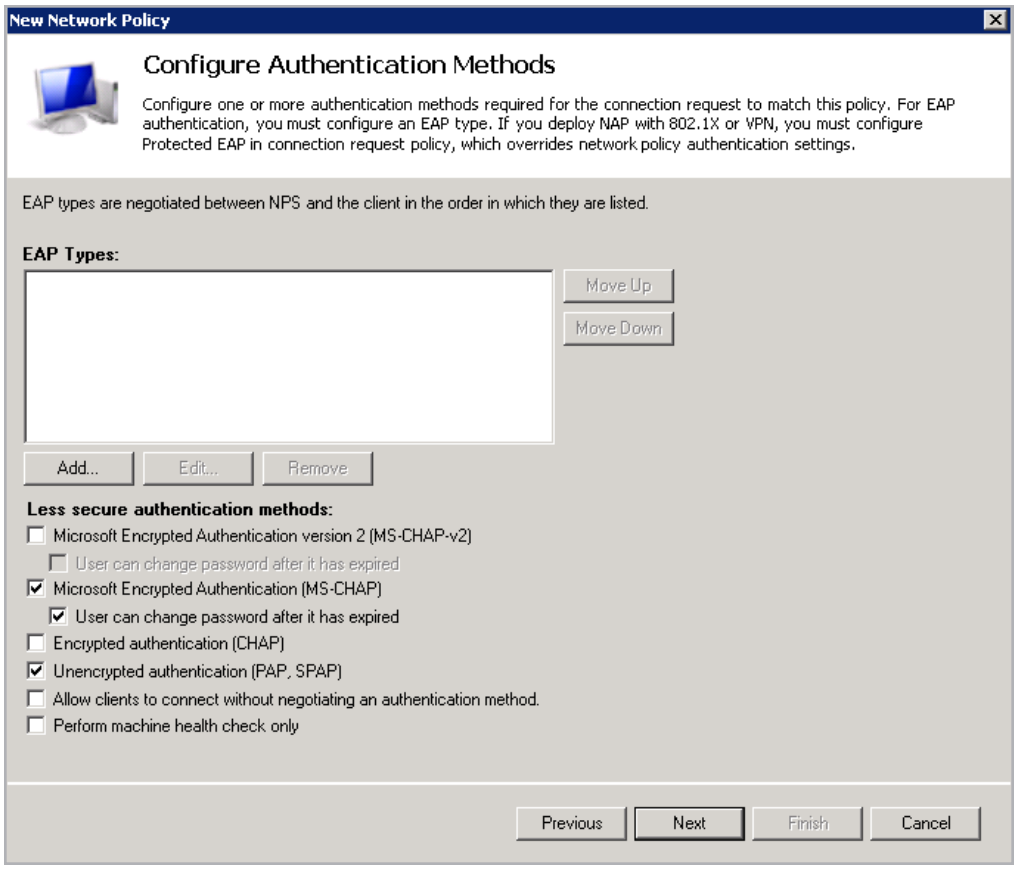
11. If the name is alright, click **OK**.



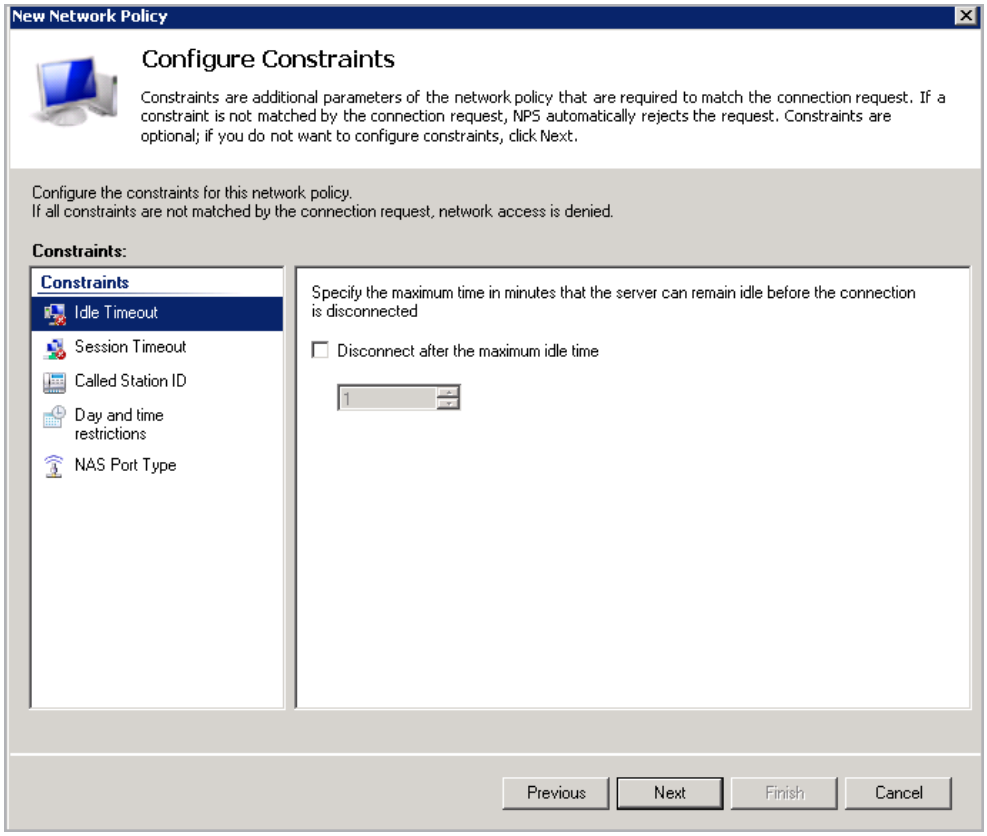
12. Click **OK**.
13. Click **Next**.



14. Select the relevant Access Permission option.
15. Click **Next**.



16. Remove the tick from the **Microsoft Encrypted Authentication version 2 (MS-CHAP-v2)** check box.
17. Ensure that **Microsoft Encrypted Authentication (MS-CHAP)** is selected.
18. Ensure that **User can change password after it has expired** is selected.
19. Select the **Unencrypted authentication (PAP, SPAP)** check box.
20. Click **Next**.

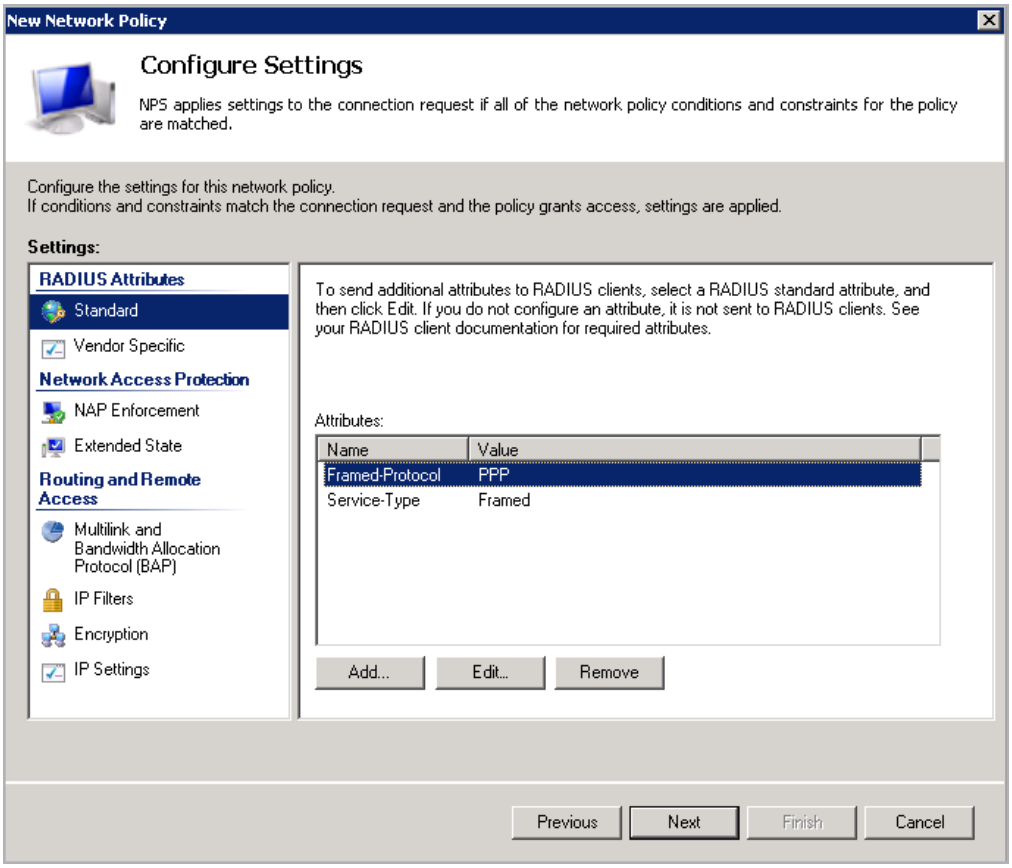


If idle timeout is used on the server it should match the idle timeout settings in the LoadMaster. Generally, Kemp recommends not setting this on the server.

21. Click **Next**.

The Kemp RADIUS policies should be moved to the top of the policy list on the Windows RADIUS server. The policies are executed in the order they are displayed.

3.2.2.1.2 Specify RADIUS Authorization for a Group

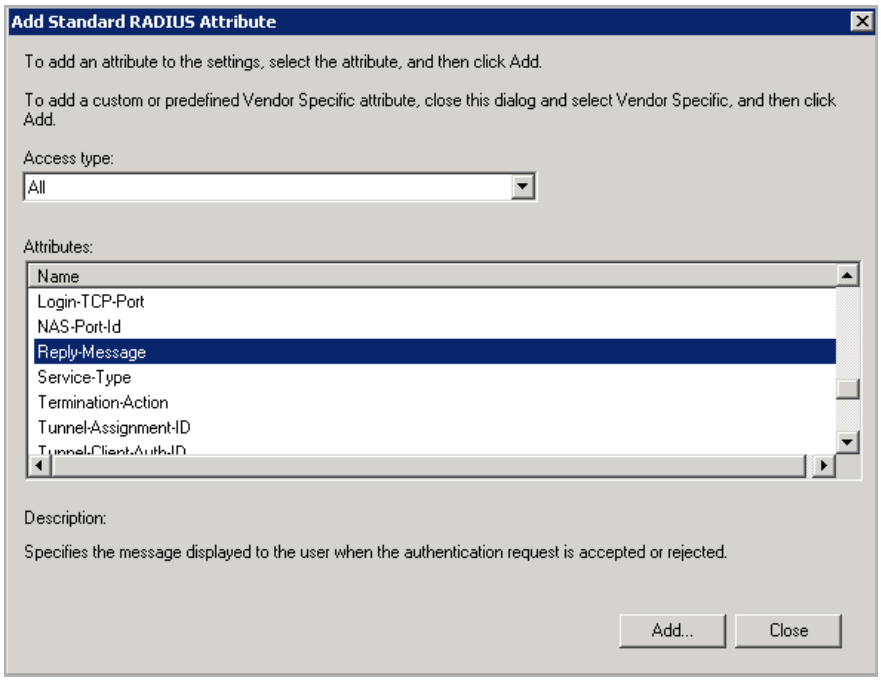


The **Attributes** on this screen need to be in a certain order for the settings to work correctly. The order is as follows:

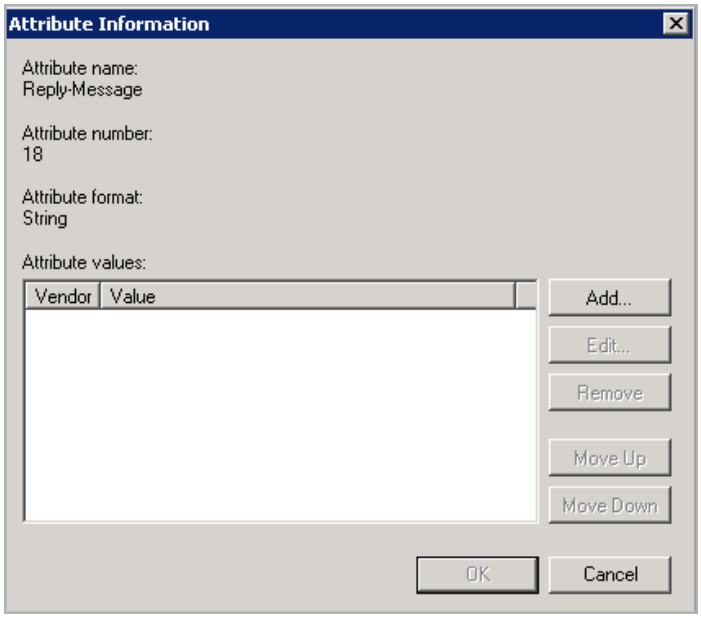
1. **Reply-Message**
2. **Framed-Protocol**
3. **Service-Type**

Unfortunately, these attributes are not movable. So, to order these attributes correctly, you need to **Remove** and then **Add** them.

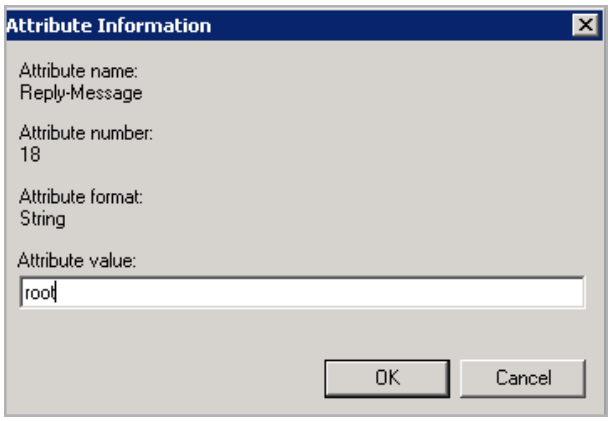
1. Select **Framed-Protocol** and click **Remove**.
2. Select **Service-Type** and click **Remove**.
3. Click the **Add...** button.



4. Select **Reply-Message**.
5. Click the **Add...** button.



6. Click the **Add...** button.



7. Enter the relevant permission option(s) and click **OK**.

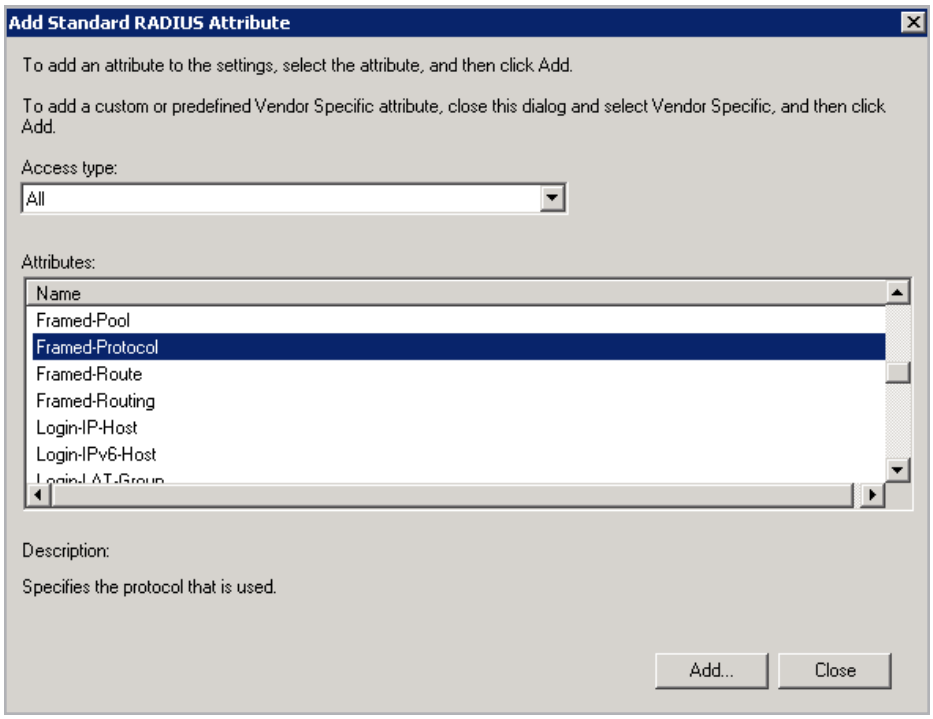
   The available permission options are as follows:
   real,vs,rules,backup,certs,cert3,certbackup,users,root,addvs
   These correspond to the permission options in the LoadMaster Web User Interface (WUI).

   The **root** permission grants all permissions.

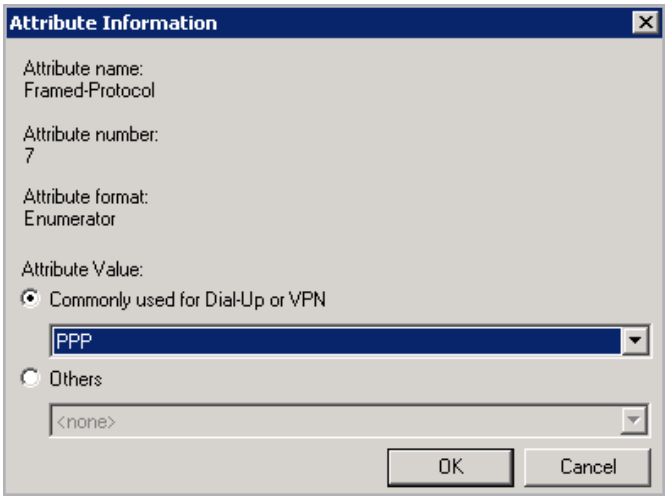
   Multiple attributes can be specified here, but they must be separated by a comma (with no space).

8. Click **OK** again.

9. Select **Framed-Protocol**.

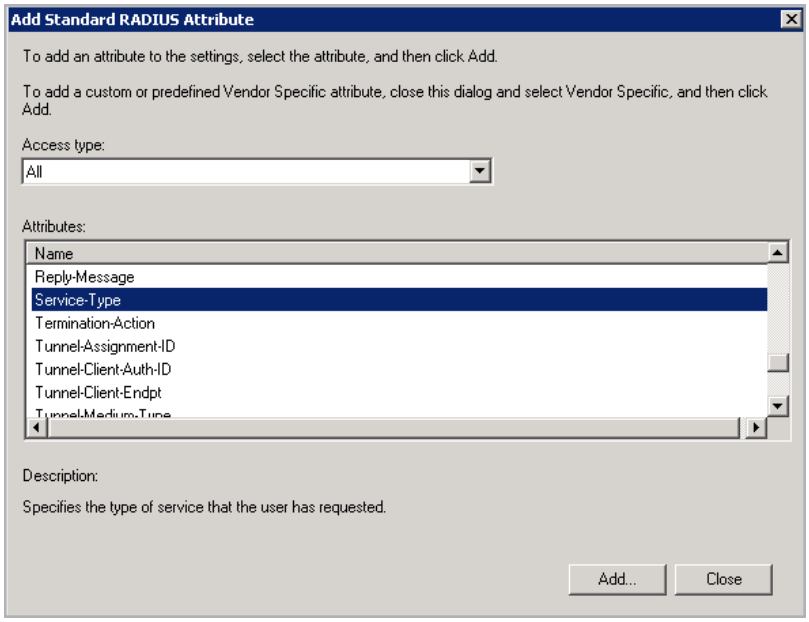


10. Click the **Add...** button.

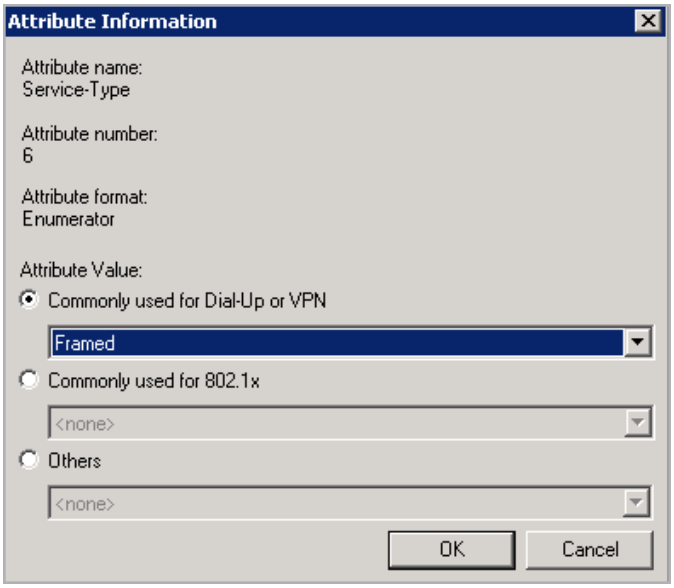


11. Select **PPP** from the **Commonly used for Dial-Up or VPN drop-down** list.

12. Click **OK**.

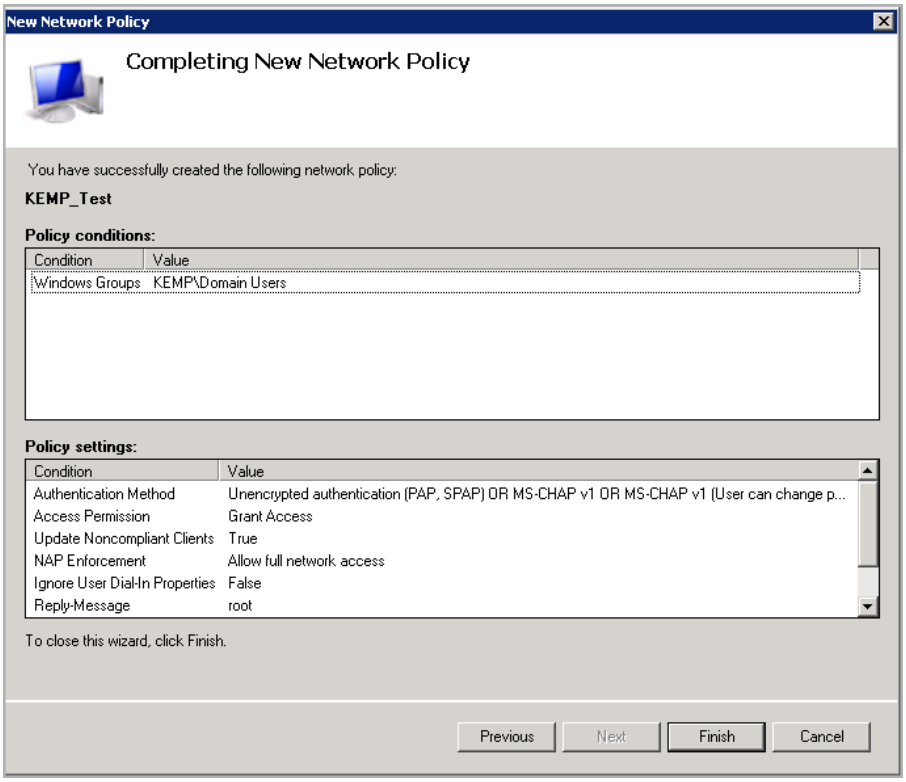


13. Select **Service-Type**.
14. Click the **Add...** button.



15. Select **Framed** from the **Commonly used for Dial-Up or VPN** drop-down list.
16. Click **OK**.
17. Click **Close**.

18. Click **Next**.



19. Click **Finish**.

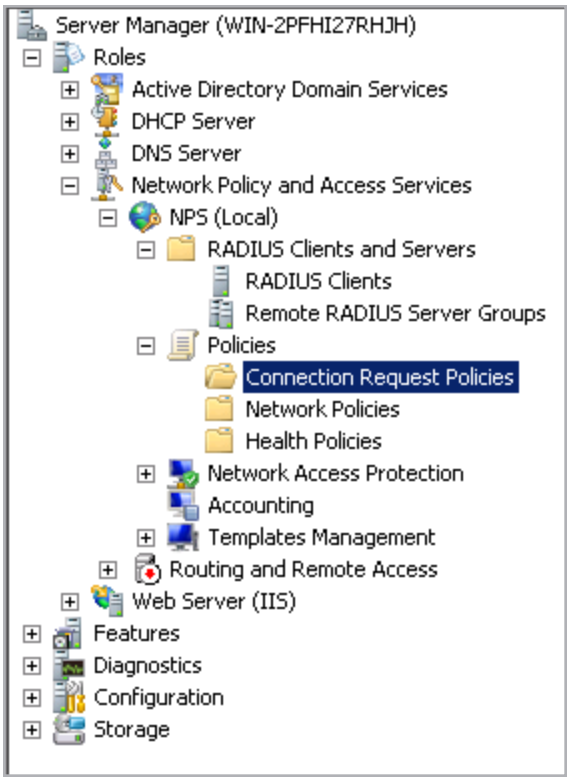
20. Repeat this process as needed to set permissions for other groups.

3.2.2.2 Specify RADIUS Authentication and Authorization for All Users

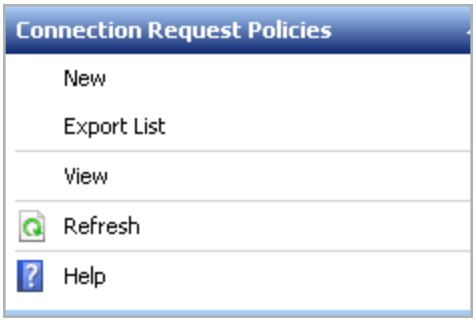
3.2.2.2.1 Specify RADIUS Authentication for All Users (Connection Request Policy)

> Permissions set in the connection request policy apply to all users.

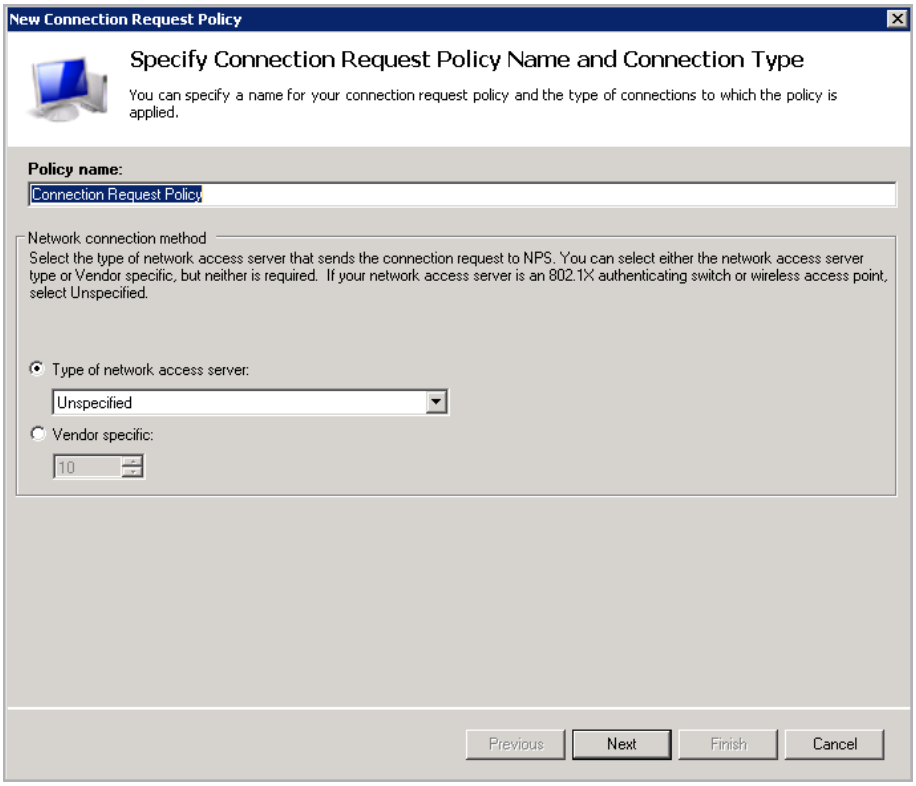
To set up a connection request policy, follow the steps below.



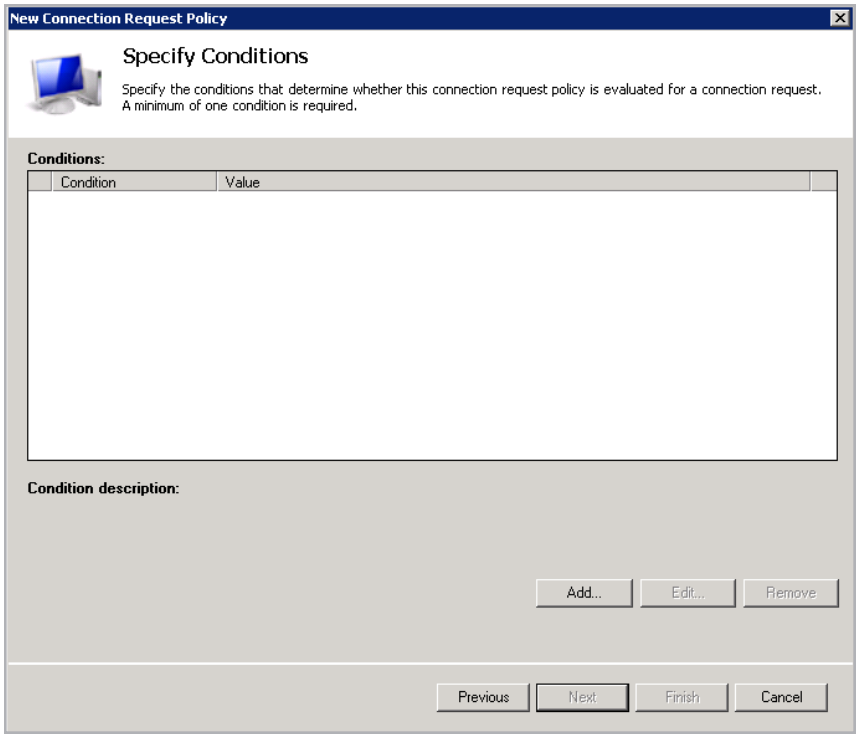
1. Navigate to **Roles > Network Policy and Access Services > Policies > Connection Request Policies**.



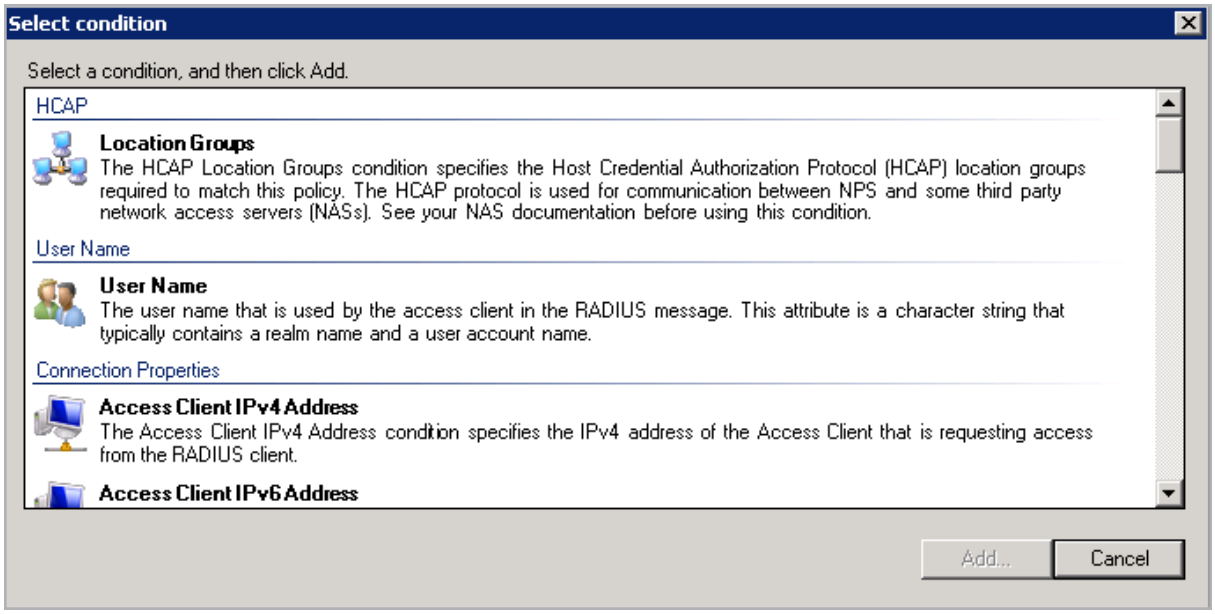
2. Click **New** in the panel on the right.



3. Enter a **Policy name.**
4. Click **Next**.

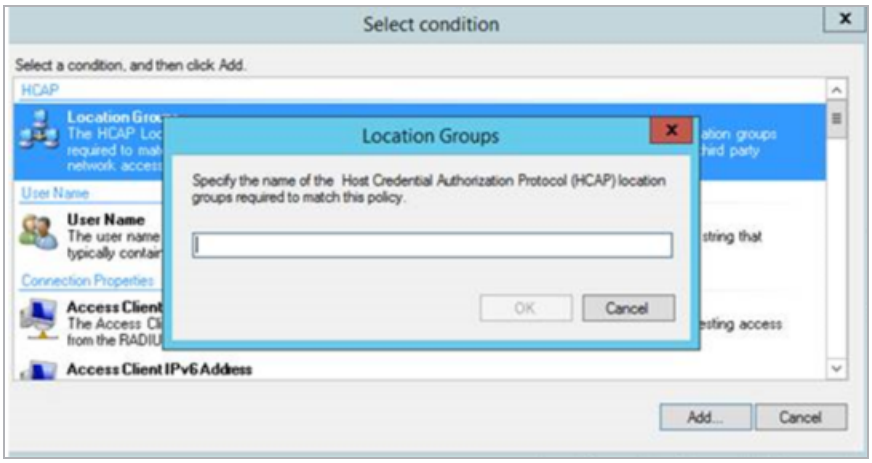


5. Click the **Add...** button.



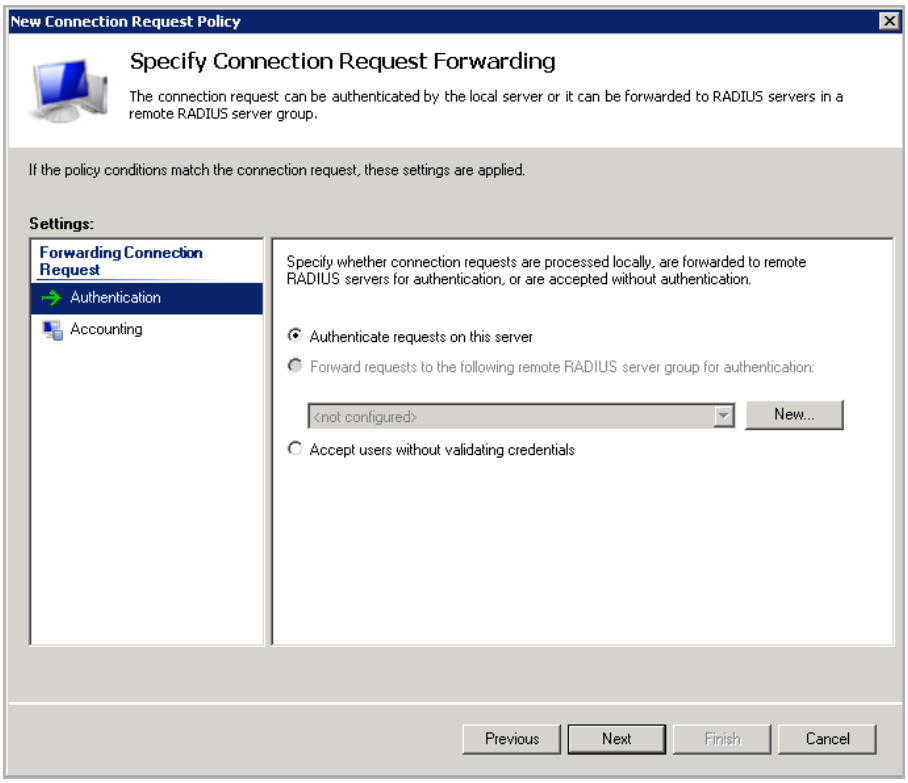
6. Select the **Location Groups** option.

7. Click the **Add...** button.

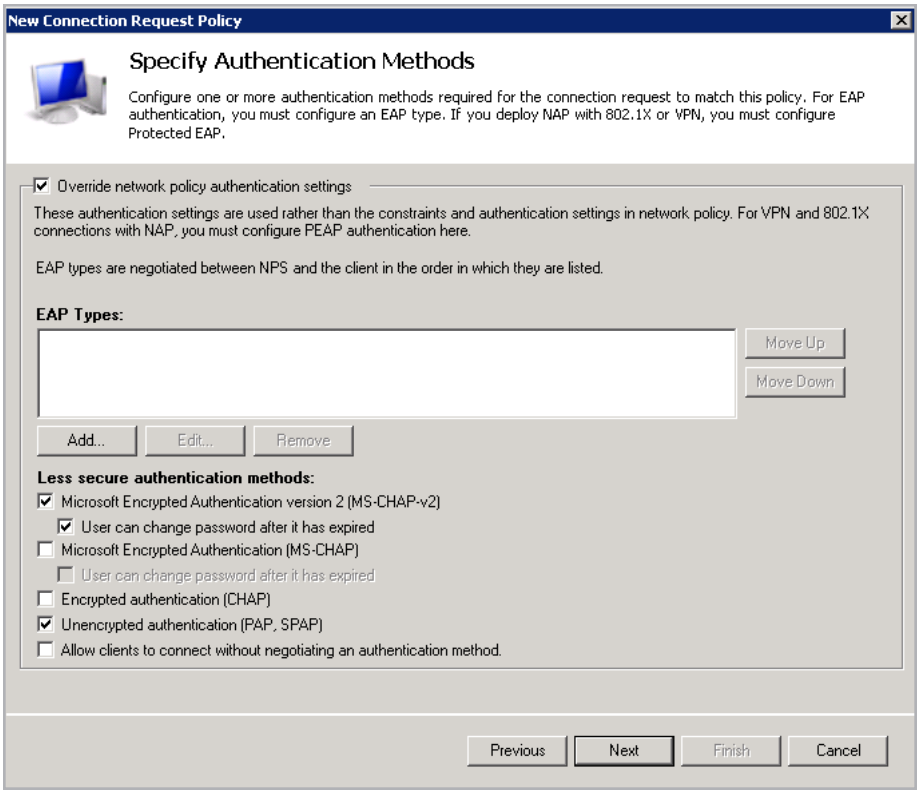


8. Type **Domain users** and click **OK**.

9. Click **Next**.

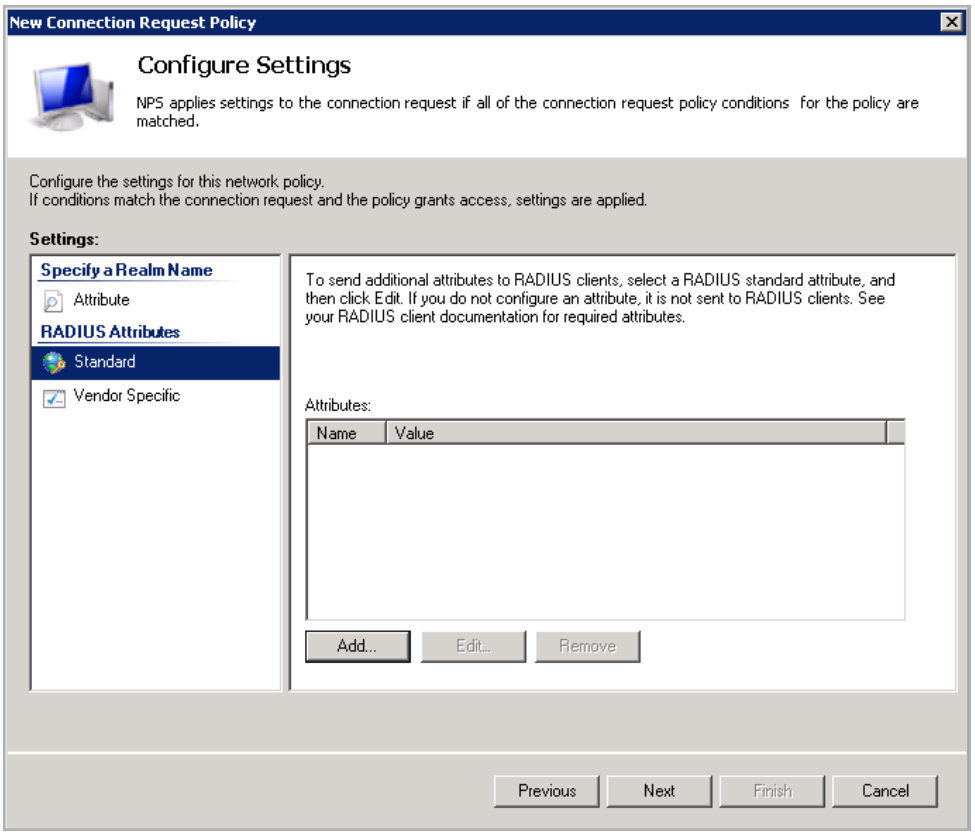


10. Click **Next**.

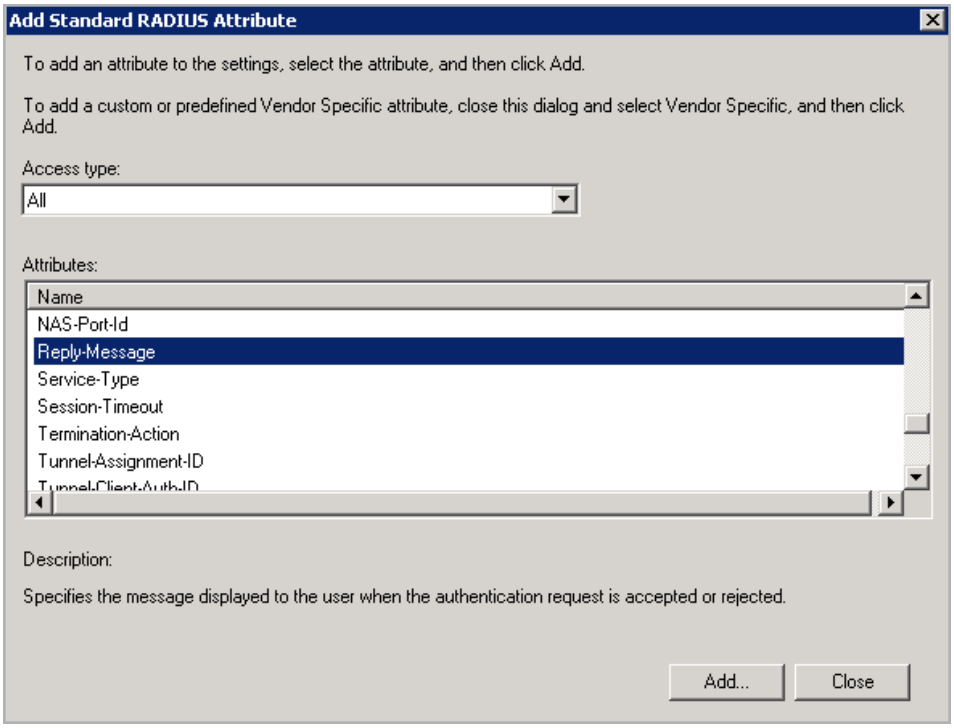


11. Select the **Override network policy authentication settings** check box.
12. Select the **Microsoft Encrypted Authentication version 2 (MS-CHAP-v2)** check box.
13. Select the **User can change password after it has expired** check box.
14. Select the **Unencrypted authentication (PAP, SPAP) check** box.

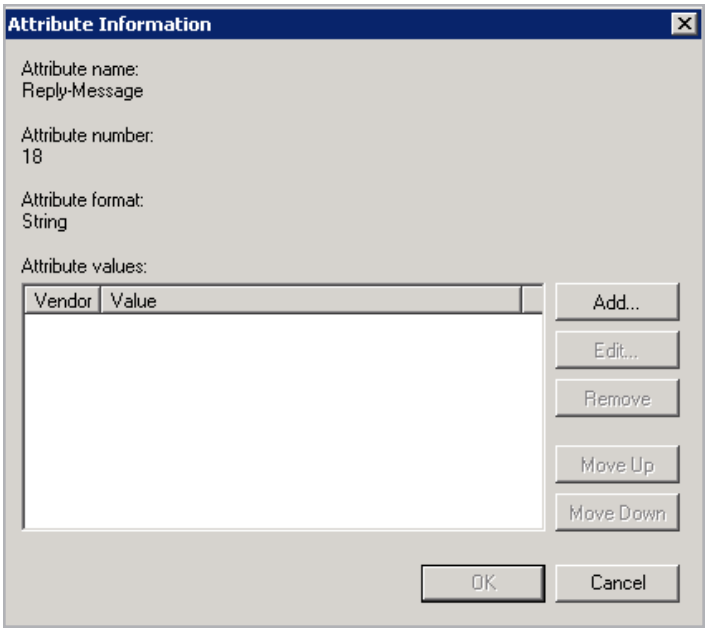
3.2.2.2.2 Specifying RADIUS Authorization for All Users



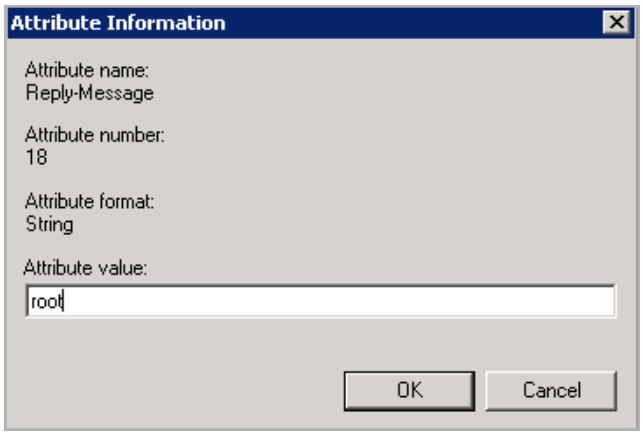
1. Select **Standard** in the panel on the left.
2. Click the **Add...** button.



3. Select **Reply-Message**.
4. Click the **Add...** button.



5. Click the **Add...** button.



6. Enter the relevant permission(s) and click **OK**.

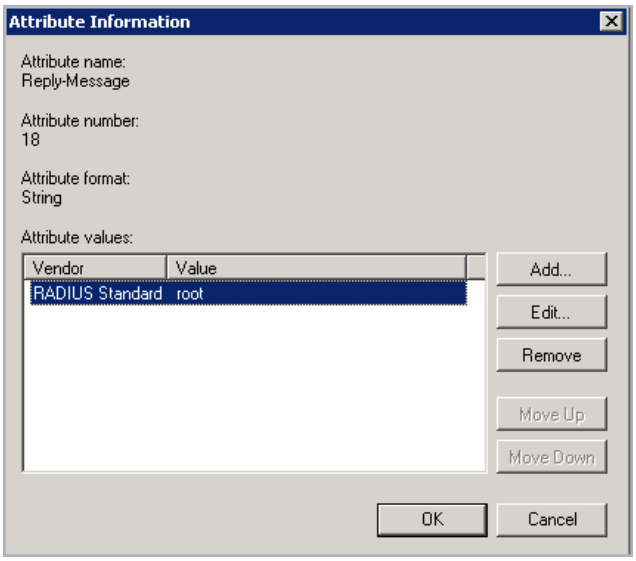
The available permission options are as follows:

real,vs,rules,backup,certs,cert3,certbackup,users,root,geo

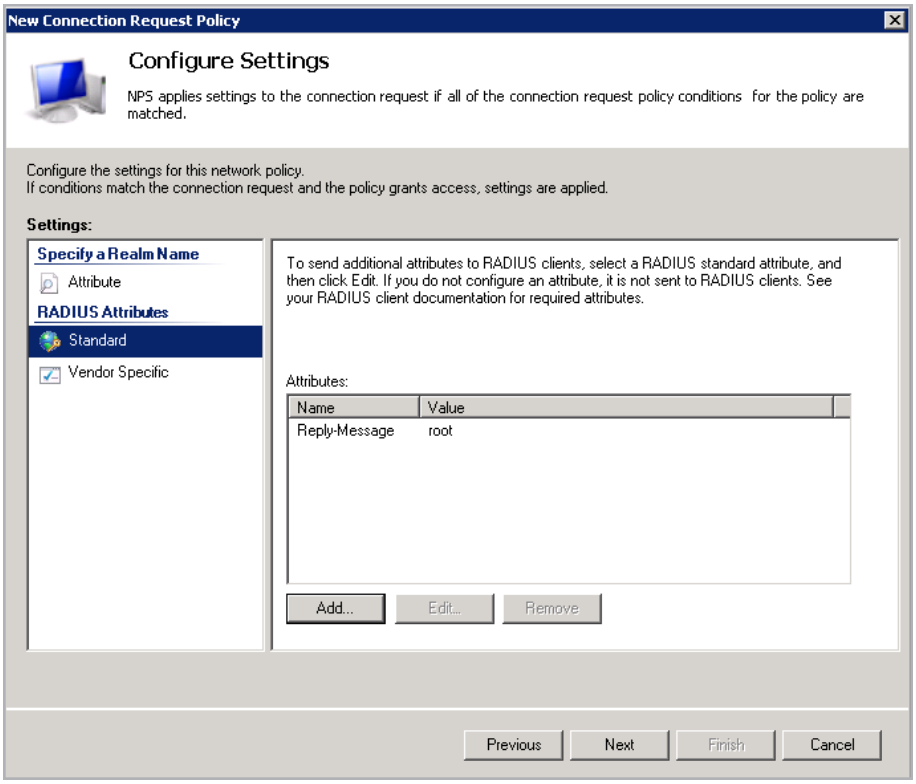
These correspond to the permission options in the LoadMaster Web User Interface (WUI).

The **root** permission grants all permissions.

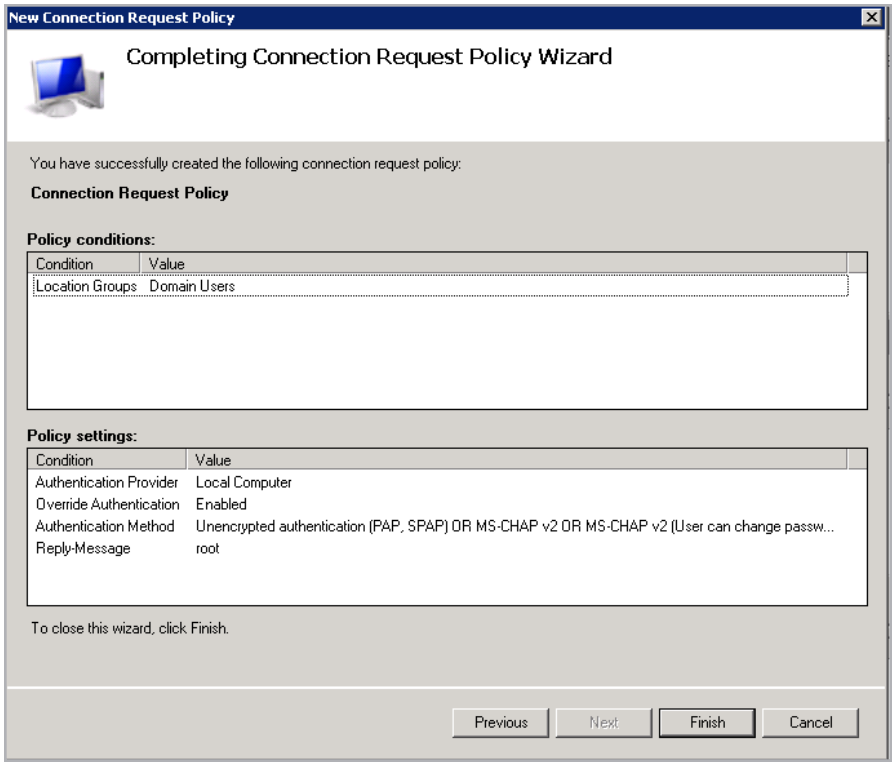
Multiple attributes can be specified here, but they must be separated by a comma (with no space).



7. Select the attribute and click **OK**.
8. Click **OK** again.
9. Click **Close**.



10. Click **Next**.



11. Click **Finish**.

References

Unless otherwise specified, the following documents can be found at http://kemptechnologies.com/documentation.

Web User Interface, Configuration Guide

Last Updated Date

This document was last updated on 19 March 2021.