Active Directory Integration

Contents

Active Directory Integration

The integration of Active Directory technology, developed by Microsoft for Windows operating systems, enhances VMware NSX Network Detection and Response by providing additional information extracted from the Domain Controllers. This information details the Windows users that are logged in on hosts in the network. The system is thus able to associate events that occur in the monitored network with the Windows users logged in on the host. You can then immediately identify the users that have been exposed to a detected threat and take appropriate measures.

About Active Directory

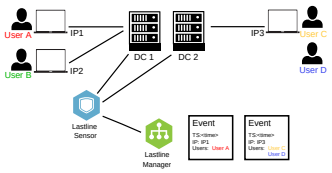
Active Directory (AD) is a directory service developed by Microsoft. It uses their Distributed Component Object Model (DCOM) technology to allow communication between software components distributed across networked computers. An Active Directory environment contains one or more Domain Controller (DC) servers that implement the authentication controls. Security Event logs are some of the event logs on a Windows system. These logs are related to security events, for example, a login attempt or a request for a privileged operation. Windows Management Instrumentation (WMI) is an interface implemented in Windows operating systems through which instrumented components provide information and notifications about the system and its hardware.

Architecture

When using the Active Directory integration, the Sensor connects to one or more Domain Controller (DC) servers, extracts the log information from the Security Event logs and uses these data to correlate IP addresses and timestamps to the Active Directory users who were active on those hosts at the given time. The Sensor will then periodically upload this mapping to its Manager (for On-Premises installations) or to the VMware backend (for hosted installations).

The communication between the Sensor and a Domain Controller relies on the Distributed Component Object Model (DCOM) and Windows Management Instrumentation (WMI) technologies integrated into the operating system.

The following figure summarizes this infrastructure:



In this figure, the network of the company is represented by two Domain Controller servers (DC 1 and DC 2) and three workstations (IP1, IP2, and IP3). Some users are logged in on these workstations:

- User A is on workstation IP1, which used the Domain Controller DC 1 to validate the authentication.

- User B is on workstation IP2, which used the Domain Controller DC 1 to validate the authentication.
- User C and User D are on workstation IP3, which used the Domain Controller DC 2 to validate the authentication.

The Sensor has been configured to query both DC 1 and DC 2. It is therefore aware of the users logged in on any of the three workstations.

Note: You can configure the request polling interval used by the Sensor.

On the right of the Manager, two events are represented. Each event contains a timestamp (TS) and the IP address of the host that generated the event. With the Active Directory integration, the events will also include the list of users that were logged in on the system at this time.

Requirements

The following are required for integration:

- At least one Sensor deployed in either a Hosted or On-Premises environment.
- An infrastructure built on Domain Controllers running Windows Server 2016, 2012, or 2008.

  A Domain Controller running Windows Server 2000 or 2003 is not compatible with the Active Directory integration. Contact *VMware Support* (https://my.vmware.com/group/vmware/get-help) if your network contains Domain Controllers with these versions.

  The configuration of a Domain Controller requires an account with the administrator privileges.

- The Sensor and the Domain Controller can be in two different networks, however if any equipment is filtering the network streams between the two networks, the underlying protocols Windows uses to execute remote WMI queries require the following communications to be enabled:

  # TCP Sensor:`*` to Domain Controller:`135`

  # TCP Sensor: `[>=1024]` to Domain Controller: `[>=1024]`

  These port ranges come from the internal port mapping mechanism Windows uses to execute the RPC calls that support the WMI queries. The client (the Sensor) first connects to the Port Mapper service (port `135`) on the server (the Domain Controller) and then requests the port number of the specific service it wants to query. The server replies with the port number (a port greater or equal to `1024`) and the client opens a new connection to this port. Because this port number can vary, communication to any port greater or equal to `1024` must be allowed.

Note: The range of dynamic ports for RPC services can be configured and restricted in Windows.

Configure the Domain Controller

Configuration Steps

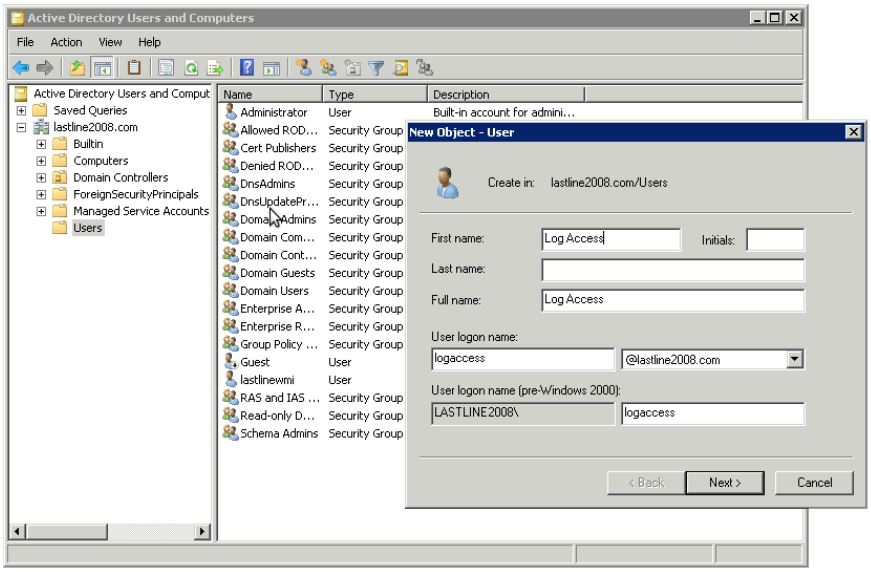
The Sensor needs to have access to an account with the appropriate rights on the Domain Controller to be able to retrieve the security event log. While an account with full administrator rights could technically be used, it is strongly recommended that you instead create a dedicated account with the least required privileges.

The following steps show the procedure to create such account. The screenshots were taken on a Windows Server 2008 installation. The process is very similar on Windows Server 2012 and 2016.

Procedure

Step 1: Create a new account

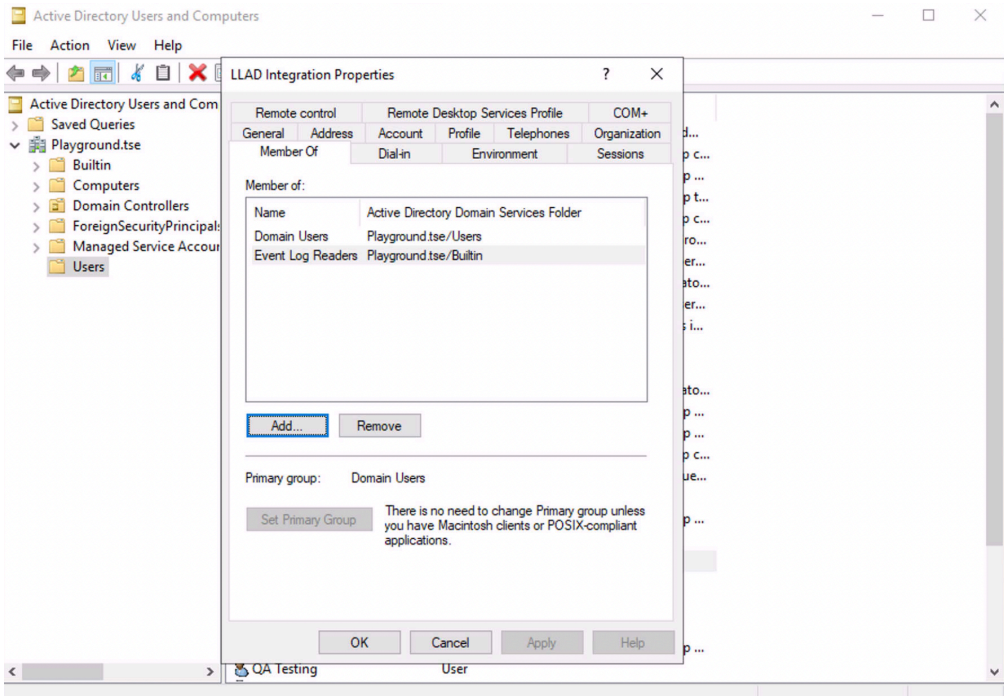
Create a new Domain Controller user account using the Active Directory Users and Computers component. In the following example, add a new user `logaccess` to the domain `LASTLINE2008`:



Step 2: Add the user account to the Event Log Readers group

- Open Active Directory Users and Computers and then select Users from the left sidebar.
- Right-click the user account from the list and open the Properties.

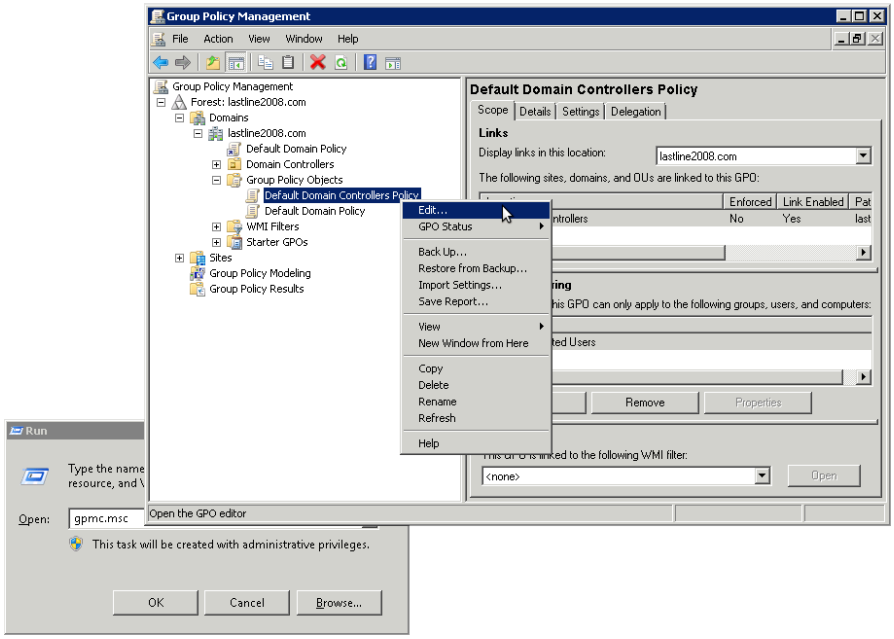
- From the Member Of tab, click the Add button.
- Select the Event Log Readers group.



Step 3: Grant read access on Security Event logs

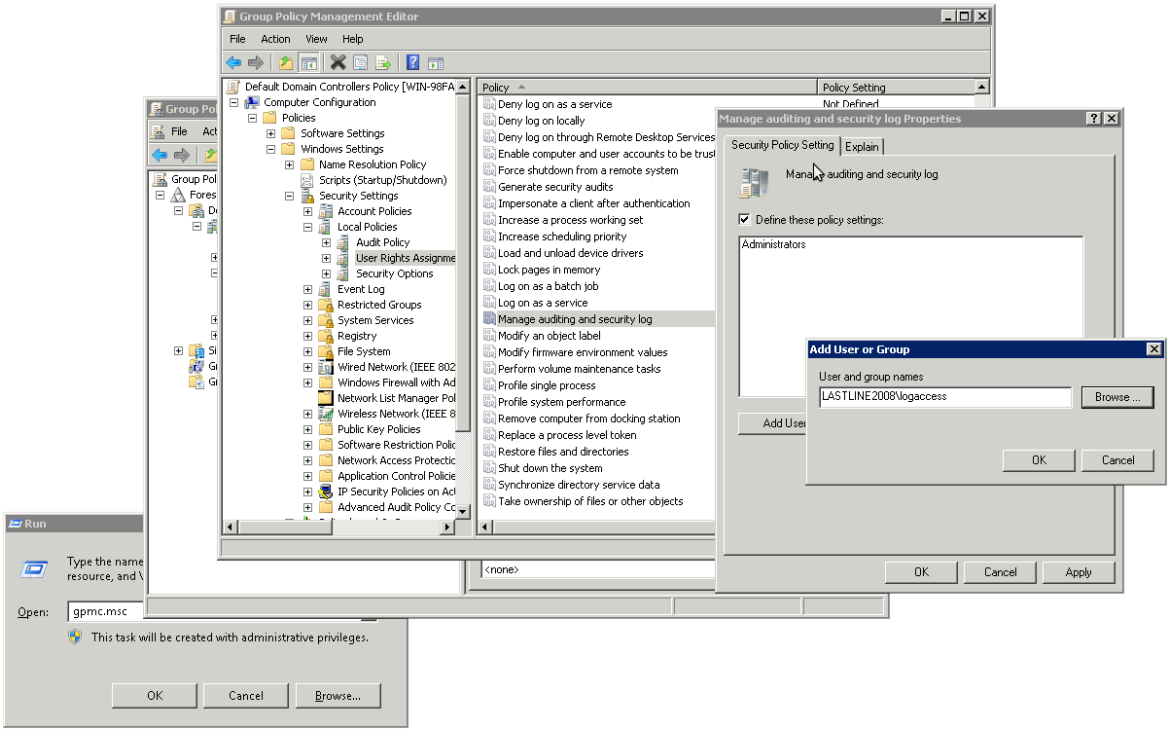
The new user, `logaccess`, must be granted with permission to read the Security Event logs:

- Start the Group Policy Management console by running `gpmc.msc`.
- Expand the tree, then right-click on Default Domain Controllers Policy (you can select another group policy, depending on the structure of your domain) and select Edit, as in the following example:



The Group Policy Management Editor starts. Configure the permissions in this window:

- Expand the tree, then select User Rights Assignment in the left panel.
- Select Manage audit and security log in the right panel. This opens the Manage audit and security log properties pop-up.
- Click the Add Users button. The Add User or Group pop-up appears.
- Enter the name of the user (as in this example, `LASTLINE2008\logaccess`) or click the Browse button to search for it.

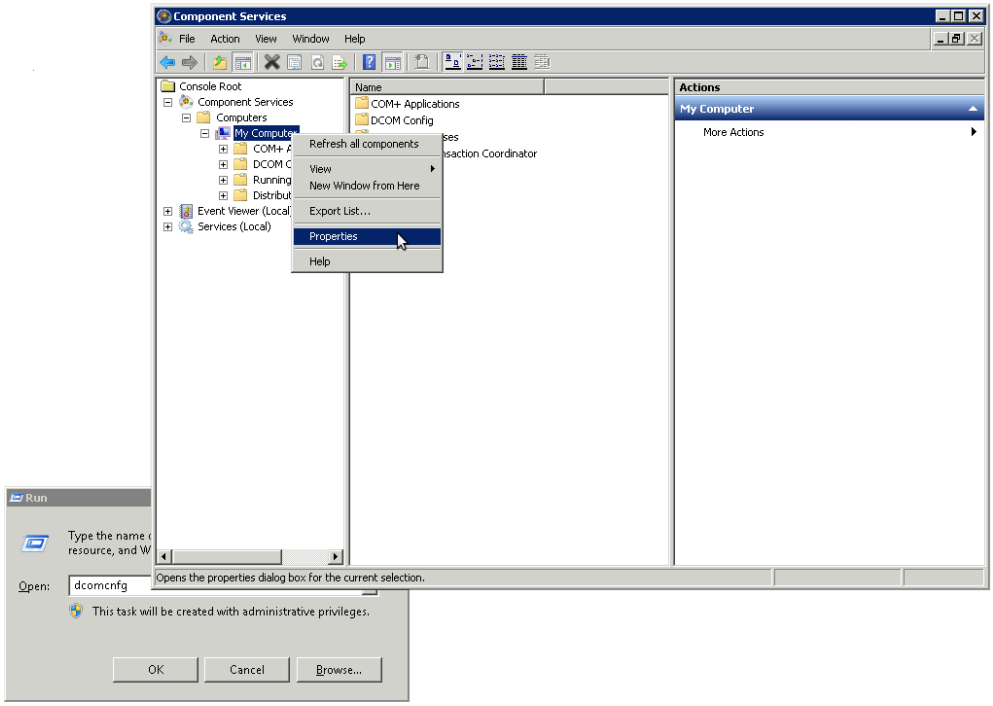


- Click the OK button to dismiss the pop-up. Close all the other windows by applying changes if prompted.

Step 4: Provide DCOM permissions

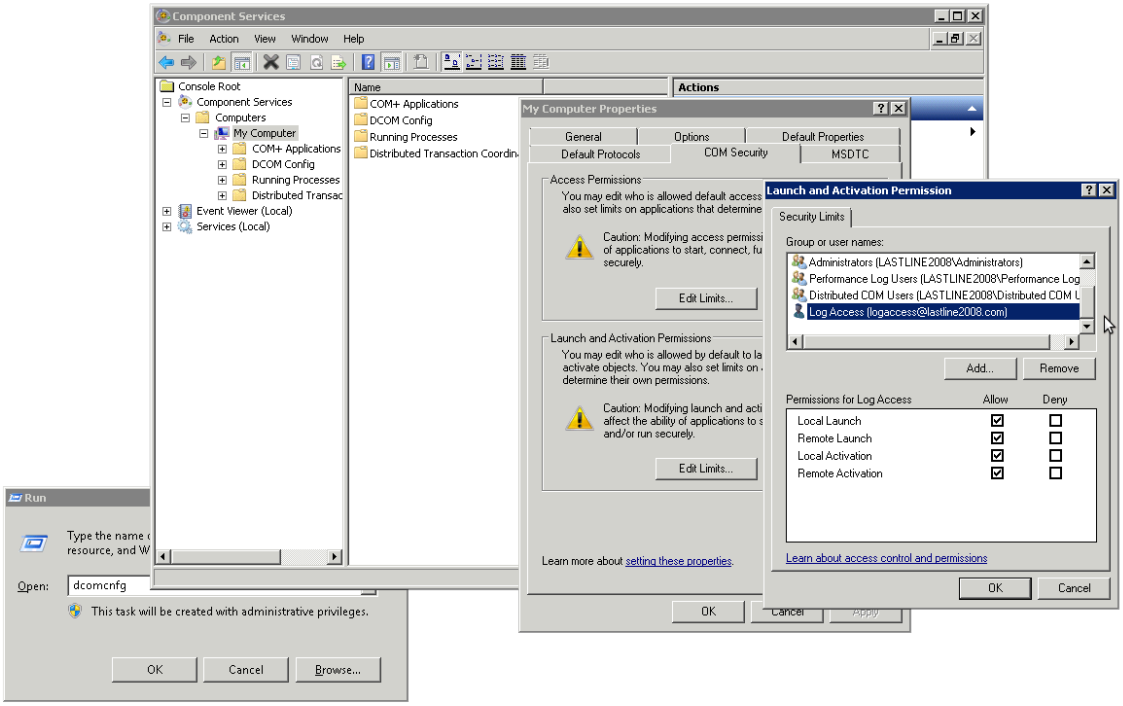
The new user, `logaccess`, must be granted permission to access DCOM objects:

- Start the Component service program by running `dcomcnfg`.
- Expand the tree, then right click on My Computer and select Properties, as in the following example:



The My Computer Properties editor starts. Configure the permissions in this window:

- Select the COM Security tab.
- In the Launch and Activation Permissions section, click Edit Limits.
- In the Security Limits section of the pop-up, click Add... to add the new user.
- In the Permissions for Log Access section of the pop-up, select the Allow toggle for Local Launch, Remote Launch, Local Activation, and Remote Activation, as in the following example:

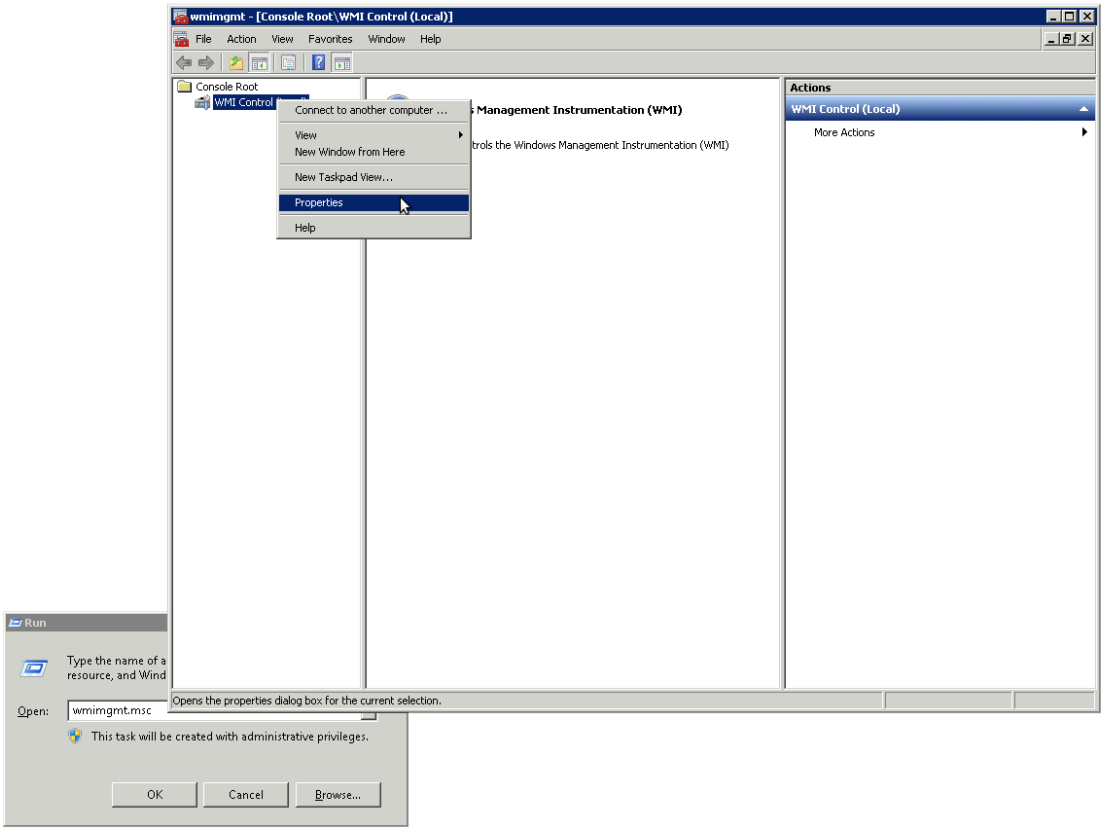


- Click the OK button to dismiss the pop-up. Close all the other windows by applying changes if prompted.

Step 5: Provide WMI permissions

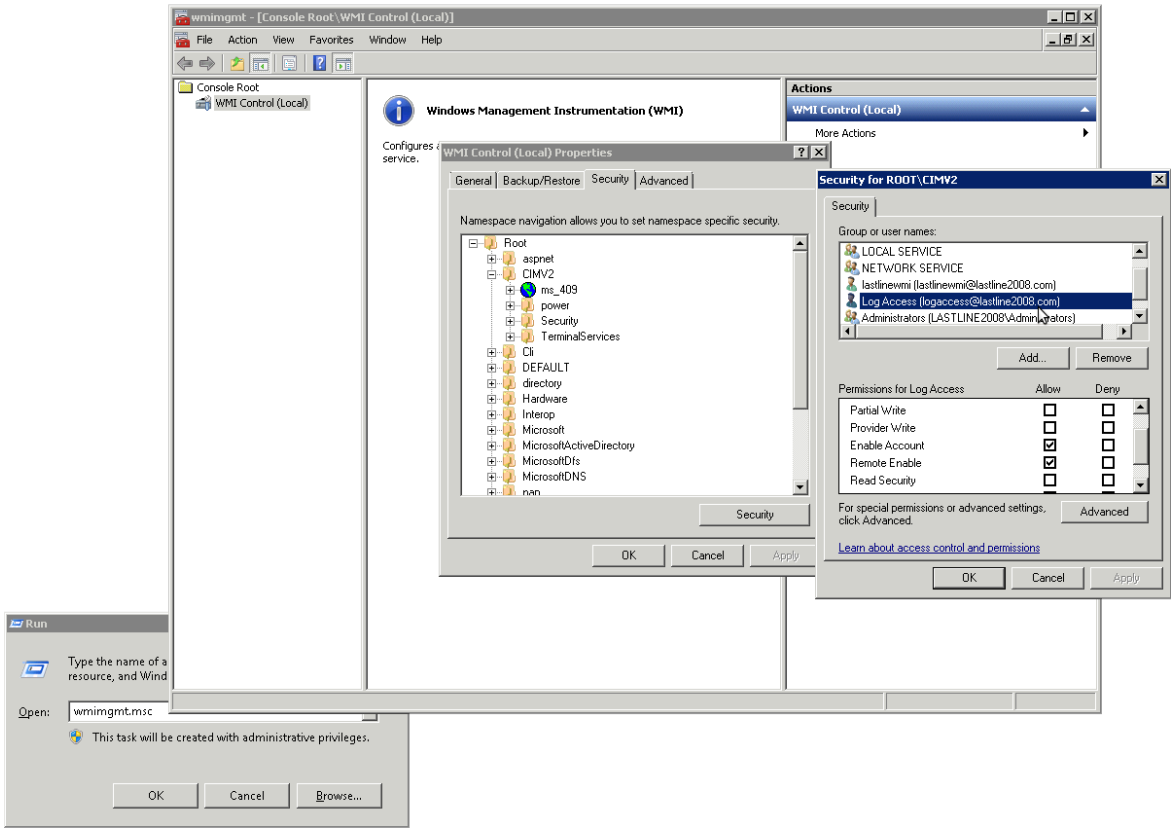
The new user, `logaccess`, must be granted permission to access some of the objects available through the WMI interface:

- Start the WMI Management console by running `wmimgmt.msc`.
- Right click on WMI Control (Local) and select Properties from the menu, as in the following example:



The Local WMI Control Properties editor starts. Configure the permissions in this window:

- Select the Security tab.
- Expand the tree and Select CIMV2. Click the Security button.
- In the Security for ROOT\CIMV2 pop-up, select the user in the Group or user name section then click Add... to add the new user. Then in the Permissions for Log Access section, select the Allow toggle for Enable Account and Remote Enable, as in the following example:



- Click the OK button to dismiss the pop-up. Close all the other windows by applying changes if prompted.

Configure the Sensor

Configuration Steps

Once your Windows network has been set up properly, the Sensor can be configured to pull information from Active Directory.

Procedure

Step 1: Login to the Web UI

Using your Web browser, login to the Manager Web UI.

Step 2: Navigate to the Active directory tab

From the Main navigation menu, click **[Admin]**. On the Admin page, select **[Data sources]** from left sidebar menu. The Active directory tab is the default view on the Data sources page.

Step 3: Select an appliance

Enter a valid Sensor UUID in the Appliance UUID textbox or click **[☰]** and select a compatible appliance from the pop-up.

Step 4: Add a Domain Controller

Click the **[ADD DOMAIN CONTROLLER]** button to configure a Domain Controller. If you want to add another Domain Controller to an already existing configuration, click the **[+]** icon.

On the ADD DOMAIN CONTROLLER page, fill in the following:

- Enter a Source Name. This is the name of the domain controller, another way of manually identifying a configured Domain Controller. It can be useful in the event of configuring multiple Domain Controller servers.
- In the Hostname field, enter the hostname or IP address of the domain controller.
- Set a Polling interval. The default is 60 seconds.
- Enter a Username in the format `USERNAME`. This is the *account used to authenticate* on page 3 with the Domain Controller.
- Enter a Password. The password used to validate the username to the Domain Controller. Enter it a second time in the Confirm password field.

Step 5: Save the configuration

When you are done, click ADD.

Configuration Result

Once the configuration is complete and the system has had time to gather data, you can view user login events from the configured Domain Controller servers on the Network → Events page by clicking the User tab.

VMware, Inc.
3401 Hillview Ave.
Palo Alto, CA 94304
www.vmware.com