ConnectWise Automate Comprehensive Security Best Practice Guide

Overview

This guide was created to help partners with an instance of ConnectWise Automate properly lock down host systems in a manner to offer better protection from a security incident. The guide itself is broken into three elements:

- Operating System
- Network
- Application

Each area should be reviewed and implemented. Please note this document will be updated frequently. Ensure you have the most up-to-date copy.

This guide addresses the following:

- Microsoft Windows Server 2016, 2019, and 2022
- Microsoft IIS 10.x
- ConnectWise Automate v2020+

Edited: February 1, 2024

CONNECTWISE Automate

Contents

Operating System Hardware Guidelines (Before application install)

Review the Security Technical Implementation Guides (STIGs) as a methodology to secure Microsoft Server 2016, 2019, and 2022. Many of the High and Medium standards are addressed inside the AWS Standard Server AMI for the Cloud instances. The user account and STIGs information below are strongly recommended for the ConnectWise Automate server.

The IT Nation Secure team is recommending Partners implement the STIGs located here:

- Server 2022: https://www.stigviewer.com/stig/microsoft_windows_server_2022/
- Server 2019: https://www.stigviewer.com/stig/windows_server_2019/
- Server 2016: https://www.stigviewer.com/stig/windows_server_2016/
- IIS 10: https://www.stigviewer.com/stig/microsoft_iis_10.0_server/

User Accounts and Permissions

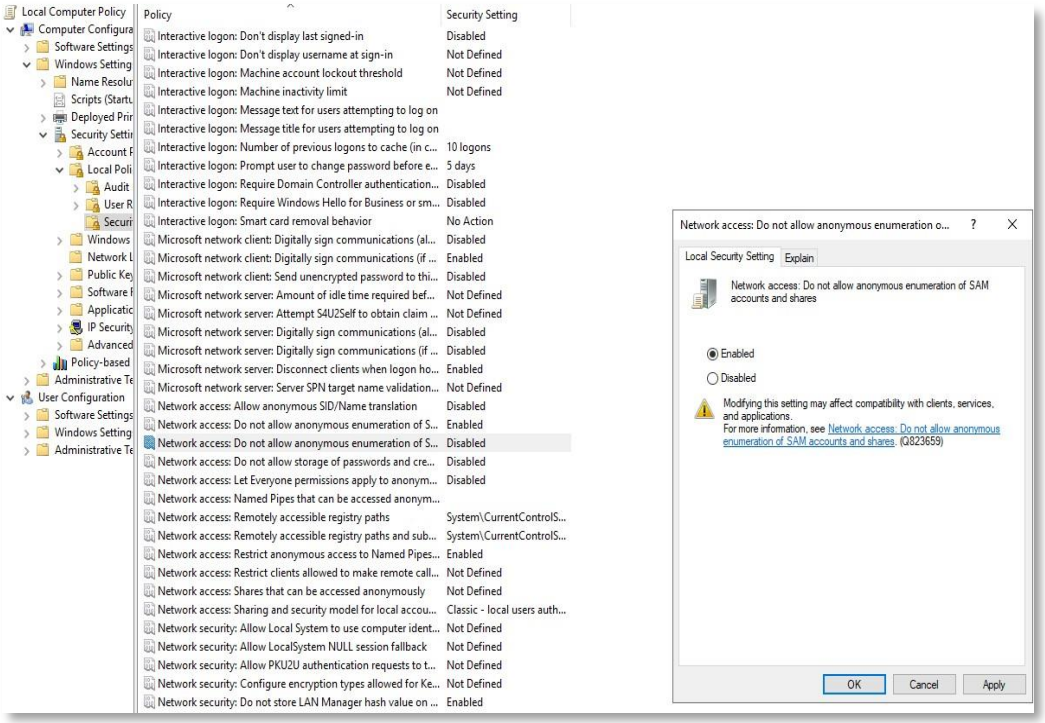
It is highly recommended that user accounts with access to the Automate server and all servers, should have non-privileged (non-administrator) access for their initial login. Only users with a need for privileged access to the Automate server, or any other server, should be provided a SECOND individual account with ONLY the minimum level of access needed to accomplish their specific job role and function. Limiting user access ensures compliance to the STIG and limits the overall risk exposure for the system and services provided. The assigned privileged account should NOT be used for initial login, and it is recommended that the enforcement of privileged accounts be restricted via GPO on the Automate server and across all servers.

STIG Items to Modify

Run **gpedit.msc**.

1. **Network access**.

   Do not allow anonymous enumeration of SAM accounts and shares. Configure the policy value for **Computer Configuration** > **Windows Settings** > **Security Settings** > **Security Options** > Set **Network access: Do not allow anonymous enumeration of SAM accounts and shares** to **Enabled**.



2. **Disallow AutoPlay for non-volume devices**.

   Configure the policy value for **Computer Configuration** > **Administrative Templates** > **Windows Components** > **AutoPlay Policies** > Set **Disallow AutoPlay for non-volume devices** to **Enabled** (Server 2016: Computer Configuration\Windows Settings\Security Settings\Local Policies\Security Options).

3. **Set the default behavior for AutoRun**.

   Configure the policy value for **Computer Configuration** > **Administrative Templates** > **Windows Components** > **AutoPlay Policies** > Set the default behavior for AutoRun to **Enabled** and select the **Do not execute any autorun commands** option.

4. **Turn off AutoPlay**.

   Configure the policy value for **Computer Configuration** > **Administrative Templates** > **Windows Components** > **AutoPlay Policies** > Set **Turn off AutoPlay** to **Enabled** and select the **All Drives** option.

   The above setting is discussed in some detail within the Certify Fundamentals course available under the ConnectWise University.

   Please ensure NO ONE is added to **Act as part of the operating system** in the GPO.

5. **Verify the effective settings within the Local Group Policy Editor**.

Navigate to **Local Computer Policy** > **Computer Configuration** > **Windows Settings** > **Security Settings** > **Local Policies** > **User Rights Assignment**.

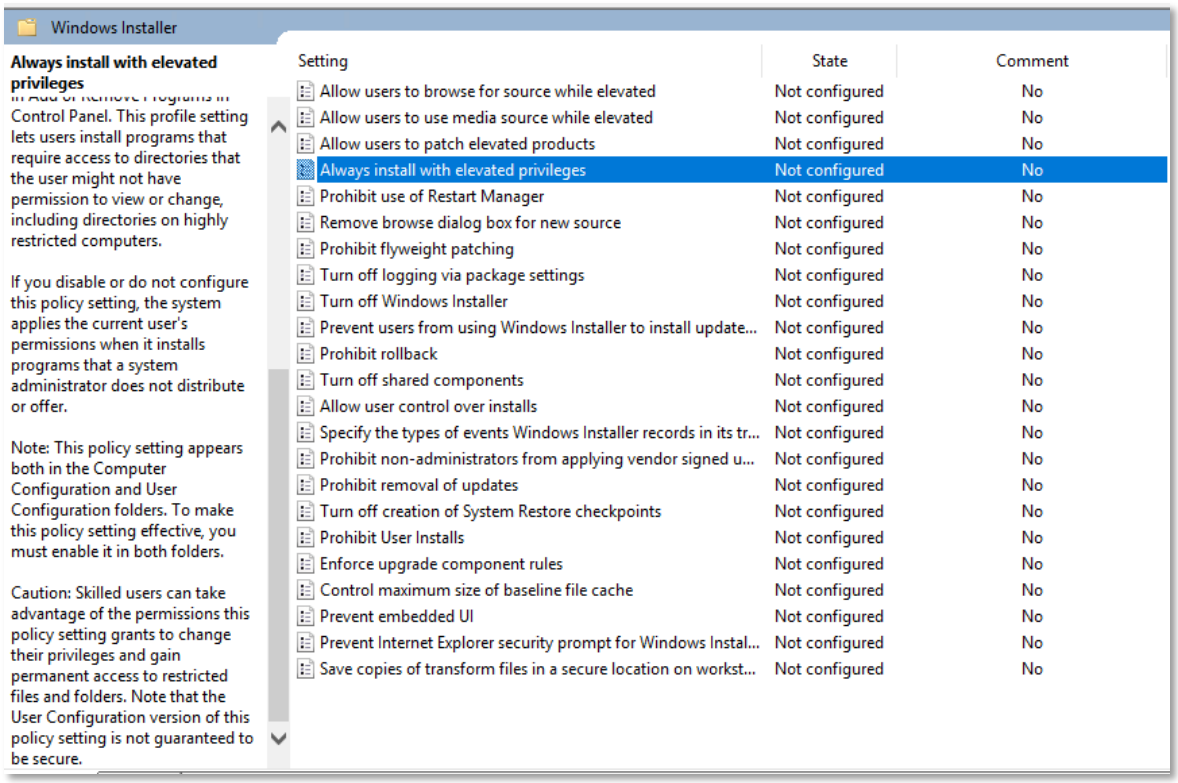
If any accounts or groups (to include administrators) are granted the Act as part of the operating system user right, the accounts should be removed immediately from this policy object.

Another setting to pay attention to on all Microsoft Windows Servers is the privilege escalation.

6. **Always install with elevated privileges**.

   Configure the policy value for **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Windows Installer** > Set **Always install with elevated privileges** to **Disabled**.

   The **Not Configured** setting uses the user's current permission set. This is part of the reason having TWO accounts is very important. Please also note the Caution item in the following graphic.



Additionally, Microsoft Windows Server administrative accounts must not be used with applications that access the Internet, such as web browsers, or with potential Internet sources, such as email.

Using applications that access the Internet or have potential Internet sources using

administrative privileges exposes a system to compromise. If a flaw in an application is exploited while running as a privileged user, the entire system could be compromised. Web browsers and email are common attack vectors for introducing malicious code and must not be run with an administrative account. Since administrative accounts may generally change or work around technical restrictions for running a web browser or other applications, it is essential that policy require administrative accounts to not access the Internet or use applications such as email. The policy should define specific exceptions for local service administration. These exceptions may include HTTP(S)-based tools that are used for the administration of the local system, services, or attached devices. Whitelisting can be used to enforce the policy to ensure compliance.

Network Hardening Guidelines

Windows Defender Firewall on Automate Server

Verify that only the following ports are open:

- Port 75 UDP: Utilized by the Enhanced Heartbeat.
- Port 443 TCP: Used for HTTPS communication.
- Port 8484 TCP: Must be open and forwarded to the Automate server in order to access the Solution Center from the Control Center.
- Local machine access 127.0.0.1 on any port from 127.0.0.1 using any protocol should be opened (local machine access).

Verify the following ports and protocols are closed:

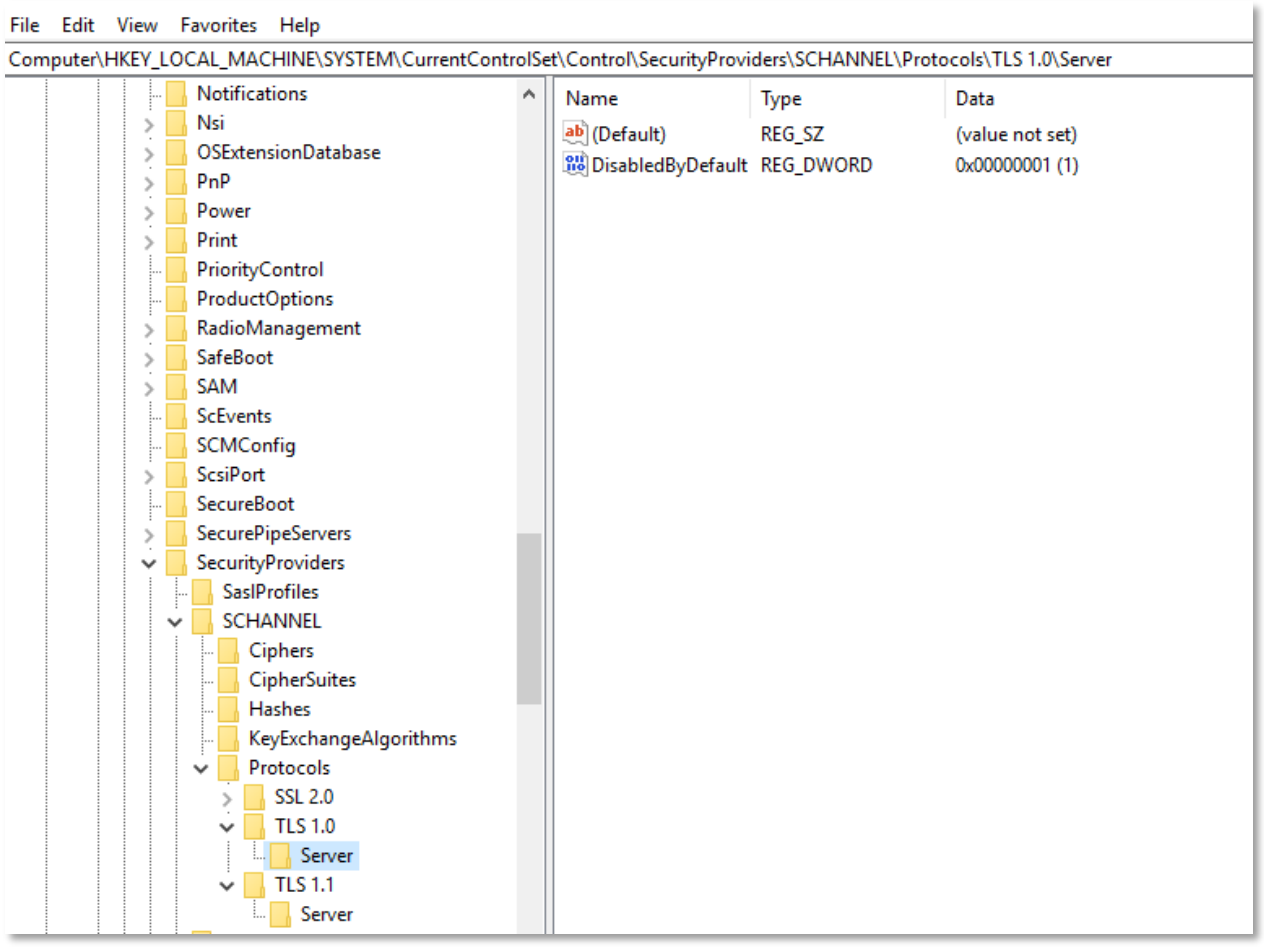
- Port 70 TCP: Redirector communications without tunnels.
- Ports 70-74 UDP: Tunnels and Redirectors.
- Port 8002 TCP/UDP: For tunnels, the remote agent and the Control Center must be able to communicate to mediator.labtechsoftware.com on port 8002 TCP/UDP.
- Ports 40000-40050 TCP: Connecting via HTTP from the Web Control Center. Open ports beginning with 40000 and ending with four times the number of total technicians using Automate (e.g., If there are 25 technicians, then there are 25x4 (100) simultaneous sessions. So, ports 40000-40100 should be open).
- Ports 40000-41000 UDP: Tunnels and Redirectors, only when advanced routers are blocking and not at the Automate server, at client and agent locations or where the router in front of the Control Center is blocking.
- Port 3389: Windows RDP. This must be disabled after a ConnectWise Control client is running or there is another way to access the system. Also ensure that the perimeter firewall is blocking port 3389 for all machines.
- Port 3306: MySQL. Block this port on the perimeter router. If using a single system for Automate and database, 3306 should only be available locally. If using two separate systems, 3306 on the database machine should only be available on the private network and only accessible from the Automate machine.
- Port 12413 TCP: Used by the Automate File Service. This service is for internal communications between the Automate server and its applications and should not be accessible by other devices and networks. All partners should verify that port 12413 TCP is closed to external devices and networks.

If not connected to Active Directory, these ports can be blocked.

- Port 135: MSRPC. Remove firewall rule to allow TCP-135.
- Port 139: NetBios. Remove firewall rule to allow TCP-139.
- Port 445: Microsoft-ds. Remove a firewall rule to allow TCP-445.

Disable TLS 1.0 and 1.1 in the registry

1. Open the Registry Editor.
2. Navigate to HKLM SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols.
3. TLS 1.0 or 1.1 entry does not exist in the registry by default.
4. Create a new subkey called **TLS 1.0 or 1.1** under **Protocols**.
5. Create a new subkey called **Server** under **TLS 1.0 or 1.1**.
6. In the **Server key**, create a **DWORD DisabledByDefault** entry and set the value to **1**.
7. Reboot the server.



Application Hardening Guidelines

Additional Automate Hardening Items

- Set the Automate system password with a minimum of 12 characters and a mix of uppercase, lowercase, numbers, and symbols.
- Set the MySQL Root password with a minimum of 12 characters and a mix of uppercase, lowercase, numbers, and symbols.

Permissions

Ensure that the directory *C:/LTShare* is not shared on the network with permissions EVERYONE. Configure the Minimum permissions for LTShare:

- IIS AppPool\LabTech
- IIS AppPool\LabTech WebCC
- IIS AppPool\CwaRestApi
- System

Additionally, they each need:

- Modify
- List folder contents
- Read & Execute
- Read
- Write

IIS Hardening Items

HTTP Headers

Validate they are not disabled. Open PowerShell as Administrator, copy, and paste the following command:

Get-WebConfigurationProperty -pspath machine/webroot/apphost -filter 'system.webserver/security/requestfiltering' -name 'removeServerHeader'

Use the following command to disable server headers in IIS10:

Set-WebConfigurationProperty -pspath MACHINE/WEBROOT/APPHOST -filter "system.webServer/security/requestFiltering" -name "removeServerHeader"

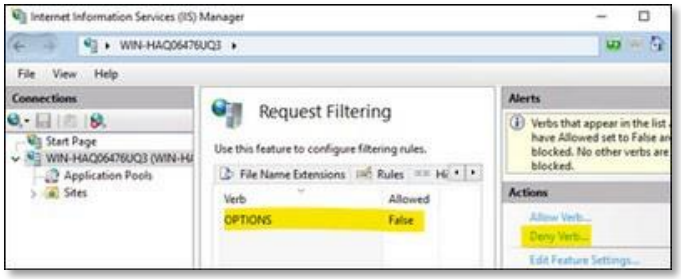
-value "True"

Under HTTP Response, remove all entries.

Disable HTTP Options

To disable the Options method:

1. Open the IIS Manager.
2. Click on the server name.
3. Double-click on **Request Filtering**.
4. Select the **HTTP Verbs** tab.
5. On the right side, click **Deny Verb**.
6. Type OPTIONS.
7. Click **OK**.



Remove IP Addresses through /aspnet_client call

1. Navigate to **C:\inetpub\wwwroot\aspnet_client**.
2. There should be a **web.config file**. If the file is not present, create a web.config file and add the following information:

   <?xml version="1.0" encoding="UTF-8"?>

   <configuration>

```
<system.webServer>
<rewrite>
<outboundRules>
<!-- This rule changes the domain in the HTTP location header for redirection responses
-->
<rule name="Change Location Header">
<match serverVariable="RESPONSE_LOCATION" pattern="^http(s)?://[^/]+/(.*)" />
<conditions>
<add input="{RESPONSE_STATUS}" pattern="^301" />
</conditions>
<action type="Rewrite" value=""/>
</rule>
</outboundRules>
</rewrite>
</system.webServer>
</configuration>
```

3. Restart the IIS and run the curl command **curl -H 'Host:' https://[AUTOMATEFQDN] /aspnet_client --http1.0 -I** to confirm the IP address is not present.

API Integrations

For Control Partners:

- Server Requirements:
- ConnectWise Automate v2019.1+
- TCP Ports 8040 and 8041 forwarded to the ConnectWise Control server (for alternate ports, refer to Control's Changing Default Ports documentation. If using a ConnectWise Control Cloud server, port 443 is required.
- Supported Versions:
- Control v6.4+
- Control Remote Support and Meetings requires Control v6.4+

Permissions

Accessing features of the ConnectWise Control solution requires the user to be associated with a user class with the following permissions.

Task	Class	Level	Category
Access ConnectWise Control plugin	Plugin	User	ConnectWise Control plugin > Access
Access ConnectWise Control Remote plugin	Plugin	User	ConnectWise Control Remote plugin > Access
View Support Sessions	Plugin	User	ConnectWise Control plugin > View Support Sessions > Access
Print Over Session	Plugin	User	ConnectWise Control plugin > Print Over Session > Access
Transfer Files in Session	Plugin	User	ConnectWise Control plugin > Transfer Files in Session > Access
Use Shared Toolbox	Plugin	User	ConnectWise Control plugin > Use Shared Toolbox > Access
Manage Shared Toolbox	Plugin	User	ConnectWise Control plugin > Manage Shared Toolbox > Access
Access Backstage via the Web Control Center	Plugin	User	ConnectWise Control plugin > Manage Credentials > Access
Switch Logon Session	Plugin	User	ConnectWise Control plugin > Switch Logon Session > Access Note: This permission is required for Control Backstage.
Access Support Session Viewer	Web Extension	User	ConnectWise Control plugin > Support Session Viewer > Access
All tasks listed below require the Access ConnectWise Control plugin permission.			
View script statuses during server installation on an agent	Core	User	Scripts > Read

Configure plugin	Core	User	System Dashboard > Config > Access
Connect to computer	Core	Client and/or Group	Allows Redirector/Remote Control
Install, uninstall, enable or disable the Control Client	Core	Client and/or Group	Send Commands
Establish a remote control session from Web Control Center	Core	User	Allow Web Access

Restrict Administrative Access by IP Address for the Automate Server

This section provides steps for Administrators of On Premises ConnectWise Automate® installations to restrict access to administrative functions provided by Automate Web Server components to specific IP address ranges. Ultimately, remote agent and contact (remote workforce) login are not easily limited to specific IP address ranges and thus this document only provides steps to restrict administrative user functionality.

Note: This functionality is not yet available for ConnectWise Automate administrators with a Cloud system (hostedrmm.com). ConnectWise will communicate when a process is ready for Cloud Partners to implement IP address restrictions for user login. We cannot commit to a release date at this time and appreciate your patience, allowing us to prepare for a straightforward and efficient implementation. In the meantime, please evaluate your expected IP Allow needs and look for opportunities to consolidate required IP Allow entries

Prerequisites

- Microsoft IIS 8 or higher
- Windows Server 2008 or higher
- ConnectWise Automate version 2021.12 or higher

Web Server Design

Automate has individual web applications and sites for different types of traffic to the Web Server. These applications are powered by Microsoft IIS. In order to restrict access for functions considered Administrative to the Automate application, the sites, and apps that power those can be restricted to specific ranges using the IIS Security Module for Microsoft IIS.

For the Control Center, mainly used by technicians accessing Automate, data is provided by the LegacyCCASMX, cwa, WCC2 sites.

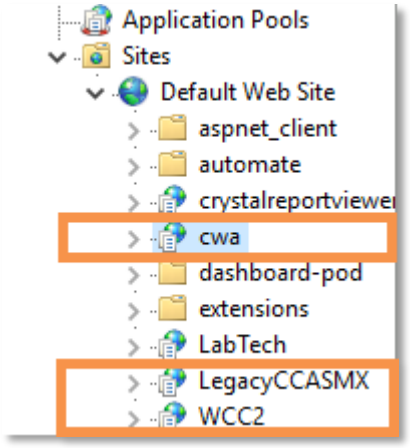
For the Web Control Center, also primarily used by technicians accessing Automate, data is provided by the automate and cwa site.

To limit Administrative functions access to expected IP addresses, IP address restrictions should be placed on:

- CWA

- LegacyCCASMX
- automate

Important: WCC2 is used by Contact logins. If you are not offering Contact login via WCC2



Plugin and Integration Communication

The ConnectWise Automate REST API is hosted on the **automate** and **cwa** site.

If you have API-Only integrations to the application, these API's are provided by

the **cwa** and **automate** sites and should be considered when adding allow rules in your required configuration.

Callback functionality for plugins is provided by the **LabTech** site and should be considered when adding allow rules in your required configuration, however is not likely be relevant based on shared responsibility for remote agent communication.

Prepare the Server

To prepare your server:

1. Install the IP Security Module using Microsoft documentation for IP Security.
2. Back up your Web Configuration files in case you need to revert to your prior configuration.

Determine the Required Configuration

Accumulate your list of required allow rules by examining the following scenarios.

- For technicians accessing the Web Control Center and Control Center for Windows, IP addresses for expected technician access network locations should be added to the IP Restrictions as allow rules.
- For Rest API integrations, these APIs are provided by the cwa and automate site and should be considered when adding allow rules in your required configuration.
- For contacts and remote agents, it is not practically feasible to recommend an IP restriction configuration to meet all Automate partner needs.
- For Callback integrations, because labtech is providing the callback function, you should only consider adding IP restriction configuration in the case that you are pursuing a custom solution via proxy or gateway configuration and have decided to restrict access as specified in the introduction section.
- For Agent traffic and Contact logins, **labtech** and **WCC2** site/app pools are required. ConnectWise does not support IP restrictions. Apply restrictions at your own risk.
- If you use the Manage plugin, refer to Public IP Addresses for Manage for detail on the IP addresses that should be allowed.

Add Allow Rules

These rules do not require downtime to implement, however, it is easy to implement a rule incorrectly and restrict otherwise expected and critical access to the application. Please keep in mind the implementation order does not matter.

Start with the LegacyCCASMX site and apply the required allow rules by completing these steps.

1. Go to IIS Manager for the Automate server.
2. Expand the Sites menu on the left-hand navigation.
3. Select the LegacyCCASM site.
4. Find the IP address and Domain Restrictions menu.
5. From the Actions menu, select Add Allow Entry.

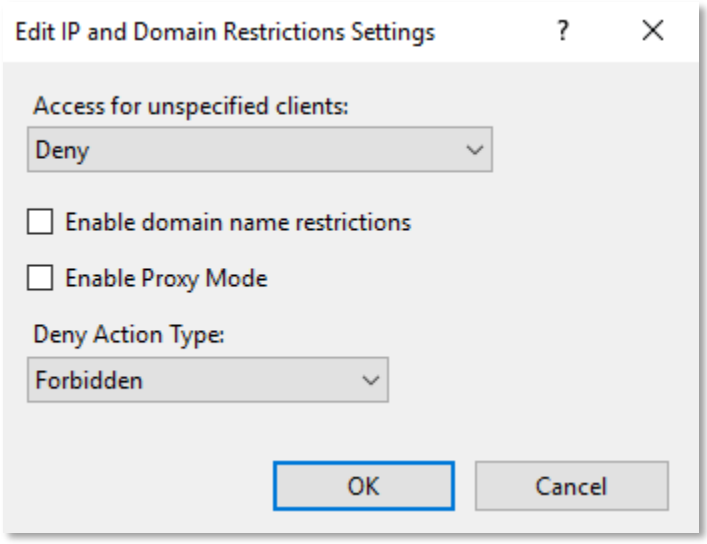
Add Deny Rules

Now that the allowed traffic has been specified, the deny rules for all unknown IP addresses should be placed on each application.

Start with the LegacyCCASMX site and apply the required deny rules by completing these steps.

1. In the IP address and Domain Restrictions area Actions menu, select Edit Feature Settings.

2. Select Deny from the Access for unspecified clients drop-down.



4. Click OK.

Verify the Rules

Complete the following steps to verify the rules were implemented correctly.

1. Though not required, perform an IIS Reset to restart the IIS Application pools and force the IP restriction changes to take effect immediately.
2. From an IP address on the specific allow list, log in to the Control Center and verify key functions operate as expected. Check the **Computer Management** screen and critical plugins.
3. From an IP address not on your allow list, verify logins do not complete.