Progress®

Kemp® LoadMaster®

Interface Description PowerShell

1 May 2024

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Introduction

Introduction

PowerShell is a scripting language developed by Microsoft to enable automation of administrative tasks. The LoadMaster PowerShell wrapper enables direct access to the LoadMaster Application Program Interface (API) from PowerShell to simplify automation of configuration, deployment and lifecycle management of LoadMaster instances.

Progress Kemp products optimize web and application infrastructure as defined by high-availability, high-performance, flexible scalability, security and ease of management. They minimize the total cost-of-ownership for web infrastructure, while enabling flexible and comprehensive deployment options.

Related Links

- Document Purpose
- Intended Audience
- Prerequisites

Document Purpose

Document Purpose

This document provides some information on how to import the Progress Kemp PowerShell module, how to enable the API interface on the LoadMaster and how to use the **Get-Help** command to retrieve help text relating to the various commands and parameters that can be used.

Intended Audience

Intended Audience

This document is intended to help anyone who wishes to configure or interface to the LoadMaster using Windows PowerShell commands.

Prerequisites

Prerequisites

For the PowerShell API to work with the LoadMaster, the following prerequisites must be met:

- Either **TLS1.1** or **TLS1.2** must be enabled in the LoadMaster Web User Interface (WUI) Settings. These are enabled by default. **SSLv3** and **TLS1.0** are unsupported with the PowerShell API. To set the **Supported TLS Protocols**, go to **Certificates & Security > Admin WUI Access** and select the check boxes provided.
- The API interface must be enabled on the LoadMaster. To enable it – go to **Certificates & Security > Remote Access** and tick the **Enable API Interface** check box or enable the API programmatically using the **Enable-SecAPIAccess** command. If you license the LoadMaster using the API, the API interface gets automatically enabled.
- PowerShell version 5 or above is recommended.
- A **WUI Cipher set** other than **Null_Ciphers** must be selected in **Certificates & Security > Admin WUI Access**.
- The API only works on the WUI interface unless **Allow Multi Interface Access** is enabled in **Certificates & Security > Remote Access**.

2

Windows PowerShell

Windows PowerShell

Companies are focusing on the internal changes necessary to enable their organization to scale efficiently in line with growth. Working more quickly and efficiently means managing and protecting a greater number of devices, applications, systems and identities. IT departments are using automation frameworks to meet that challenge.

PowerShell is an automation platform and scripting language for Windows and Windows Server. Progress Kemp have had a PowerShell module since 2013. It simplifies the management of systems and is key to enabling IT departments to adopt automation in dynamic environments. In PowerShell, administrative tasks are generally performed by cmdlets, which are specialized .NET classes implementing particular operations. Progress Kemp's PowerShell cmdlet improvements in our 7.2.39 release, are an enhancement for companies on an automation path, especially for automating your LoadMaster family of products.

Related Links

- Installing the Progress Kemp PowerShell Module
- Importing the Certificate
- Using the Get-Help Command
- Authenticating to the LoadMaster
- Object Structure
- Initially Configure a LoadMaster Using PowerShell API Commands
- Code Snippet Examples
- Known Issues with Beta PowerShell Wrapper

Installing the Progress Kemp PowerShell Module

Installing the Progress Kemp PowerShell Module

Download the Progress Kemp PowerShell module from the Progress Kemp Support page, https://support.kemptechnologies.com/hc/en-us/articles/201239319. Unzip the files.

The module contains the following files within the Kemp.LoadBalancer.Powershell folder:

- Kemp.LoadBalancer.Powershell.psd1
- Kemp.LoadBalancer.Powershell.psm1
- Kemp.LoadBalancer.Powershell-Help.xml

Copy the **Kemp.LoadBalancer.Powershell** folder to the relevant folder.

Install the module in a folder that is available in PSModulePath ($Env:PSModulePath).

If PSModulePath does not contain the module folder value, add the module path to the in PSModulePath environment variable. The module path can be for the current user only or for all users. Recommended values are:

- $home\Documents\WindowsPowerShell\Modules for the current User
- $Env:ProgramFiles\WindowsPowerShell\Modules for All Users

For example, install the Progress Kemp PowerShell module for the current user only:

```
# Save the current value of PSModulePath
$mpath = [Environment]::GetEnvironmentVariable("PSModulePath")
# Add the new path to the $mpath variable
$mpath +=
";$home\Documents\WindowsPowerShell\Modules\Kemp.LoadBalancer.Powershell"
# Add the paths in $mpath to the PSModulePath value.
[Environment]::SetEnvironmentVariable("PSModulePath", $mpath)
```

Import the module to start using it:

```
Import-Module Kemp.LoadBalancer.Powershell
Get-Module Kemp.LoadBalancer.Powershell
ModuleType Version    Name                                ExportedCommands
---------- -------    ----                                ----------------
Script     7.2.39.0   Kemp.LoadBalancer.Powershell        {Add-
BondedInterface, A...
```

Note: For the PowerShell commands to work, the API interface must be enabled on the LoadMaster. To enable it using the Web User Interface (WUI), go to **Certificates & Security > Remote Access** and select **Enable API Interface**.

You can test the connection to the load balancer by using the **Test-LmServerConnection** command, for example:

Test-LmServerConnection –ComputerName 10.11.0.60 –Port 443 -Verbose

To retreive a list of available commands, run the following command:

Get-Command -Module Kemp.LoadBalancer.Powershell

To retrieve the build number of the PowerShell module, run the following command:

(Get-Module Kemp.LoadBalancer.Powershell).ReleaseNotes

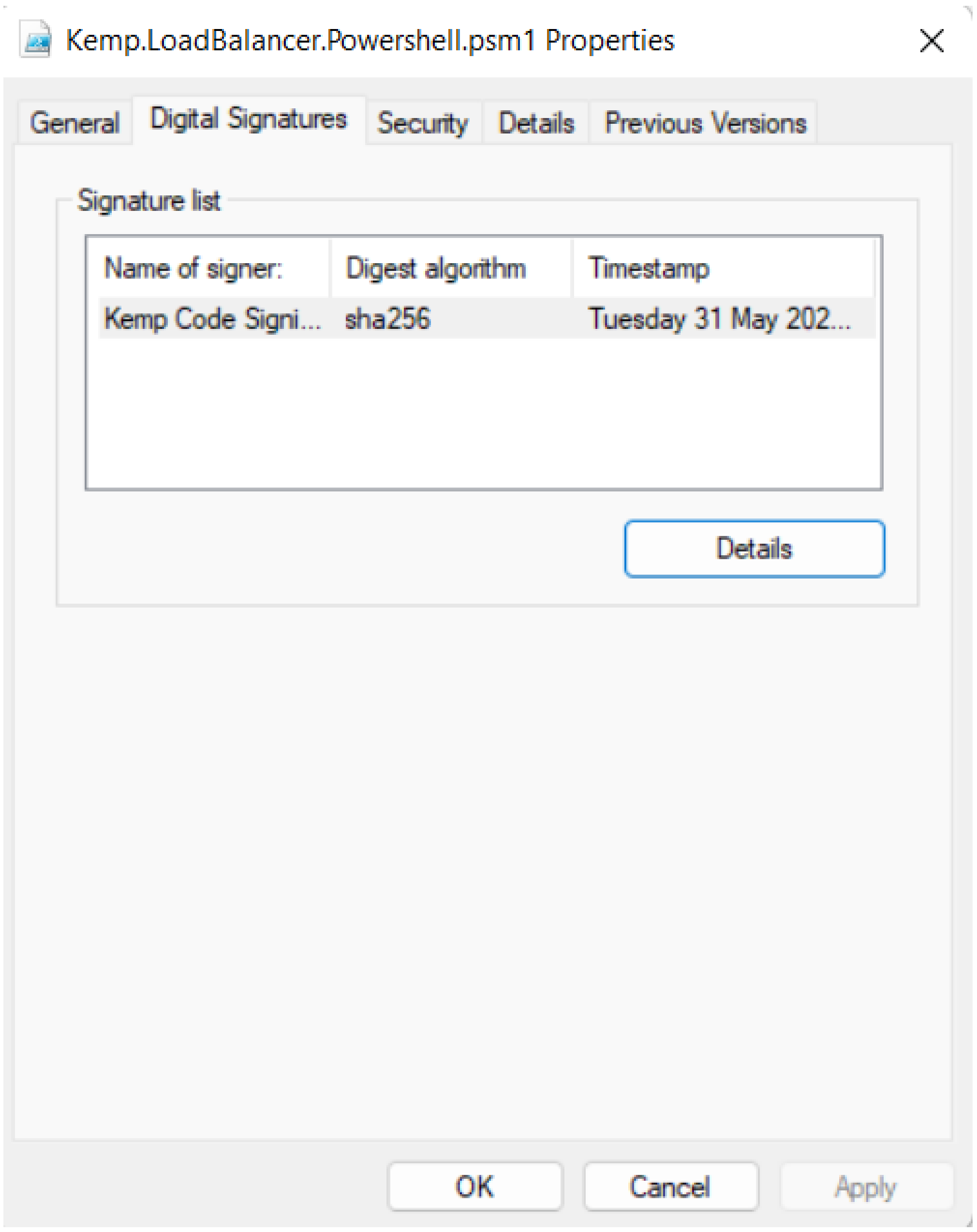
Importing the Certificate

Importing the Certificate

As of LoadMaster version 7.2.36 the PowerShell module is signed.

The signature is embedded in the **.psm1** file. To validate the signature, follow these steps:

1. Right-click the **Kemp.LoadBalancer.Powershell.psm1** file and click **Properties**.
2. Select the **Digital Signatures** tab.



Name of signer:	Digest algorithm	Timestamp
Kemp Code Signi...	sha256	Tuesday 31 May 202...

3. Select the signature and click **Details**. This provides the signer information.
4. Click **View Certificate** to check the signing certificate chain.

Depending on your execution policy, you may need to import the Progress Kemp PowerShell certificate to allow execution. Download the Progress Kemp certificate bundle using the link here.

This downloads a zip archive with three certificates:

- root.kemp.crt – Root Progress Kemp CA certificate
- ca.kemp.crt – Intermediate Progress Kemp CA certificate

- codesign.kemp.crt – Progress Kemp code signing certificate

Unzip the archive into a desired location with **unzip kemp-certs.zip**.

Perform the following steps:

1. Double-click the **root.kemp.crt** file and install it in **Trusted Root Certification Authorities**.
2. Double-click the **ca.kemp.crt** file and install it in **Trusted Root Certification Authorities**.
3. Confirm the installation by clicking **OK** when requested.
4. Double click the **codesign.kemp.crt** and install it in **Trusted Publishers**.
5. Set the execution policy to **AllSigned**. For example:

```
Set-ExecutionPolicy –ExecutionPolicy AllSigned –Scope CurrentUser
```

Alternatively, you could adjust your execution policy to one that is less restrictive.

Using the Get-Help Command

Using the Get-Help Command

To retrieve help text for a particular command, run the **Get-Help** command, followed by a command name, for example:

Get-Help Set-VirtualService

Different parameters can be specified to retrieve more detailed help text:

- **-Detailed**: Provides further detailed help, including a list of parameters and their descriptions.
- **-Examples**: Provides an example command and example output.
- **-Full**: Provides all of the help text for the specified command.

For example:

Get-Help Set-VirtualService –Full

Authenticating to the LoadMaster

Authenticating to the LoadMaster

To run PowerShell API commands, you need to establish authentication with the LoadMaster. There are two ways to establish authentication:

- Using credentials; a LoadMaster username (**Credential**) and password
- Using certificate-based authentication

Whichever option you use, you can either specify the parameters when running individual commands, or using the **Initialize-LmConnectionParameters** command.

You can also globally set the LoadMaster IP address that you are directing the commands to by using the **Initialize-LmConnectionParameters** command, for example:

Initialize-LmConnectionParameters -Address 10.11.0.60 -LBPort 443 -Credential bal -Verbose

You can either enter a username for the load balancer or provide a PSCredential object. When you enter a username, a prompt appears asking for the password. You can override the globally-provided LoadBalancer address and User Name on each individual command by using the **LoadBalancer** or **Credential** parameter within the command.

Similarly, you can specify the details to use certificate-based authentication using the **Initialize-LmConnectionParameters** command. For further information on the various steps involved to configure certificate-based authentication, refer to the below section.

Related Links

- Configure Certificate-Based Authentication

Configure Certificate-Based Authentication

Configure Certificate-Based Authentication

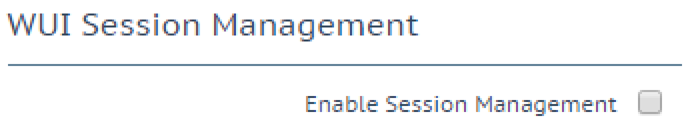
Follow the steps in the sections below to configure certificate-based authentication.

Note: Certificate-based authentication will be deprecated at some point in the future.

Enable Session Management

You must enable **Session Management** before you can enable client certificate authentication. To enable Session Management, follow the steps below:

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



WUI Session Management

Enable Session Management ☐

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

   Note: Once this check box is selected, the user is required to log in to continue using the LoadMaster.

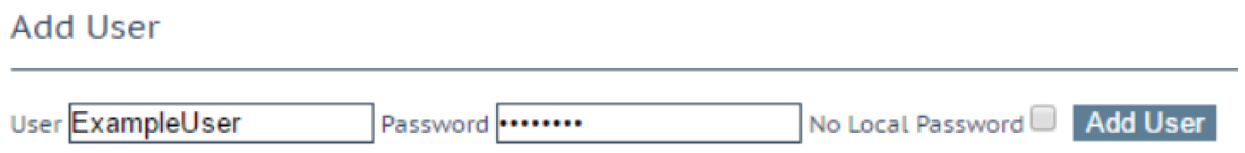
3. Configure any other settings as needed.

Note: The default state for the Require Basic Authentication check box is disabled. When this option is disabled, both certificate and credential-based remote access are available. If the check box is enabled, only credentials are valid for remote access.

Create a User (If Needed)

It is not possible to use certificate-based authentication with the **bal** user. However, you can create a non-**bal** user and grant it **All Permissions**, or whatever permissions you want. If you do not already have another user created, you can add one by following these steps:

1. In the main menu of the LoadMaster WUI, expand **System Configuration > System Administration** and click **User Management**.



Add User

User ExampleUser
Password ••••••••
No Local Password ☐

2. At the bottom of the screen, enter a username in the **User** text box.
3. At this point, you can either set a **Password** for the new user, or select the **No Local Password** check box.

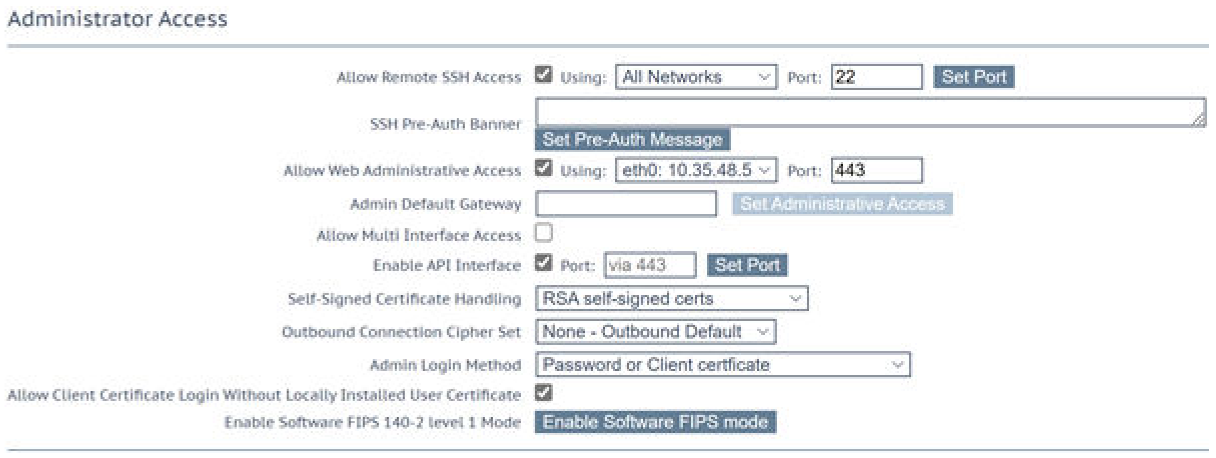
Note: For further information on the **No Local Password** option, and on certificate authentication in general, refer to the User Management, Feature Description.

4. Click Add User.

Enable Client Certificate Authentication on the LoadMaster

A number of different login methods are available to enable. For steps on how to set the **Admin Login Method**, along with a description of each of the available methods, refer to the steps below:

1. In the main menu of the LoadMaster WUI, expand **Certificates & Security** and click **Remote Access**.



Administrator Access

Allow Remote SSH Access: ✓ Using: All Networks Port: 22
SSH Pre-Auth Banner:
Allow Web Administrative Access: ✓ Using: eth0: 10.35.48.5 Port: 443
Admin Default Gateway:
Allow Multi Interface Access: ☐
Enable API Interface: ✓ Port: via 443
Self-Signed Certificate Handling: RSA self-signed certs
Outbound Connection Cipher Set: None - Outbound Default
Admin Login Method: Password or Client certficate
Allow Client Certificate Login Without Locally Installed User Certificate: ✓
Enable Software FIPS 140-2 level 1 Mode

2. Select the relevant **Admin Login Method**.

Note: Using local certificates will only work with API authentication. Because of this, it might be best to select the **Password or Client certificate** option. This will allow API access using the client certificate and WUI access using the username/password.

The following login methods are available:

- **Password Only Access (default):** This option provides access using the username and password only – there is no access using client certificates.
- **Password or Client certificate:** The user can log in either using the username/password or using a valid client certificate. If a valid client certificate is in place, the username and password is not required.The LoadMaster asks the client for a certificate. If a client certificate is available, the LoadMaster checks for a match. The LoadMaster checks if the certificate is a match with one of the local certificates, or checks if the Subject Alternative Name (SAN) or Common Name (CN) of the certificate is a match. The SAN is used in preference to the CN when performing a match. If there is a match, the user is granted access to the LoadMaster. This works both using the API and user interface.An invalid certificate will not allow access.If no client certificate is supplied, the LoadMaster will expect that a username and password is supplied (for the API) or will ask the user to enter a password using the standard WUI login page.
- **Client certificate required:** Access is only allowed using the use of a client certificate. It is not possible to log in using the username and password. SSH access is not affected by this (only the **bal** user can log in using SSH).
- **Client certificate required (Verify via OCSP):** This is the same as the **Client certificate required** option, but the client certificate is verified using an OCSP service. You must configure the OCSP Server Settings for this to work. For further information on the OCSP Server Settings, refer to the DoD Common Access Card Authentication, Feature Description.

Some points to note regarding the client certificate methods are below:

- The **bal** user does not have a client certificate. Therefore, it is not possible to log into the LoadMaster as **bal** using the **Client certificate required** methods. However, a non-**bal** user can be created and granted **All Permissions**. This will allow the same functionality as the **bal** user.
- There is no log out option for users that are logged in to the WUI using client certificates, as it is not possible to log out (if the user did log out the next access would automatically log them back in again). The session terminates when the page is closed, or when the browser is restarted.

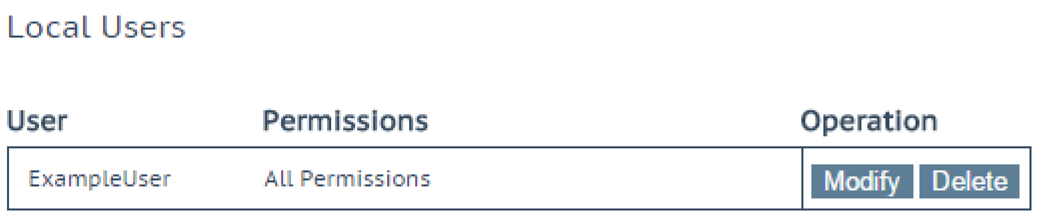
Generate and Download the Client Certificate

To generate a local certificate, follow the steps below:

Note: Users with **User Administration** permissions are able to manage local certificates for themselves and other users.

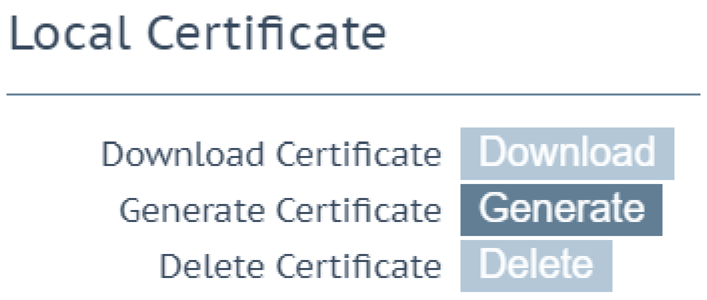
---

1. In the main menu of the LoadMaster WUI, navigate to **System Configuration > System Administration > User Management**.

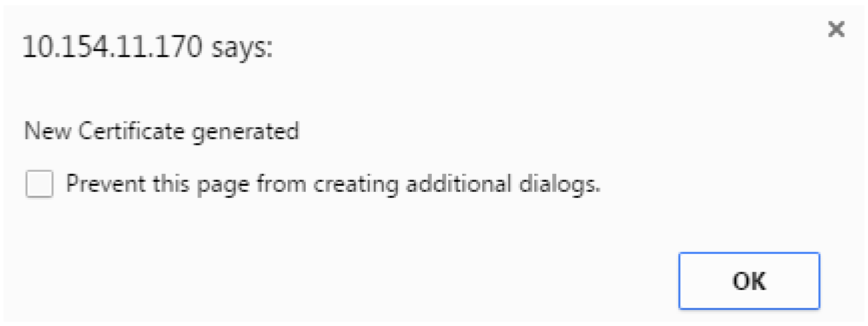

Local Users

User	Permissions	Operation
ExampleUser	All Permissions	Modify Delete

2. Click **Modify** on the relevant user.



3. Click **Generate**.

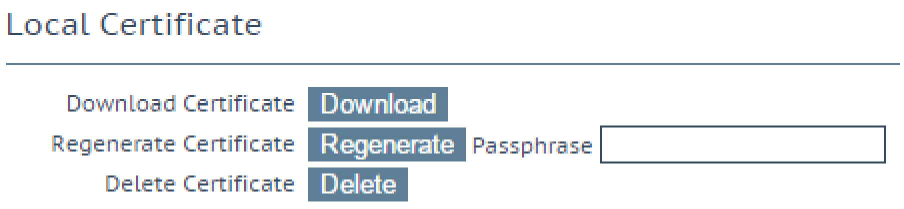

10.154.11.170 says:

New Certificate generated

Prevent this page from creating additional dialogs.

OK

4. Click **OK** to the pop-up message that appears.



5. Click **Download**.

You can also regenerate from this screen.

Create the PFX File

When you generate a certificate, as described in the section above, the LoadMaster creates a .pem file. For certificate-based authentication to work with PowerShell, a .pfx file is required.

You can convert the .pem file to .pfx any way you like. For the purposes of this document, we have provided steps on how to do it using OpenSSL. If you are using Windows, you may need to install OpenSSL to run these steps.

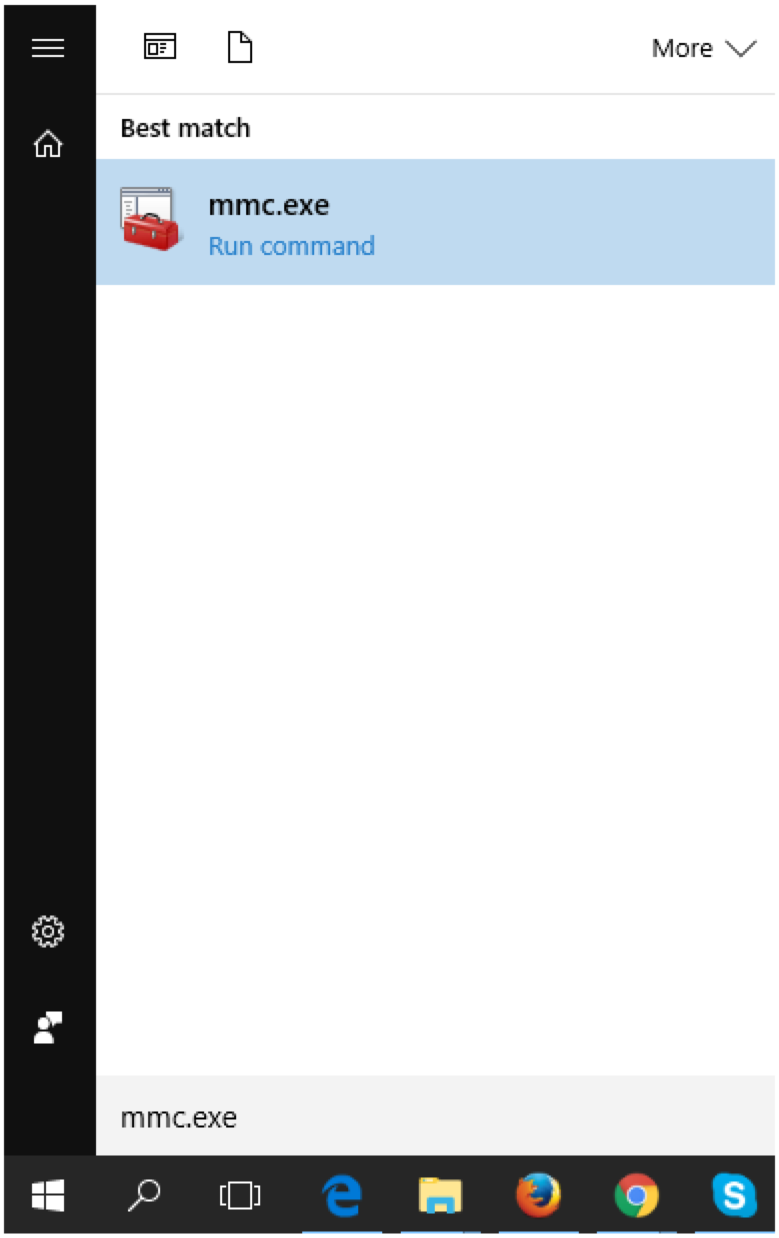
To create a .pfx file using, follow the steps below:

1. Open the .pem certificate.
2. Copy from the start of the **-----BEGIN CERTIFICATE-----** section to the end of the **-----END CERTIFICATE-----** section.

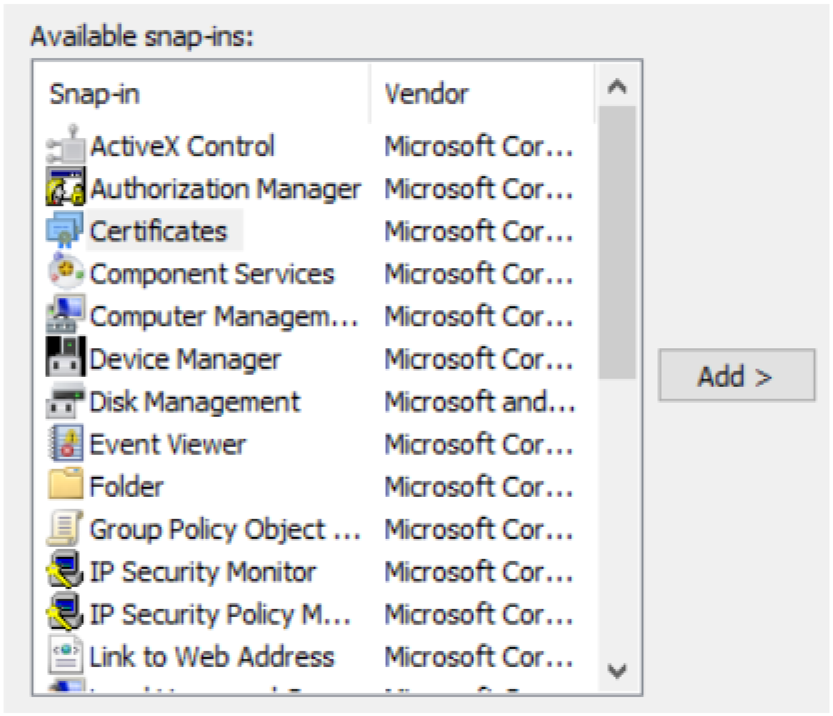
3. Paste this text into a new file.
4. Save the file as **<CerFileName>.cer**.
5. Go to the .pem certificate file again.
6. Copy from the start of the -----BEGIN RSA PRIVATE KEY----- section to the end of the -----END RSA PRIVATE KEY----- section.
7. Paste this text into a new file.
8. Save the file as **<KeyFileName>.key**.
9. Use the **openssl** command to create the .pfx file:
   ```
   openssl pkcs12 -export -out <NewFileName>.pfx -inkey <KeyFilename>.key -in
   <CerFileName>.cer
   ```
10. Import the certificate to the web browser.

Import the PFX File into the Microsoft Management Console (if using Windows)

If you are using Windows, follow the steps below to import the .pfx file into the Microsoft Management Console:



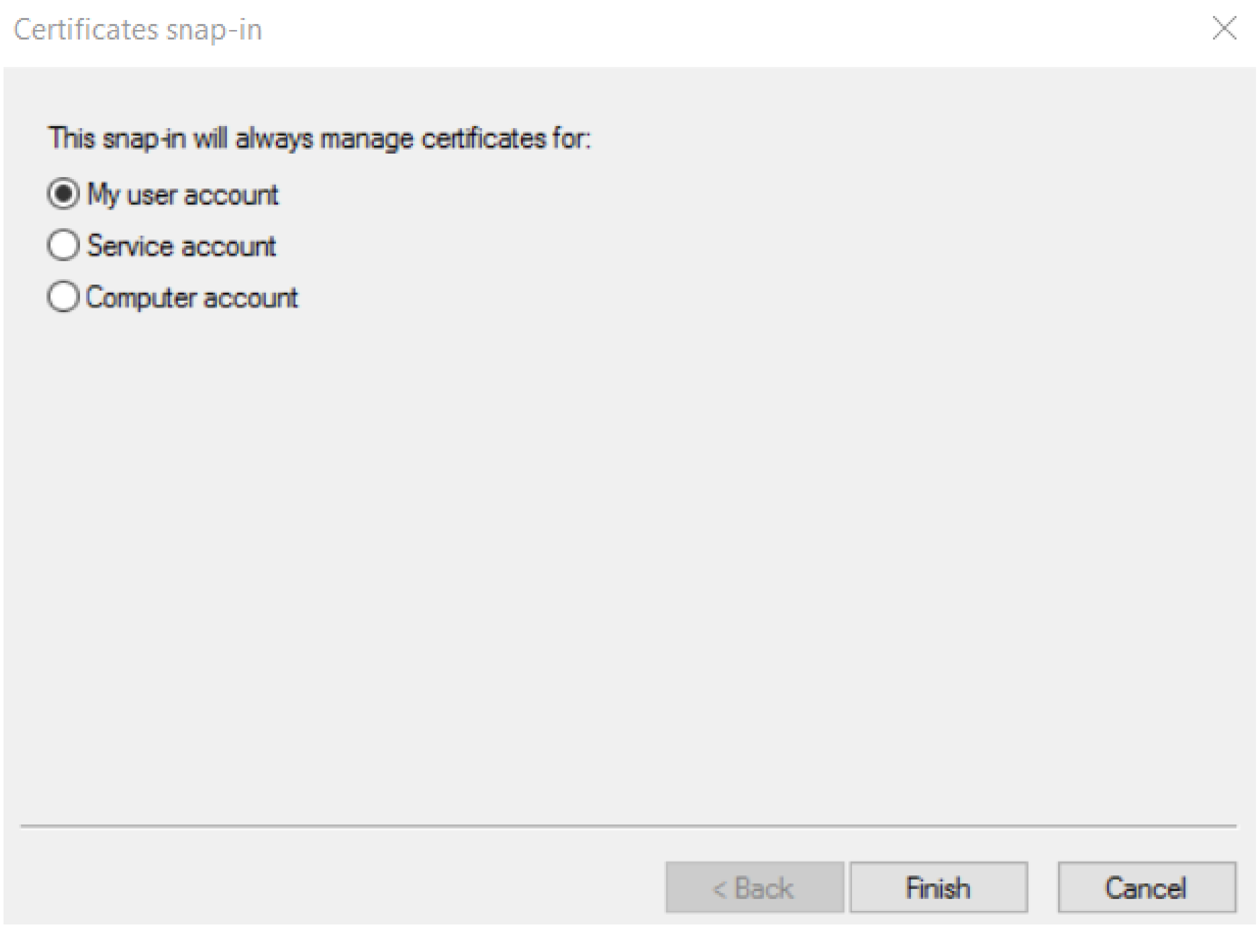
1. Click **Start** and type **mmc.exe**.
2. Click **mmc.exe** to open the Microsoft Management Console.
3. Click **File** and select **Add/Remove Snap-in**.



Available snap-ins:

Snap-in	Vendor
ActiveX Control	Microsoft Cor…
Authorization Manager	Microsoft Cor…
Certificates	Microsoft Cor…
Component Services	Microsoft Cor…
Computer Managem…	Microsoft Cor…
Device Manager	Microsoft Cor…
Disk Management	Microsoft and…
Event Viewer	Microsoft Cor…
Folder	Microsoft Cor…
Group Policy Object …	Microsoft Cor…
IP Security Monitor	Microsoft Cor…
IP Security Policy M…	Microsoft Cor…
Link to Web Address	Microsoft Cor…

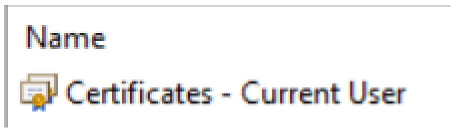
4. Select **Certificates** on the left and click **Add**.


Certificates snap-in

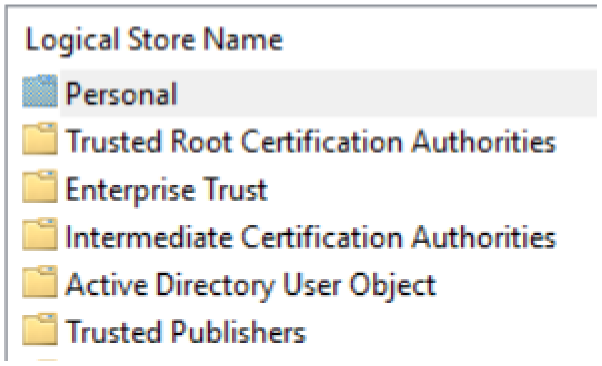
This snap-in will always manage certificates for:

(● My user account) [✓]
Service account
Computer account

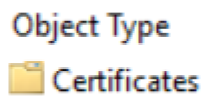
5. Ensure that **My user account** is selected and click **Finish**.
6. Click **OK**.


Name
Certificates - Current User

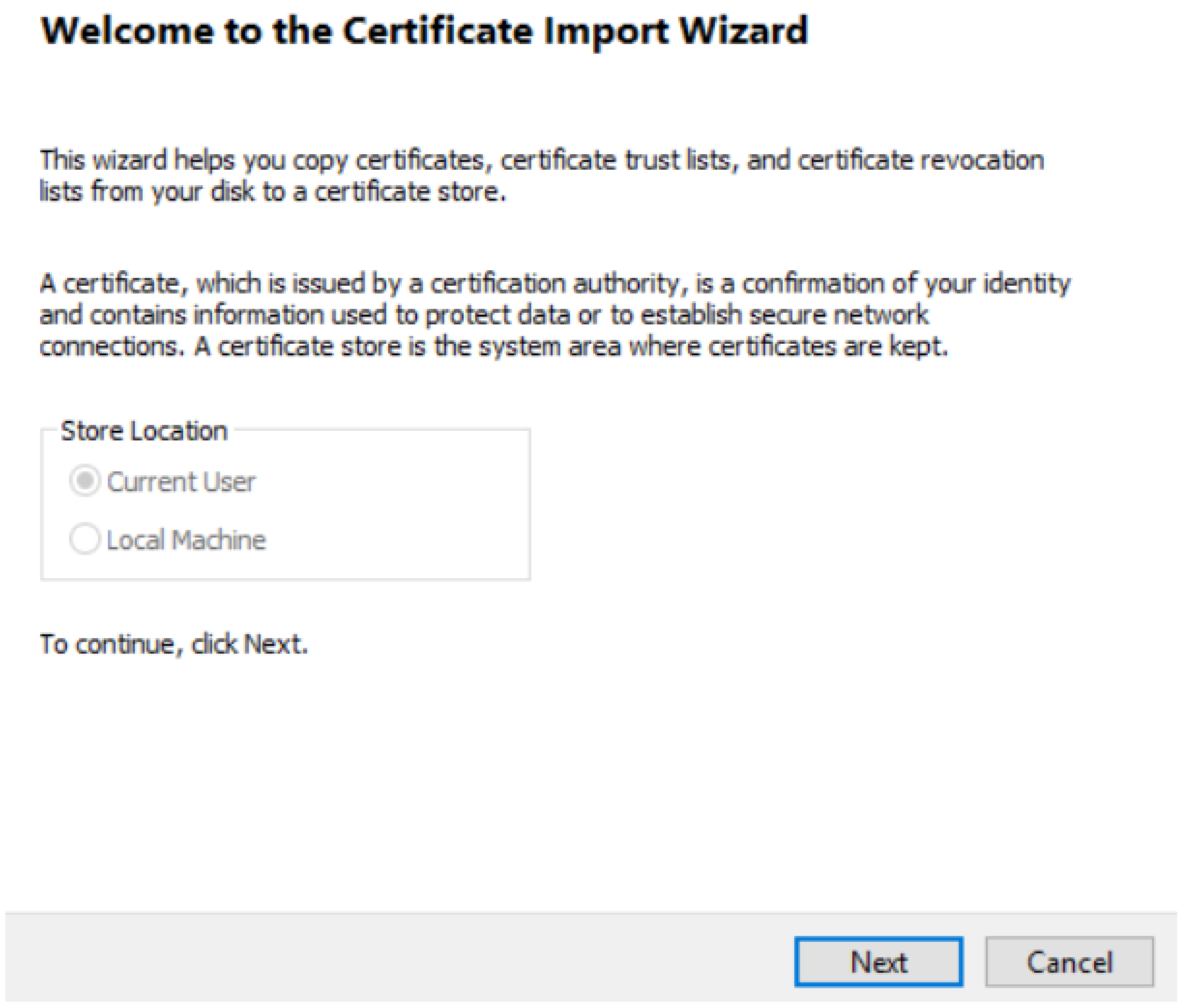
7. Double-click **Certificates – Current User**.


Logical Store Name
Personal
Trusted Root Certification Authorities
Enterprise Trust
Intermediate Certification Authorities
Active Directory User Object
Trusted Publishers

8. Double-click **Personal**.



9. Double-click **Certificates**.
10. Right-click on any white space in the middle panel, select **All Tasks** and click **Import**.



Welcome to the Certificate Import Wizard

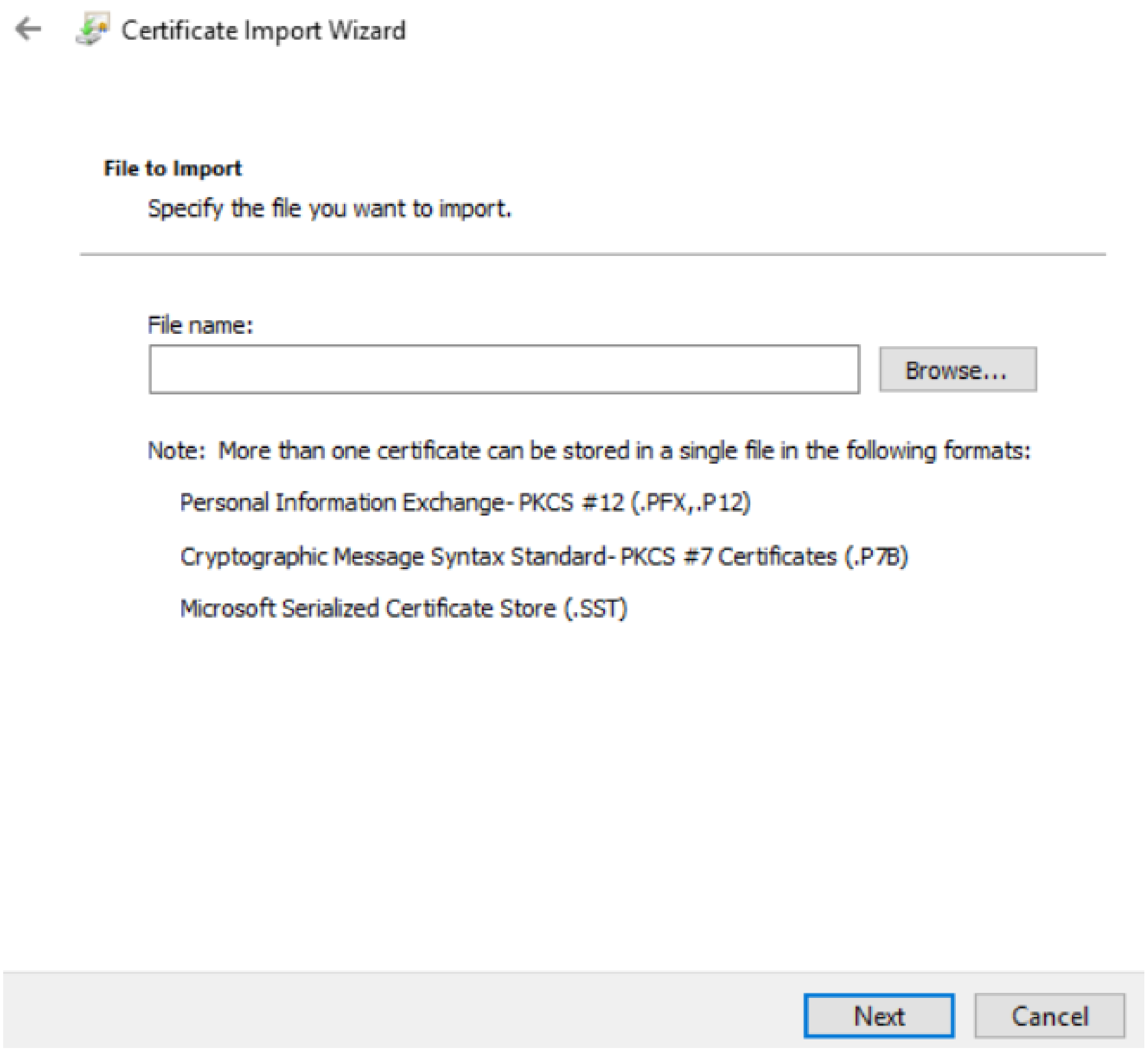
This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.

A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.

Store Location
● Current User
○ Local Machine

To continue, click Next.

11. Click **Next**.


Certificate Import Wizard

File to Import

Specify the file you want to import.

File name:

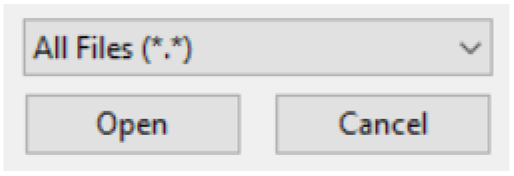
Note: More than one certificate can be stored in a single file in the following formats:

Personal Information Exchange- PKCS #12 (.PFX,.P12)

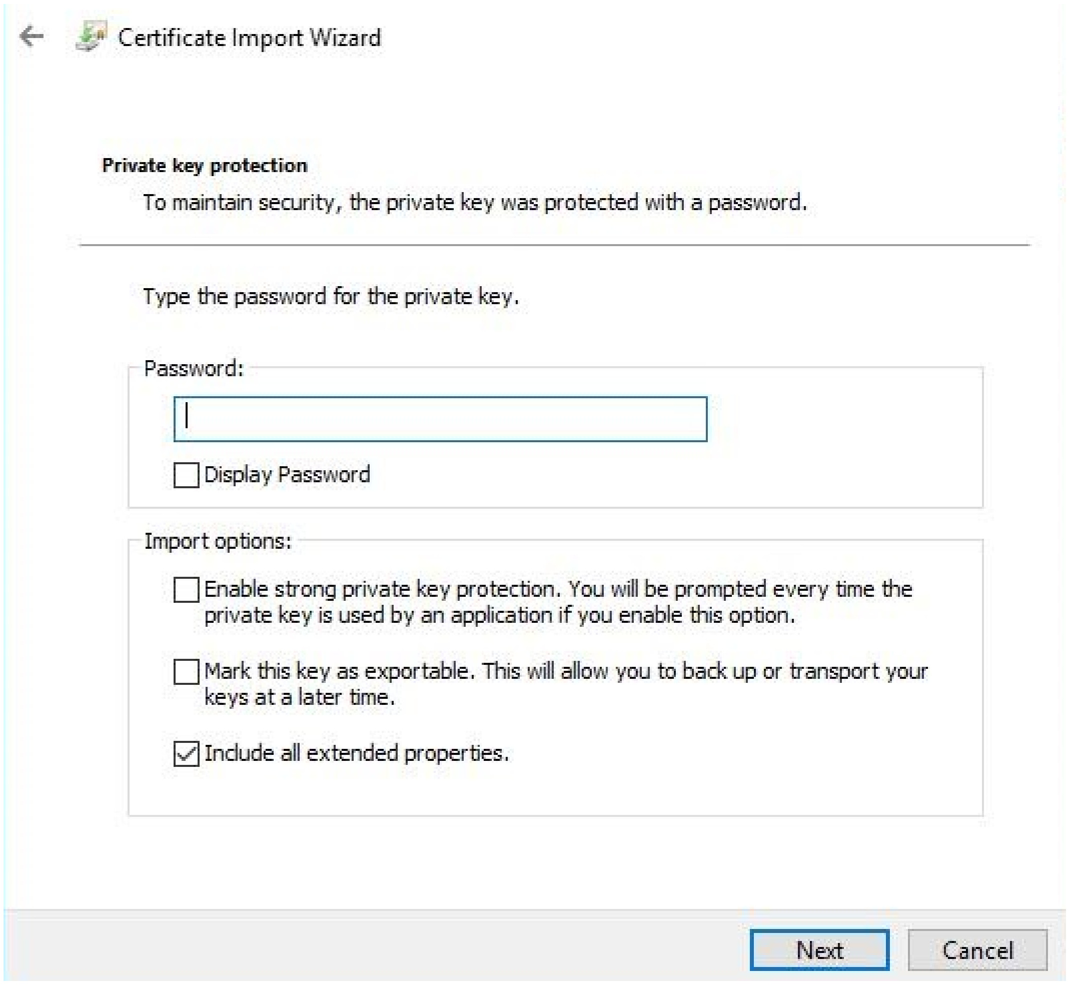
Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B)

Microsoft Serialized Certificate Store (.SST)

12. Click **Browse**.
13. Browse to the location of the .pfx file to be imported.



14. Select **All Files** in the drop-down menu in the bottom-right.
15. Double-click the .pfx file.



Certificate Import Wizard

Private key protection

To maintain security, the private key was protected with a password.

Type the password for the private key.

Password:

☐ Display Password

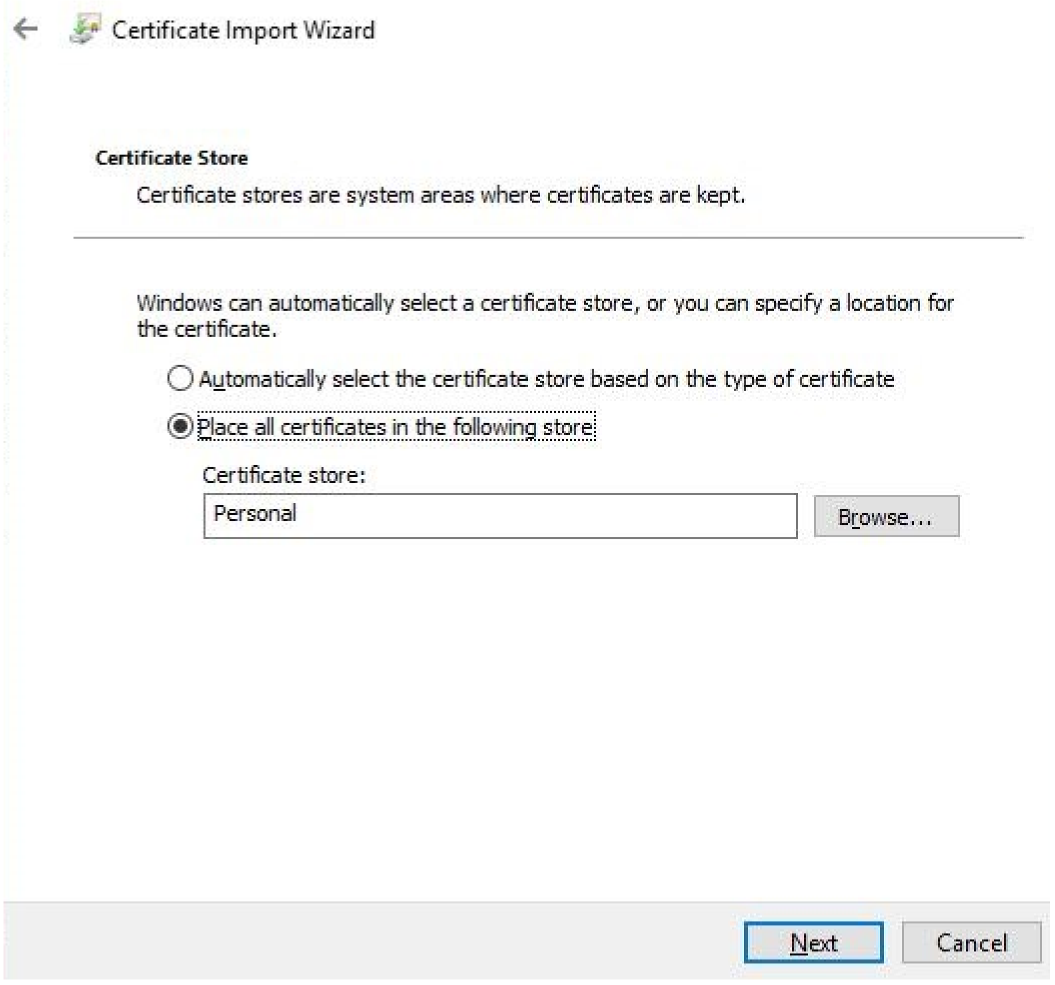
Import options:

☐ Enable strong private key protection. You will be prompted every time the private key is used by an application if you enable this option.

☐ Mark this key as exportable. This will allow you to back up or transport your keys at a later time.

☑ Include all extended properties.

16. Enter the **Password** (if necessary).
17. Click **Next**.


Certificate Import Wizard

Certificate Store

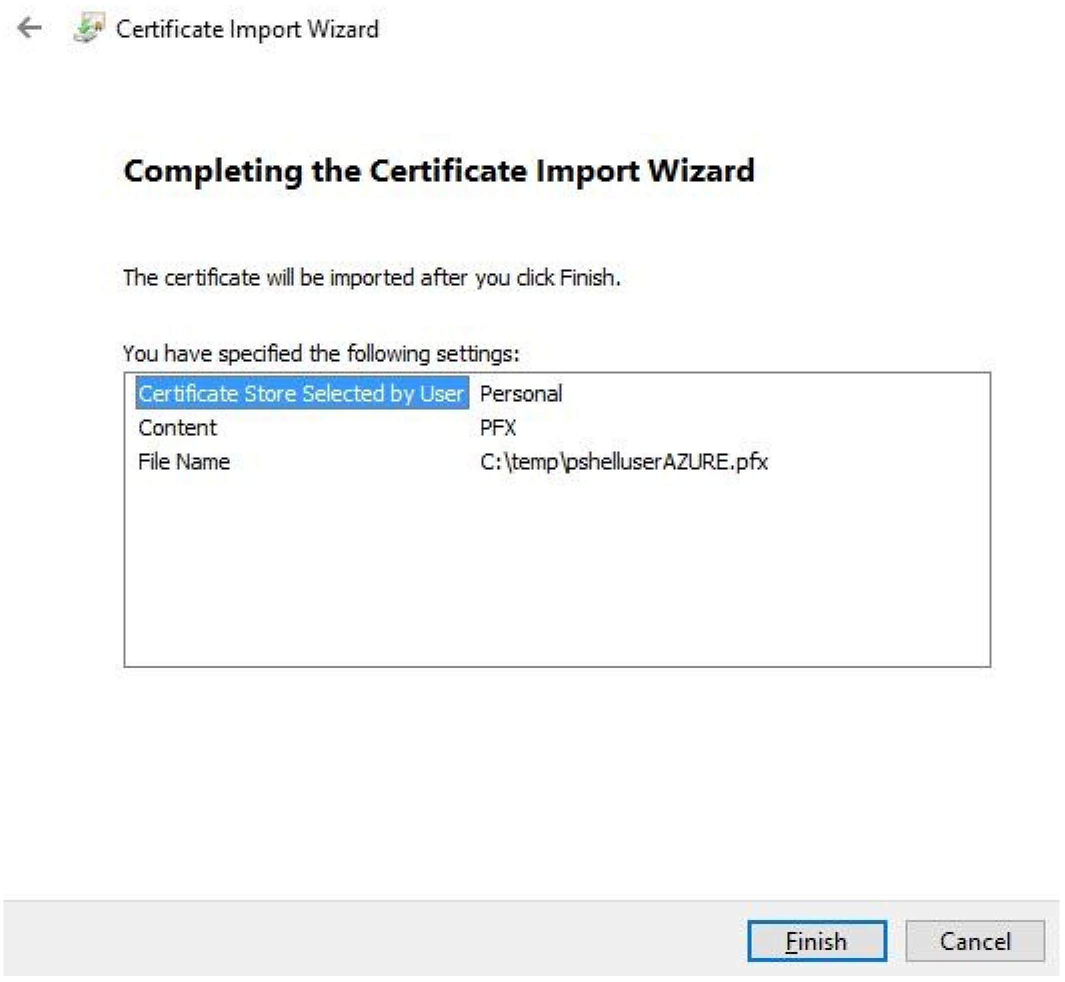
Certificate stores are system areas where certificates are kept.

Windows can automatically select a certificate store, or you can specify a location for the certificate.

- ○ Automatically select the certificate store based on the type of certificate
- ● Place all certificates in the following store

Certificate store: Personal

18. Click **Browse** and select the **Personal** certificate store.
19. Click **Next**.



Completing the Certificate Import Wizard

The certificate will be imported after you click Finish.

You have specified the following settings:

Certificate Store Selected by User	Personal
Content	PFX
File Name	C:\temp\pshelluserAZURE.pfx

20. Review the settings and click **Finish**.

Specify the Certificate Details in the API

After configuring all of the options as outlined in the above sections, you need to specify the details of the certificate to run the API commands successfully. You can either do this using the **Initialize-LmConnectionParameters** command or in individual commands when they are run. The two parameters related to certificate-based authentication are:

- **SubjectCN:** This parameter is mandatory if you want to use certificate-based authentication. This is the certificate Common Name (CN). This is the username of the LoadMaster user that the certificate was generated for. If you do not specify the **CertificateStoreLocation**, the certificate is searched for in the **<CurrentUser>/My** location.
- **CertificateStoreLocation:** This parameter is optional. If you do not use it, the cmdlet searches for the certificate in the **<CurrentUser>/My** location (default). If the **CertificateStoreLocation** parameter is set, the API searches for the certificate in the specified location, for example **Cert:\<CurrentUser>\TrustedPeople**

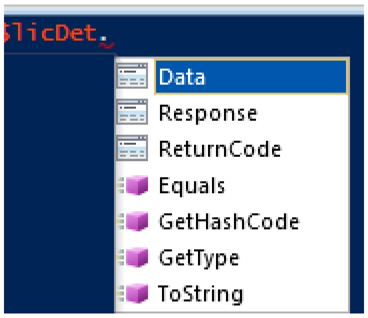
Object Structure

Object Structure

Before version 7.2.39.0.334 of the Progress Kemp PowerShell wrapper, the output format did not have a defined standard - each commandlet had variable structure and output.

In the 7.2.39.0.344 version of the wrapper, improvements were made to the output structure. All commands (except **Test-LmServerConnection**) return a PowerShell object with the following structure:

Note: The **Test-LmServerConnection** command returns **True** if the LoadMaster is reachable by the API, **False** if not (or if the API interface is disabled on the LoadMaster).



```
$licDet.
```

- ReturnCode (integer)
- Response (string)
- Data (PowerShell object, if any)

Note: As a result of the new object structure, the current Progress KempPowerShell wrapper is not compatible with scripts written based on an older version of the Progress Kemp PowerShell wrapper (before version 7.2.39.0.344).

The possible values for the ReturnCode field are:

- 200: The command completed successfully
- 4xx/500: The command ended with an error. The error code depends on the error type.

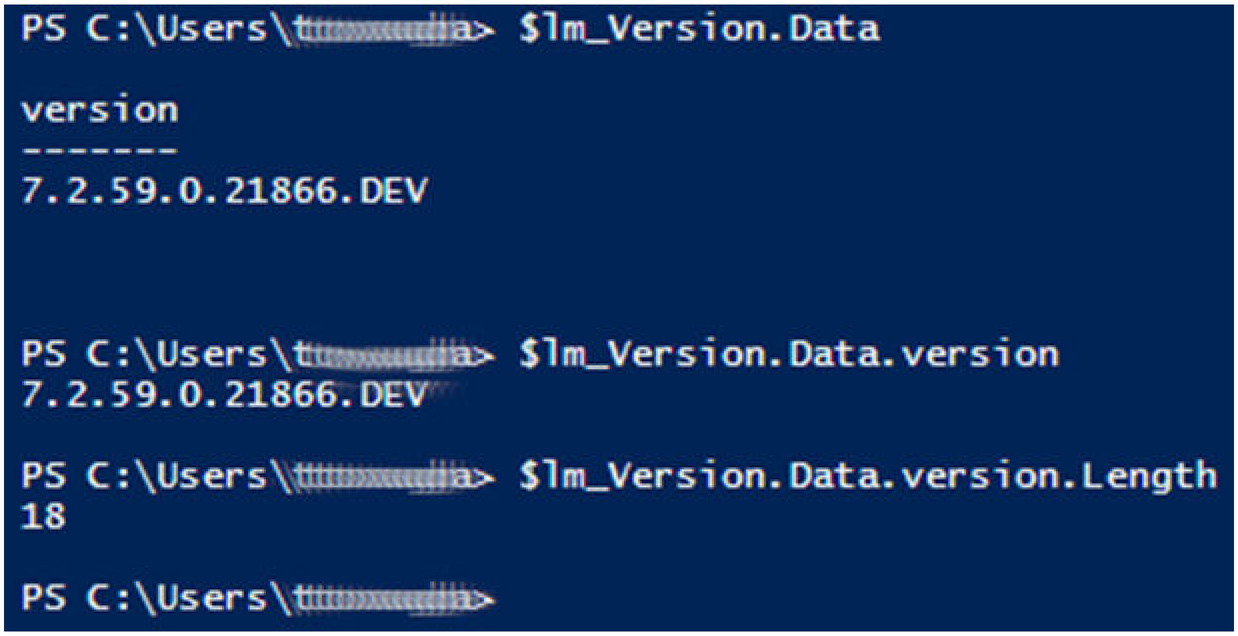
The possible values for the Response field are:

- Command successfully executed
- Description of the error when the command fails, for example **Unknown parameter value lmversion**.

The Data field contains the response, if any. The structure of this field depends on the command. The elements of this field can be accessed by assigning the command to a variable and using the “dot” notation (for example, **$lm_Version.Data.version** in the example below). The next argument is listed by PowerShell after you enter the dot, for example, **Data**, **Response**, or **ReturnCode**, depending on the data in the variable. The dot can be used multiple times to focus on certain information, for example, **$lm_Version.Data.version.Length**. If the command fails, this field is empty.

Example 1: Retrieve the installed LoadMaster firmware version:

```
$lma = Get-LmParameter -Param version -LoadBalancer 172.21.59.189 -SubjectCN
user1
$lma | Format-List
ReturnCode : 200
Response   : Command successfully executed.
Data       : @{version=7.2.59.0.21866.DEV}
```



```
PS C:\Users\[redacted]> $lm_Version.Data

version
-------
7.2.59.0.21866.DEV



PS C:\Users\[redacted]> $lm_Version.Data.version
7.2.59.0.21866.DEV

PS C:\Users\[redacted]> $lm_Version.Data.version.Length
18

PS C:\Users\[redacted]>
```

```
$lm_Version.Data.version
7.2.59.0.21866.DEV
```

Example 2: Retrieve the available licenses for a specific Order ID:

```
$licDet = Get-LicenseType -KempId jbloggs@kemptechnologies.com -Password
ExamplePassword -LoadBalancer 172.21.59.85 -Credential bal -OrderId
Example20170517
$licDet | Format-List
ReturnCode : 200
Response   : Command successfully executed.
Data       : @{License=System.Object[]}

$licDet.Data.License
id              : 0632b88b577c71591798268bcd4e01132f082309
name            : VLM-5000 ESP GEO with Basic 2 Years
```

```
available     : 1
description   : VLM-5000 ESP GEO with Basic 2 Years
tethered      : False
LicenseStatus : Permanent License
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?KempID=
jbloggs@kemptechnologies.com
id            : fc488d991cffb7a5958625427d6bfb0b3edc008e
name          : VLM-5000 WAF GEO with Basic 3 Years
available     : 1
description   : VLM-5000 WAF GEO with Basic 3 Years
tethered      : False
LicenseStatus : Permanent License
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?KempID=
jbloggs@kemptechnologies.com
name          : VLM-5000 with Enterprise Plus subscription
available     : 1
tethered      : 0
id            : 3eb92178611573946b422cf8d0df69d04c07fede
LicenseStatus : Temp License
description   : VLM-5000 with Enterprise Plus subscription
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?KempID=
jbloggs@kemptechnologies.com
```

In the above example, the **$licDet.Data.License** is an array and each single element of the array can be accessed using the "[]" notation. For example, to access the field name of the second element of the previous array we have to use the following notation: **$licDet.Data.License[1].name**. The index of the array starts from 0. The NULL object is returned if we try to access a non-existing element.

The benefits of the structure of the command answers are:

- It is easy to check for success/error (ReturnCode)
- There is a short description (Response)
- The Data field returns a PowerShell object when successful and null when there is an error

Related Links

- Errors

Errors

Errors

If the error is a functional one (for example using the wrong credentials, parameter value or LoadMaster IP address) the cmdlet returns a PowerShell object, as described, with a ReturnCode containing the code of the error and with Response containing the description of the error that has occurred.

For example: Try to get the firmware version installed on the LoadMaster using an invalid certificate (installed in the Windows machine but not belonging to any user inside the LoadMaster):

```
$lma = Get-LmParameter -Param version -LoadBalancer 172.21.59.85 -SubjectCN
user1
$lma
ReturnCode Response                                                 Data
---------- --------                                                  ----
       401 The remote server returned an error: (401) Unauthorized.
```

If the error is due to a wrong/missing mandatory input, the cmdlet throws an exception. These types of errors do not return a ReturnCode because an exception has been thrown. The execution of the command is halted.

For example: Get the firmware version installed on the LoadMaster using a certificate not installed in the Windows machine:

```
$lma = Get-LmParameter -Param version -LoadBalancer 172.21.59.189 `
                                                       -SubjectCN
invalidcertificate
ERROR: Can't find a certificate with "invalidcertificate" as CN in the default
Cert:\CurrentUser\My store.
At
C:\Users\ExampleUser\Work\Kemp.LoadBalancer.Powershell\Kemp.LoadBalancer.Power
shell.psm1:273 char:5
+                  Throw $errStr
+                  ~~~~~~~~~~~~~
    + CategoryInfo          : OperationStopped: (ERROR: Can't fi...tUser\My
store.:String) [], RuntimeException
    + FullyQualifiedErrorId : ERROR: Can't find a certificate with
"invalidcertificate" as CN in the default Cert:\CurrentUser\My store.
```

For example: Get the firmware version installed on the LoadMaster without credentials/certificate:

```
$lma = Get-LmParameter -Param version -LoadBalancer 172.21.59.189
ERROR: login method param is empty. Credentials or SubjectCN must be specified.
At
C:\Users\ExampleUser\Work\Kemp.LoadBalancer.Powershell\Kemp.LoadBalancer.Power
shell.psm1:244 char:3
+          Throw $errStr
+          ~~~~~~~~~~~~~
    + CategoryInfo          : OperationStopped: (ERROR: login me...t be
specified.:String) [], RuntimeException
    + FullyQualifiedErrorId : ERROR: login method param is empty. Credentials
or SubjectCN must be specified.
```

Note: The connection drops if more than 30 calls are performed in less than 3 seconds over all API interfaces.

Initially Configure a LoadMaster Using PowerShell API Commands

Initially Configure a LoadMaster Using PowerShell API Commands

Several steps are involved in initially deploying a LoadMaster, such as accepting the End User License Agreement (EULA) and licensing the unit. Before the LoadMaster can be fully deployed, the EULAs must be displayed and accepted. These initial configuration steps can either be performed using the WUI or the API. The PowerShell API commands relating to initial configuration are in the sections below.

Note: These commands should be run in sequential order.

Related Links

- Licensing Cloud LoadMasters
- Initial Configuration Commands List
- Accept the EULAs
- Retreive the Available Licenses (optional)
- License the LoadMaster
- Set the Initial Password for the LoadMaster
- Retreive the License Details (optional)
- Update a LoadMaster License

Licensing Cloud LoadMasters

Licensing Cloud LoadMasters

The two main licensing models for cloud LoadMasters are pay-per-use and Bring Your Own License (BYOL).

The Bring Your Own License (BYOL) model offers an alternative to the pay-per-use model. BYOL licenses are perpetual licenses which can include feature subscriptions. To use BYOL licensing, contact a Progress Kemp representative to purchase a license. Then apply the license to the LoadMaster.

The pay-per-use licensing model enables you to pay for individual LoadMasters you need, for as long as you need to use them. You only pay for the usage consumed, and once you stop using them there are no additional costs or fees. Like BYOL subscription licenses, pay-per-use LoadMaster instances offer many different options for bandwidth throughput and add-on services.

Pay-per-use cloud LoadMasters are “pre-licensed”. Therefore, the following commands are not valid for pay-per-use LoadMasters: Read-LicenseEULA, Confirm-LicenseEULA, Confirm-LicenseEULA2 and Request-LicenseOnline. These commands are valid for BYOL cloud LoadMasters.

When deploying a pay-per-use LoadMaster, you can use the Set-LicenseInitialPassword command to configure the administrator password. The LoadMaster is ready to use after that point.

Initial Configuration Commands List

Initial Configuration Commands List

The initial configuration commands are listed below:

- EULA:
  - Read-LicenseEULA (mandatory)
  - Confirm-LicenseEULA (mandatory)
  - Confirm-LicenseEULA2 (mandatory)

Note: These EULA commands must be run in the above order.

- License type:
  - Get-LicenseType (optional)
  - Get-AslLicenseType (optional)

Note: These commands are optional when completing the licensing process. The **Get-LicenseType** command contacts the Progress Kemp Licensing Server. The **Get-AslLicenseType** must be used with a Kemp 360 Central local licensing server.

- Licensing:
  - Request-LicenseOnline
  - Request-LicenseOffline
  - Request-LicenseOnPremise

Note: To install the license on the LoadMaster, one of the above commands must be used: - The online command is used when the LoadMaster can reach the Progress Kemp licensing server. - Otherwise, the offline command must be used. If using offline licensing, you must have the “BLOB” licensing text that Progress Kemp sent in an email. - The Request-LicenseOnPremise command is used to license a LoadMaster using a Kemp 360 Central acting as a “local licensing server”.

- Set password:
  - Set-LicenseInitialPassword (mandatory)

Note: This command must be used to set the LoadMaster administrator (**bal**) password.

- Get license details:
  - Get-LicenseInfo (optional)
- Upgrade license:
  - Update-LicenseOnline (optional)
  - Update-LicenseOffline (optional)

- Legacy:
  - Get-LicenseAccessKey

Accept the EULAs

Accept the EULAs

To license a LoadMaster, you must acknowledge the EULA licenses. This step involves three commands and they must be run in the following order:

1. Read-LicenseEULA
2. Confirm-LicenseEULA
3. Confirm-LicenseEULA2

For example:

```
$reula = Read-LicenseEULA -LoadBalancer 172.21.59.85 -Credential bal
$reula
ReturnCode Response                     Data
---------- --------                     ----
200        Command successfully executed @{Eula=}

$reula.Data.Eula
MagicString
Eula

-----------
----

d15981f0-ec48-4558-8a3e-796e2036300d ...
```

The **MagicString** parameter must be used as input for the **Confirm-LicenseEULA** command. The **Type** parameter is optional. The default value for the **Type** parameter is **Trial**. The **Free** value must only be used for the Free LoadMaster.

```
$ceula = Confirm-LicenseEULA -Magic $reula.Data.Eula.MagicString `
                                            -LoadBalancer 172.21.59.85
-Credential bal
$ceula
ReturnCode Response                     Data
---------- --------                     ----
200        Command successfully executed @{Eula2=}

$ceula.Data.Eula2
MagicString
Eula2
```

```
-----------
-----

46181257-2f09-4094-
a9cd-6af02f352180 ...
```

The last step is to run the **Confirm-LicenseEULA2** command. The **MagicString** parameter is from the **Confirm-LicenseEULA** output.

Setting the **Accept** parameter to yes when running the **Confirm-LicenseEULA2** command means that your LoadMaster sends data to Progress Kemp anonymously to improve our product usage knowledge. If this parameter is set to **no**, your LoadMaster does not send this data.

Note: Setting the **Accept** parameter to **no**, disables notifications regarding new releases in the LoadMaster WUI.

```
$ceula2 = Confirm-LicenseEULA2 -Magic $ceula.Data.Eula2.MagicString -Accept
yes `
                                       -LoadBalancer 172.21.59.85 -Credential
bal
$ceula2
ReturnCode Response                      Data
---------- --------                      ----
       200 Command successfully executed.
```

Retreive the Available Licenses (optional)

Retreive the Available Licenses (optional)

Before running the command to license the LoadMaster (**Request-LicenseOnline/Request-LicenseOffline**) it is possible to retrieve the available license(s) for a specific Kemp ID from the Progress Kemp Licensing Server using the **Get-LicenseType** command.

The parameters for this command are:

- KempId (mandatory)
- Password (mandatory)
- OrderId (optional)

The output of the command (when successful) has the following structure:

```
ReturnCode : 200
Response   : Command successfully executed.
Data       : @{License=}
```

Note: There is currently an issue with the **Get-LicenseType** command that returns an error (**Item has already been added. Key in dictionary: 'description' Key being added: 'description'**). If you run the command with the **-Verbose** parameter, you will see the content of the successful output including the license type IDs. You can proceed to license the LoadMaster successfully after this.

The field **Data.License** contains details about the the license(s) and it always includes the temporary license option. For example:

```
$licDet.Data.License
id            : 0632b88b577c71591798268bcd4e01132f082309
name          : VLM-5000 ESP GEO with Basic 2 Years
available     : 1
description   : VLM-5000 ESP GEO with Basic 2 Years
tethered      : False
LicenseStatus : Permanent License
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?
KempID=jbloggs@kemptechnologies.com
id            : fc488d991cffb7a5958625427d6bfb0b3edc008e
name          : VLM-5000 WAF GEO with Basic 3 Years
available     : 1
description   : VLM-5000 WAF GEO with Basic 3 Years
tethered      : False
LicenseStatus : Permanent License
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?KempID=
jbloggs@kemptechnologies.com
name          : VLM-5000 with Enterprise Plus subscription
available     : 1
tethered      : 0
id            : 3eb92178611573946b422cf8d0df69d04c07fede
LicenseStatus : Temp License
description   : VLM-5000 with Enterprise Plus subscription
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?KempID=
jbloggs@kemptechnologies.com
```

In this example, the customer purchased two licenses. The third entry is the temporary license.

If the Kemp ID does not exist, the command returns the string “License type information not available”.

Example without Specifying an Order ID

Without an Order ID, the command only returns the temporary license details:

```
$licDet = Get-LicenseType -KempId jbloggs@kemptechnologies.com -Password
supersecretpasswd `
                                            -LoadBalancer 172.21.59.85
-Credential bal
$licDet
ReturnCode Response                     Data
```

```
---------- --------                      ----
       200 Command successfully executed. @{License=System.Object[]}
$licDet.Data.License
name          : VLM-5000 with Enterprise Plus subscription
available     : 1
tethered      : 0
id            : 3eb92178611573946b422cf8d0df69d04c07fede
LicenseStatus : Temp License
description   : VLM-5000 with Enterprise Plus subscription
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?
KempID=jbloggs@kemptechnologies.com
```

Example with a Valid Order ID

If a valid Order ID is provided, the command returns an array of licenses containing the purchased license(s) and the temporary license details:

```
$licDet = Get-LicenseType -KempId jbloggs@kemptechnologies.com -Password
supersecretpasswd `
                     -LoadBalancer 172.21.59.85 -Credential bal -OrderId
Example20170517
$licDet | Format-List
ReturnCode : 200
Response   : Command successfully executed.
Data       : @{License=System.Object[]}
$licDet.Data.License
id            : 0632b88b577c71591798268bcd4e01132f082309
name          : VLM-5000 ESP GEO with Basic 2 Years
available     : 1
description   : VLM-5000 ESP GEO with Basic 2 Years
tethered      : False
LicenseStatus : Permanent License
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?
KempID=jbloggs@kemptechnologies.com
id            : fc488d991cffb7a5958625427d6bfb0b3edc008e
name          : VLM-5000 WAF GEO with Basic 3 Years
available     : 1
description   : VLM-5000 WAF GEO with Basic 3 Years
tethered      : False
LicenseStatus : Permanent License
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?KempID=
jbloggs@kemptechnologies.com
name          : VLM-5000 with Enterprise Plus subscription
available     : 1
```

```
tethered      : 0
id            : 3eb92178611573946b422cf8d0df69d04c07fede
LicenseStatus : Temp License
description   : VLM-5000 with Enterprise Plus subscription
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?KempID=
jbloggs@kemptechnologies.com
```

The answer is an array and you can retrieve each element of the array by using the usual array syntax, for example, to get the first element of the array:

```
$licDet.Data.License[0]
id            : 0632b88b577c71591798268bcd4e01132f082309
name          : VLM-5000 ESP GEO with Basic 2 Years
available     : 1
description   : VLM-5000 ESP GEO with Basic 2 Years
tethered      : False
LicenseStatus : Permanent License
BuyMoreAt     : https://www.kemptechnologies.com/buy-me-now?KempID=
jbloggs@kemptechnologies.com
```

Example with an Invalid (Undefined) Kemp ID

An example with an invalid (or non-existing) Kemp ID is below:

```
$err = Get-LicenseType -KempId invalid@invalid.co.uk -Password bla2017bla `
                                       -LoadBalancer 172.21.59.85 -Credential
bal
ReturnCode : 200
Response   : Command successfully executed.
Data       : @{Licenses=License type information not available}
$err.Data.Licenses
License type information not available
```

Retreive License Types when using Local Licensing Functionality

If you are licensing the LoadMaster using Kemp 360 Central, a similar command (**Get-AslLicenseType**) is used to retrieve the available licenses. The parameters for this command are:

- aslhost (mandatory): IP address of the Kemp 360 Central server instance
- aslport (optional): The Kemp 360 Central listening port. The default value for the **aslport** parameter is **443**.

License the LoadMaster

License the LoadMaster

The commands to license the LoadMaster (initially license the LoadMaster for the first time, not updating an existing LoadMaster license) are **Request-LicenseOnline**, **Request-LicenseOffline**, and **Request-LicenseOnPremise**.

To use the **Request-LicenseOnline** command, the LoadMaster must be able to connect to the Progress Kemp Licensing Server. If this is not possible, the **Request-LicenseOffline** command can be used.

The **Request-LicenseOnPremise** command is used to license a LoadMaster using Kemp 360 Central as a "Local Licensing Server".

The **Request-LicenseOnline** command interface contains the **OrderId** and **LicenseTypeId** parameters. When you purchase a product from Progress Kemp, we provide you with the **OrderId**. The **OrderId** is a unique string that is a pointer to the record that details what was purchased. The **OrderId** is a container – there may be multiple license types for one **OrderId**. The **LicenseTypeId** is the "license ID" that can be retrieved using the **Get-LicenseType** command, as shown in the above examples.

If you specify the **OrderId** but not the **LicenseTypeId**, the first license in the list matching the specified Order ID is used. This is the first license defined (the oldest) for that order ID.

If you specify both the **OrderId** and **LicenseTypeId**, the specific license matching both the Order ID and License Type ID is used.

If you do not specify either an **OrderId** or **LicenseTypeId**, a temporary license is applied.

If you specify a **LicenseTypeId** but not an **OrderId**, an error message is returned. This is an invalid combination – the Order ID must also be specified if using the License Type ID.

The following table summarizes the above text:

OrderId (not mandatory)	**LicenseTypeId (not mandatory)**	**License Given to the LoadMaster**
Used	Not used	First license in the list matching the specified Order ID
Used	Used (value from Get-LicenseType)	The specific license matching the Order ID and License Type ID
Not used	Not used	Temporary license

OrderId (not mandatory)	LicenseTypeId (not mandatory)	License Given to the LoadMaster
Not used	Used (value from Get-LicenseType)	Invalid combination (error is returned). The Order ID must also be specified.

Online Licensing Example

The below example uses online licensing and requests a specific license (both the **OrderId** and **LicenseTypeId** must be used):

```
$lictype = Get-LicenseType -KempId jbloggs@kemptechnologies.com -Password
supersecretpassword `
                 -LoadBalancer 172.21.59.85 -Credential bal -OrderId
marvel20170511-01
$lictype | Format-List
ReturnCode : 200
Response   : Command successfully executed.
Data       : @{License=System.Object[]}

$lic = Request-LicenseOnline -LoadBalancer 172.21.59.85 -Credential bal `
                             -KempId jbloggs@kemptechnologies.com -Password
supersecretpassword `
                           -LicenseTypeId $lictype.Data.License[0].id
-OrderId marvel20170511-01
$lic | Format-List
ReturnCode : 200
Response   : Command successfully executed.
Data       :
```

Offline Licensing Example

An example using the offline licensing method is below:

```
$offline_lic = Request-LicenseOffline -Path .\blob-85.blob -LoadBalancer
172.21.59.85
$offline_lic
ReturnCode Response                       Data
---------- --------                       ----
       200 Command successfully executed.
```

On-Premise Licensing Example

The following example uses on-premise licensing through Kemp 360 Central and requests a specific license (the **LicenseTypeId** is used):

```
get = Get-AslLicenseType -aslhost 10.35.48.10 -LoadBalancer 10.35.48.9

$get.Data.AvailableLicenses

id name         description  available
-- ----         -----------  ---------
2  VLM-100      VLM-100              1
9  VLM-200      VLM-200              1
16 VLM-500      VLM-500              1
23 VLM-1000     VLM-1000             1
30 VLM-3000     VLM-3000             1
37 VLM-5000     VLM-5000             1
44 VLM-Uncapped VLM-Uncapped         1
```

If you wanted to license a LoadMaster with the **VLM-Uncapped** license listed above, you would set the **LicenseTypeId** to **44**, for example:

```
Request-LicenseOnPremise -aslhost 10.35.48.10 -LicenseTypeId 44 -LoadBalancer
10.35.48.9
```

You must specify the **aslhost** (Kemp 360 Central IP address) and **LoadBalancer** (LoadMaster IP address) values.

Set the Initial Password for the LoadMaster

Set the Initial Password for the LoadMaster

After licensing, you must set the administrator password before you can start using the LoadMaster. Use the **Set-LicenseInitialPassword** command to do this, for example:

```
$setp = Set-LicenseInitialPassword -Passwd balsupersecretpassword
-LoadBalancer 172.21.59.85 `

-Credential bal
$setp | Format-List
ReturnCode : 200
Response   : Command successfully executed.
Data       :
```

Retreive the License Details (optional)

Retreive the License Details (optional)

You can use the **Get-LicenseInfo** command to retrieve the LoadMaster license details.

```
$license_details = Get-LicenseInfo -LoadBalancer 172.21.59.85 -Credential bal
$license_details
ReturnCode Response                      Data
---------- --------                      ----
       200 Command successfully executed. @{LicenseInfo=}
$license_details.Data.LicenseInfo
uuid             : 941b6d65-1758-40a3-8a89-a9b45a8a8512
ActivationDate   : Wed May 17 16:47:46 UTC 2017
LicensedUntil    : unlimited
SupportLevel     : Basic 2 years
SupportUntil     : Fri May 17 04:00:00 UTC 2019
LicenseType      : VLM-5000 ESP GEO
LicenseStatus    : Single Perm
ApplianceModel   : VLM-5000 ESP GEO
MaxVS            : 0
MaxRS            : 0
Bandwidth        : 5000
TpsLimit         : 10000
HA               : no
FirstHA          : no
ModSecurity      : yes
AFE              : yes
ViewAFE          : yes
ESP              : yes
IPSEC            : 2
SingleCPU        : no
VLM              : yes
VlmPlatform      : VMWARE
SKU              : VLM_OVF_64
FreeLicense      : no
Temporary        : no
ASL              : no
MandatoryTether  : no
MultipleConnect  : no
```

Update a LoadMaster License

Update a LoadMaster License

The LoadMaster license can be updated using the **Update-LicenseOnline** or **Update-LicenseOffline** command.

Here is an example using the online command:

```
$licupdate = Update-LicenseOnline -KempId jbloggs@kemptechnologies.com
-Password kempkemp `
                                            -LoadBalancer 172.21.59.85
-Credential bal
$licupdate
ReturnCode Response                        Data
---------- --------                        ----
       200 Command successfully executed.
```

You can check the updated license by running the **Get-LicenseInfo** command.

Code Snippet Examples

Code Snippet Examples

Refer to the sections below for some code snippet examples.

Related Links

- Initialize the LoadMaster Connection Parameters
- Enable the API
- Add a New Virtual Service
- Modify a Virtual Service
- Add a Real Server to a Virtual Service
- Modify a Real Server and Retrieve Settings
- Upload a Template
- Create a Virtual Service using a Template
- SubVS Code Snippet Examples

Initialize the LoadMaster Connection Parameters

Initialize the LoadMaster Connection Parameters

In the above examples, the required parameters, **LoadBalancer** and **Credential**, can be initialized before running the commands with the **Initialize-LmConnectionParameters** command. If you do this, it is not necessary to specify these parameters in each command.

For example:

```
lma = Initialize-LmConnectionParameters -Address $LMIP -Credential $creds
$lma | Format-List
ReturnCode : 200
Response   : Command successfully executed.
Data       : @{Connection=; Login=}
After the initialization, for example, the command to create a vs will became:
$vs = New-AdcVirtualService -VirtualService $VSIP -VSPort $VSPORT `
                                            -VSProtocol $VSPROTOCOL
if ($vs.ReturnCode -ne 200) {
# ERROR: exit
return $vs
}
```

Enable the API

Enable the API

You can enable the API using the command **Enable-SecAPIAccess**. The LoadMaster must be licensed for this command to work.

```
$eapi = Enable-SecAPIAccess -LoadBalancer $LMIP -Credential $creds
$eapi | Format-List
ReturnCode : 200
Response   : The API is enabled
Data       :
```

Note: If you license a LoadMaster using the API, the API is automatically enabled.

Add a New Virtual Service

Add a New Virtual Service

You can add a Virtual Service using the **New-AdcVirtualService** command. Example commands and output are provided below.

```
$newvs = New-AdcVirtualService -VirtualService 10.154.11.124 -VSPort 80
-VSProtocol tcp
$newvs | Format-List
ReturnCode : 200
Response   : Command successfully executed.
Data       : @{VS=}

$newvs.Data
```

```
VS
--
@{Status=Down; Index=15; VSAddress=10.154.11.124; VSPort=80; Layer=7;
Enable=Y; SSLReverse=N; SSLReencrypt=N; Intercept=N; InterceptOpts=;
AlertThreshold=0; Transactionlimit=0; Transparent...

$newvs.Data.VS
Status                 : Down
Index                  : 15
VSAddress              : 10.154.11.124
VSPort                 : 80
Layer                  : 7
Enable                 : Y
SSLReverse             : N
SSLReencrypt           : N
Intercept              : N
InterceptOpts          : @{Opt=System.Object[]}
AlertThreshold         : 0
Transactionlimit       : 0
Transparent            : N
SubnetOriginating      : Y
ServerInit             : 0
StartTLSMode           : 0
Idletime               : 660
Cache                  : N
Compress               : N
Verify                 : 0
UseforSnat             : N
ForceL4                : N
ForceL7                : Y
MultiConnect           : N
ClientCert             : 0
ErrorCode              : 0
CheckUse1.1            : N
MatchLen               : 0
CheckUseGet            : 0
SSLRewrite             : 0
VStype                 : http
FollowVSID             : 0
Protocol               : tcp
Schedule               : rr
CheckType              : http
```

```
PersistTimeout        : 0
CheckPort             : 0
NRules                : 0
NRequestRules         : 0
NResponseRules        : 0
NMatchBodyRules       : 0
NPreProcessRules      : 0
EspEnabled            : N
InputAuthMode         : 0
OutputAuthMode        : 0
MasterVS              : 0
MasterVSID            : 0
IsTransparent         : 0
AddVia                : 0
QoS                   : 0
TlsType               : 0
NeedHostName          : N
OCSPVerify            : N
AllowHTTP2            : N
EnhancedHealthChecks : N
RsMinimum             : 0
NumberOfRSs           : 0

$newvs.Data.VS.InterceptOpts
Opt
---
{opnormal, auditrelevant, reqdatadisable, resdatadisable}
```

Modify a Virtual Service

Modify a Virtual Service

You can modify an existing Virtual Service using the **Set-AdcVirtualService** command. An example command (to enable transparency) with output is below.

```
$setvs = Set-AdcVirtualService -VirtualService 10.154.11.124 -VSPort 80
-VSProtocol tcp -Transparent 1


$setvs | Format-List


ReturnCode : 200
```

```
Response    : Command successfully executed.
Data        : @{VS=}


$setvs.Data


VS
--
@{Status=Down; Index=5; VSAddress=10.154.11.124; VSPort=80; Layer=7;
Enable=Y; SSLReverse=N; SSLReencrypt=N; Intercept=N; InterceptOpts=;
AlertThreshold=0; Transactionlimit=0; Transparent=...


$setvs.Data.VS


Status               : Down
Index                : 5
VSAddress            : 10.154.11.124
VSPort               : 80
Layer                : 7
Enable               : Y
SSLReverse           : N
SSLReencrypt         : N
Intercept            : N
InterceptOpts        : @{Opt=System.Object[]}
AlertThreshold       : 0
Transactionlimit     : 0
Transparent          : Y
SubnetOriginating    : Y
ServerInit           : 0
StartTLSMode         : 0
Idletime             : 660
Cache                : N
Compress             : N
Verify               : 0
UseforSnat           : N
ForceL4              : N
ForceL7              : Y
MultiConnect         : N
ClientCert           : 0
```

```
ErrorCode             : 0
CheckUse1.1           : N
MatchLen              : 0
CheckUseGet           : 0
SSLRewrite            : 0
VStype                : http
FollowVSID            : 0
Protocol              : tcp
Schedule              : rr
CheckType             : http
PersistTimeout        : 0
CheckPort             : 0
NRules                : 0
NRequestRules         : 0
NResponseRules        : 0
NMatchBodyRules       : 0
NPreProcessRules      : 0
EspEnabled            : N
InputAuthMode         : 0
OutputAuthMode        : 0
MasterVS              : 0
MasterVSID            : 0
IsTransparent         : 2
AddVia                : 0
QoS                   : 0
TlsType               : 0
NeedHostName          : N
OCSPVerify            : N
AllowHTTP2            : N
EnhancedHealthChecks  : N
RsMinimum             : 0
NumberOfRSs           : 0
```

Add a Real Server to a Virtual Service

Add a Real Server to a Virtual Service

You can add a Real Server to an existing Virtual Service using the **New-AdcRealServer** command. An example command with output is provided below.

```
$newrs = New-AdcRealServer -RealServer 10.154.11.15 -RealServerPort 80
-VirtualService 10.154.11.124 -VSPort 80 -VSProtocol tcp
```

```
$newrs | Format-List


ReturnCode : 200
Response   : Command successfully executed.
Data       : @{RsSettings=}


$newrs.Data


RsSettings
----------
@{Status=Down; VSIndex=5; RsIndex=1; Addr=10.154.11.15; Port=80; DnsName=;
Forward=nat; Weight=1000; Limit=0; Follow=0; Enable=Y; Critical=N}


$newrs.Data.RsSettings

Status   : Down
VSIndex  : 5
RsIndex  : 1
Addr     : 10.154.11.15
Port     : 80
DnsName  :
Forward  : nat
Weight   : 1000
Limit    : 0
Follow   : 0
Enable   : Y
Critical : N
```

Modify a Real Server and Retrieve Settings

Modify a Real Server and Retrieve Settings

You can modify an existing Real Server using the **Set-AdcRealServer** command. You can retreive the Real Server settings using the **Get-AdcRealServer** command. Example commands with output are provided below.

```
$setrs = Set-AdcRealServer -RealServer 10.154.11.15 -RealServerPort 80
-Weight 900 -VirtualService 10.154.11.124 -VSPort 80 -VSProtocol tcp
```

```
$setrs | Format-List


ReturnCode : 200
Response   : Command successfully executed.
Data       :


$getrs = Get-AdcRealServer -RealServer 10.154.11.15 -RSPort 80
-VirtualService 10.154.11.124 -VSPort 80 -VSProtocol tcp

$getrs | Format-List


ReturnCode : 200
Response   : Command successfully executed.
Data       : @{Rs=}


$getrs.Data


Rs
--
@{Status=Down; VSIndex=5; RsIndex=1; Addr=10.154.11.15; Port=80; DnsName=;
Forward=nat; Weight=900; Limit=0; Follow=0; Enable=Y; Critical=N}


$getrs.Data.Rs

Status   : Down
VSIndex  : 5
RsIndex  : 1
Addr     : 10.154.11.15
Port     : 80
DnsName  :
Forward  : nat
Weight   : 900
Limit    : 0
Follow   : 0
Enable   : Y
Critical : N
```

Upload a Template

Upload a Template

You can upload a template by using the **Install-Template** command. This does not create any Virtual Services, but you can use the **addvs** command with the **template** parameter to do this. Refer to the next section for an example. An example command with output is provided below.

```
$installtemplate = Install-Template -Path C:\Temp\Microsoft_Dynamics.tmpl

$installtemplate | Format-List



ReturnCode : 200
Response   : Command successfully executed.
Data       : @{TemplateData=Installed 3 new Kemp certified templates.}
```

Create a Virtual Service using a Template

Create a Virtual Service using a Template

You can create a Virtual Service using a template by using the **New-AdcVirtualService** command. An example command with output is provided below. To retrieve the name of the template (which is used as the value for the **Template** parameter), run the **Get-Template** command.

```
$newvs = New-AdcVirtualService -VirtualService 10.154.11.125 -VSPort 80
-VSProtocol tcp -Template "Dynamics CRM HTTP"



$getvs = Get-AdcVirtualService -VirtualService 10.154.11.125 -VSPort 80
-VSProtocol tcp



$getvs | Format-List



ReturnCode : 200
Response   : Command successfully executed.
Data       : @{VS=}

$getvs.Data

VS
--
```

```
@{Status=Down; Index=6; VSAddress=10.154.11.125; VSPort=80; Layer=7;
NickName=Dynamics CRM HTTP; Enable=Y; SSLReverse=N; SSLReencrypt=N;
Intercept=N; InterceptOpts=; AlertThreshold=0; Tran...


$getvs.Data.VS

Status                : Down
Index                 : 6
VSAddress             : 10.154.11.125
VSPort                : 80
Layer                 : 7
NickName              : Dynamics CRM HTTP
Enable                : Y
SSLReverse            : N
SSLReencrypt          : N
Intercept             : N
InterceptOpts         : @{Opt=System.Object[]}
AlertThreshold        : 0
Transactionlimit      : 0
Transparent           : N
SubnetOriginating     : Y
ServerInit            : 0
StartTLSMode          : 0
Idletime              : 660
Cache                 : N
Compress              : N
Verify                : 0
UseforSnat            : N
ForceL4               : N
ForceL7               : Y
MultiConnect          : N
ClientCert            : 0
SecurityHeaderOptions : 0
ErrorCode             : 0
CheckUrl              : /
CheckUse1.1           : N
MatchLen              : 0
CheckUseGet           : 0
SSLRewrite            : 0
VStype                : http
FollowVSID            : 0
```

```
Protocol                : tcp
Schedule                : lc
CheckType               : http
Persist                 : super
PersistTimeout          : 3600
CheckPort               : 0
NRules                  : 0
NRequestRules           : 0
NResponseRules          : 0
NMatchBodyRules         : 0
NPreProcessRules        : 0
EspEnabled              : N
InputAuthMode           : 0
OutputAuthMode          : 0
MasterVS                : 0
MasterVSID              : 0
IsTransparent           : 2
AddVia                  : 0
QoS                     : 0
TlsType                 : 0
NeedHostName            : N
OCSPVerify              : N
AllowHTTP2              : N
EnhancedHealthChecks    : N
RsMinimum               : 0
NumberOfRSs             : 0
```

SubVS Code Snippet Examples

SubVS Code Snippet Examples

When running API commands relating to SubVSs, sometimes you need to specify the SubVS using the SubVS ID (**VSIndex**) or Real Server ID (**RsIndex**).

The sections below provide an example of each scenario.

Related Links

- Add a Real Server to a SubVS
- Add a Content Rule to a SubVS

Add a Real Server to a SubVS

Add a Real Server to a SubVS

You can add a Real Server to a SubVS by using the **New-AdcRealServer** command. You must specify the Virtual Service ID (**VSIndex**) of the SubVS for this to work.

An example with output is provided below.

```
$newrs = New-AdcRealServer -RealServer 10.35.47.66 -RealServerPort 80
-VSIndex 3

$new | Format-List

ReturnCode : 200
Response   : Command successfully executed.
Data       :
```

Add a Content Rule to a SubVS

Add a Content Rule to a SubVS

You can add a content rule to a SubVS by using the **Add-NewAdcRealServerRule** command. You must specify the Real Server ID (**RsIndex**) of the SubVS for this to work.

An example command with output is provided below.

```
$new = New-AdcRealServerRule -RuleName Test1 -RSIndex 1 -VirtualService
10.35.47.50 -VSPort 443 -VSProtocol tcp

$new | Format-List

ReturnCode : 200
Response   : Command successfully executed.
Data       :
```

Known Issues with Beta PowerShell Wrapper

Known Issues with Beta PowerShell Wrapper

The 7.2.39 version of the Progress Kemp PowerShell wrapper has the following known issues:

- The **New-GeoCluster** command fails if you try to add an already existing cluster.
- GEO custom locations do not restore correctly.
- The **New-SdnController** fails in a specific scenario: if you create an SDN controller or multiple SDN controllers and delete all the SDN controllers, you cannot add a new SDN controller.

- In the **Set-GeoFQDN** command, the parameter **SiteFailureDelay** is specified in minutes but the returned value is in seconds.
- A 200 success message is returned when the **Get-GeoFQDN** or **Get-GeoCluster** command is run for a non-existing FQDN/cluster.

3

References

References

Unless otherwise specified, the following documents can be found at https://docs.progress.com/.

User Management, Feature Description

DoD Common Access Card Authentication, Feature Description