



MICROSOFT WINDOWS SERVER 2019 STIG CHEF DOCUMENTATION

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1. BACKGROUND

Chef is an open source, cross-platform configuration management solution used to define and enforce system and application configurations. This package provides Chef configurations that implement most of the Windows Server 2019 STIG. While the content has been tested during development, all possible system and environmental factors could not be tested. Before using this content in a production environment, please perform testing with the intended settings in your own test environment. There is no mandate to use this content; it is published as a resource to assist in the application of security guidance to your systems. Use it in the manner and to the extent that it assists with this goal.

Many Windows configuration settings can be applied using Group Policy. This Chef configuration does not leverage Group Policy. Therefore, this content is most useful for systems that are not using Group Policy or to manage a subset of configuration settings that are not being managed through Group Policy.

2. INSTALLATION

The following instructions are for standalone installation using chef-client for testing purposes. A production environment will likely use Chef Server and Chef Clients. See here for details.

2.1 Installing Chef Client

Install the Windows 2019 Chef Client from here.

2.2 Cookbooks

Unzip **`Win2019STIG-chef.zip`**. In PowerShell, run the **`install.ps1`** script. This script downloads and copies the required windows cookbook from the Chef Supermarket into the local Chef cookbooks directory via Chef Knife. See here for details. If manual installation is preferred, download the cookbook here and run **`tar xf windows.tar.gz`** to extract it into the cookbooks folder.

2.3 PowerShell Modules

Chef utilizes PowerShell modules to perform many tasks. By default, the provided Chef cookbook handles downloading and installing these modules. If manual installation is preferred, download the following PowerShell modules into the **`C:\Program Files\WindowsPowerShell\Modules`** directory.

- AuditPolicyDsc v1.2.0.0
- SecurityPolicyDsc v2.4.0.0

Ensure that the module folder names are only the module names without version numbers. See here for details. Files downloaded from the internet may need to be unblocked to run with:

```
dir "C:\Program Files\WindowsPowerShell\Modules" -Recurse | Unblock-File
```

2.4 Certificates

The Chef windows_certificate resource requires certificates to be in an accessible location in the .CER format. If certificate management is desired, complete the following steps to export certificates in the .CER format:

1. Download InstallRoot from DoD Cyber Exchange here.
2. Install it. Run it.
3. Double-click on the certificate you want to export.
4. Choose the "Details" tab.
5. Verify the thumbprint matches your desired certificate.
6. Click "Copy to File".
7. Click "Next".
8. Choose a .CER format.
9. Click "Browse" to choose an export location and filename.
10. Click "Next".
11. Click "Finish" to complete the export.
12. Continue the above process until all desired certificates are exported into .CER format.
13. By default, all certificates are expected to be stored in `C:\Certificates`

3. CONFIGURATION

3.1 Simple

To apply the default STIG Chef configuration to the local machine only, run the **`enforce.ps1`** script in PowerShell to enforce the STIG.If prompted, accept the license. To tailor the configuration, follow the steps in the next section.

3.2 Custom

To customize, adjust the attributes in the **`cookbooks\Win2019STIG\attributes\default.rb`** file. This file contains configuration data to define which configuration settings to manage and the values for these settings. Edit this configuration file in a text editor to best suit each system's requirements as needed. For example, if you wanted to turn off STIG rule ID 103509, you would set the "Manage" attribute equal to **`false`**. If you wanted to set STIG rule ID 103563's maximum password age to 90, you would set the "Maximum_Password_Age" attribute to **`90`**.

```
default['Win2019STIG']['stigrule_103509']['Manage'] = false
default['Win2019STIG']['stigrule_103509']['Setting']['Telnet_Client_Ensure'] = :remove

default['Win2019STIG']['stigrule_103563']['Manage'] = true
default['Win2019STIG']['stigrule_103563']['Setting']['Maximum_Password_Age'] = 90
```

For more information on attributes, see here.

Note: While useful for testing, this approach is not recommended for a production Chef Server environment. Rather than changing the cookbook defaults, which may change in future versions of the cookbook, attributes should be overridden using Chef capabilities such as roles or environments.

3.3 Defaults

Some of the available settings are not managed by default. In cases where different rules apply depending on the domain role (domain controller, member server, or standalone), defaults are based on the standalone case. Other STIG rules have hardware requirements that cannot be managed by Chef, and while their configurations are provided here, they are not managed by default. Some settings require site-specific values, and these settings are not managed by default. Finally, certificate installation is not managed by default since the required certificates themselves must be obtained separately (see above).

4. CONTENT EXTRACTION

This compliance extraction methodology returns results based on a systems compliance with the enforcement content. This may be different from STIG compliance. For example, multiple values may be allowed by the STIG but will be marked as "fail" if the value does not match the single exact value in the enforcement content. Additionally, if a value is customized in such a way as to violate a STIG rule, it will be marked as "pass" since it matches the enforcement content's expected value.

At the completion of a successful Chef run, content extraction of the configuration results into XCCDF results can be performed via a Chef handler. Use of this handler can be controlled via modification of the following variable in the **`cookbooks\Win2019STIG\attributes\default.rb`** file:

```
default['Win2019STIG']['XCCDF_result']['Manage'] = true
```

Configuration of the handler is controlled via modification of the following variables in the **`cookbooks\Win2019STIG\recipes\default.rb`** file:

```
chef_handler 'Chef::Handler::StigXml' do
  source "#{Chef::Config[:file_cache_path]}/stig_xml.rb"
  arguments :stigName => 'U_MS_Windows_Server_2019_STIG_V1R2_Manual-
xccdf.xml', :path => '/path/where/to/write/results.xml'
```

The above resource controls the arguments to the handler writing the XCCDF results file to the :path using the manual STIG named :stigName. The XCCDF results file is output by default as **`C:\Users\Username\AppData\Local\Temp\xccdf-results.xml`** if no :path is provided.

Note: The STIG name provided above should match the STIG release and version number that the Chef content is built for.

Chef provides a means of checking compliance without enforcement called **`--why-run`** mode. To use this mode, run the following:

```
chef-client -z -o Win2019STIG --why-run
```

Note: In order for the content extraction handler to function, a prior run without **`--why-run`** must have completed successfully.