SafeNet Authentication Client

Integration Guide

Using SAC CBA for VMware Horizon 6 Client

THE
DATA
PROTECTION
COMPANY

Document Information

Document Part Number	007-012969-001, Rev. A
Release Date	April 2015

Trademarks

All intellectual property is protected by copyright. All trademarks and product names used or referred to are the copyright of their respective owners. No part of this document may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, chemical, photocopy, recording, or otherwise, without the prior written permission of SafeNet, Inc.

Disclaimer

SafeNet makes no representations or warranties with respect to the contents of this document and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Furthermore, SafeNet reserves the right to revise this publication and to make changes from time to time in the content hereof without the obligation upon SafeNet to notify any person or organization of any such revisions or changes.

We have attempted to make these documents complete, accurate, and useful, but we cannot guarantee them to be perfect. When we discover errors or omissions, or they are brought to our attention, we endeavor to correct them in succeeding releases of the product.

SafeNet invites constructive comments on the contents of this document. These comments, together with your personal and/or company details, should be sent to the address or email below.

Contact Method	Contact Information
Mail	SafeNet, Inc. 4690 Millennium Drive Belcamp, Maryland 21017, USA
Email	TechPubs@safenet-inc.com

Contents

Third-Party Software Acknowledgement

This document is intended to help users of SafeNet products when working with third-party software, such as VMware Horizon 6 Client.

Material from third-party software is being used solely for the purpose of making instructions clear. Screen images and content obtained from third-party software will be acknowledged as such.

Description

Customers today are looking to desktop virtualization to transform static desktops into dynamic mobile workspaces that can be centrally and securely managed from the datacenter, and accessed across a wide range of devices and locations. Deploying desktop virtualization without strong authentication is like putting your sensitive data in a vault (the datacenter), and leaving the key (user password) under the door mat. A robust user authentication solution is required to screen access and provide proof-positive assurance that only authorized users are allowed access.

SafeNet Authentication Client (SAC) is a public key infrastructure (PKI) middleware that provides a secure method for exchanging information based on public key cryptography, enabling trusted third-party verification of user identities. SafeNet's certificate-based tokens provide secure remote access, as well as other advanced functions, in a single token, including digital signing, password management, network logon, and combined physical/logical access.

The tokens come in different form factors, including USB tokens, smart cards, and software tokens. All of these form factors are interfaced using a single middleware client, SafeNet Authentication Client (SAC). The SAC generic integration with CAPI, CNG, and PKCS#11 security interfaces enables out-of-the-box interoperability with a variety of security applications offering secure web access, secure network logon, PC and data security, and secure email. PKI keys and certificates can be created, stored, and used securely with the hardware or software tokens.

SafeNet Authentication Manager (SAM) provides your organization with a comprehensive platform to manage all of your authentication requirements, across the enterprise and the cloud, in a single, integrated system. SAM enables management of the complete user authentication life cycle. SAM links tokens with users, organizational rules, and security applications to allow streamlined handling of your organization's authentication infrastructure with a flexible, extensible, and scalable management platform.

SAM is a comprehensive token management system. It is an out-of-the-box solution for public certificate authorities (CAs) and enterprises to ease the administration of SafeNet's hardware or software token devices. SAM is designed and developed based on the best practices of managing PKI devices in common PKI implementations. It offers robust yet easy-to-customize frameworks that meet different organizations' PKI device management workflows and policies. Using SAM to manage tokens is not mandatory, but it is recommended for enterprise organizations.

For more information, refer to the *SafeNet Authentication Manager Administrator Guide*.

VMware Horizon™ 6 (with View) is a virtual desktop infrastructure (VDI) platform that delivers virtualized and remote desktops and applications through a single platform, giving end users access to all of their online resources through one unified workspace.

This document describes how to:

- Perform certificate-based authentication (CBA) to VMware Horizon 6 using SafeNet tokens.
- Configure the VMware Horizon 6 environment to work with SafeNet tokens.

It is assumed that the VMware Horizon 6 Client environment is already configured and working with static passwords prior to implementing SafeNet multi-factor authentication.

VMware Horizon 6 Client can be configured to support multi-factor authentication in several modes. CBA will be used for the purpose of working with SafeNet products.

Applicability

The information in this document applies to:

- **SafeNet Authentication Client (SAC)**—SafeNet Authentication Client is the middleware that manages SafeNet's tokens.
- **VMware Horizon 6 Client**

Environment

The integration environment that was used in this document is based on the following software versions:

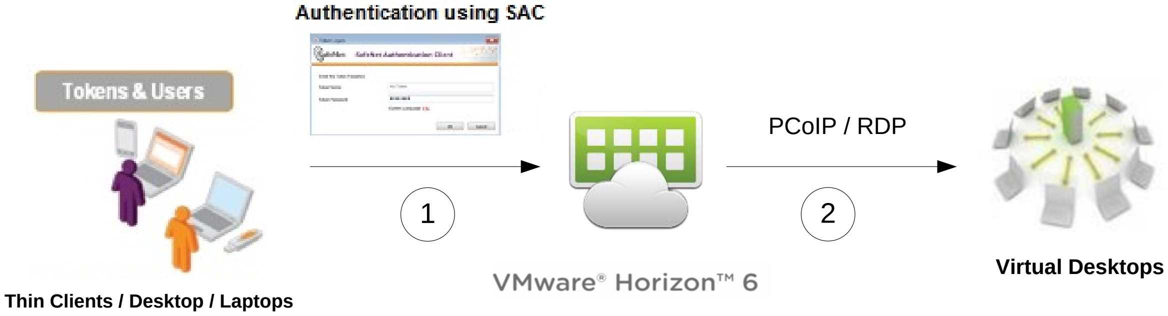
- **SafeNet Authentication Client (SAC)**—Version 9.0
- **VMware Horizon 6**

Audience

This document is targeted to system administrators who are familiar with VMware Horizon 6 Client, and are interested in adding certificate-based authentication capabilities using SafeNet tokens.

CBA Flow using SAC

The diagram below illustrates the flow of certificate-based authentication:



1. The user would like to connect to his virtual machine using VMware Horizon View Client.
2. The user inserts the SafeNet token on which his certificate resides.
3. The user chooses the VMware Horizon 6 server to connect to using the certificate on the token.
4. The user enters his token’s credentials.
5. If the credentials are successfully authenticated, the client machine is connected to VMware Horizon 6, and the user can access a VM in his assigned virtual machine pool.

Prerequisites

This section describes the prerequisites that must be installed and configured before implementing certificate-based authentication for VMware Horizon 6 Client using SafeNet tokens.

- To use CBA, the Microsoft Enterprise Certificate Authority must be installed and configured. Note that any CA can be used. However, in this guide, integration is demonstrated using Microsoft CA.
- If SAM is used to manage the tokens, TPO (token policy object) should be configured with a Microsoft CA connector. For further details, refer to the “Connector for Microsoft CA” section in the *SafeNet Authentication Manager Administrator’s Guide*.
- Users must have a SafeNet token enrolled with an appropriate certificate.
- SafeNet Authentication Client (9.0) should be installed on all client machines.

Supported Tokens in SAC

SAC supports a number of tokens that can be used as a second authentication factor for users who authenticate to VMware Horizon 6 Client.

SafeNet Authentication Client 9.0 (GA) supports the following tokens:

Certificate-based USB tokens

- SafeNet eToken PRO Java 72K
- SafeNet eToken PRO Anywhere
- SafeNet eToken 5100/5105
- SafeNet eToken 5200/5205
- SafeNet eToken 5200/5205 HID and VSR

Smart Cards

- SafeNet eToken PRO Smartcard 72K
- SafeNet eToken 4100

Certificate-based Hybrid USB Tokens

- SafeNet eToken 7300
- SafeNet eToken 7300-HID
- SafeNet eToken 7000 (SafeNet eToken NG-OTP)

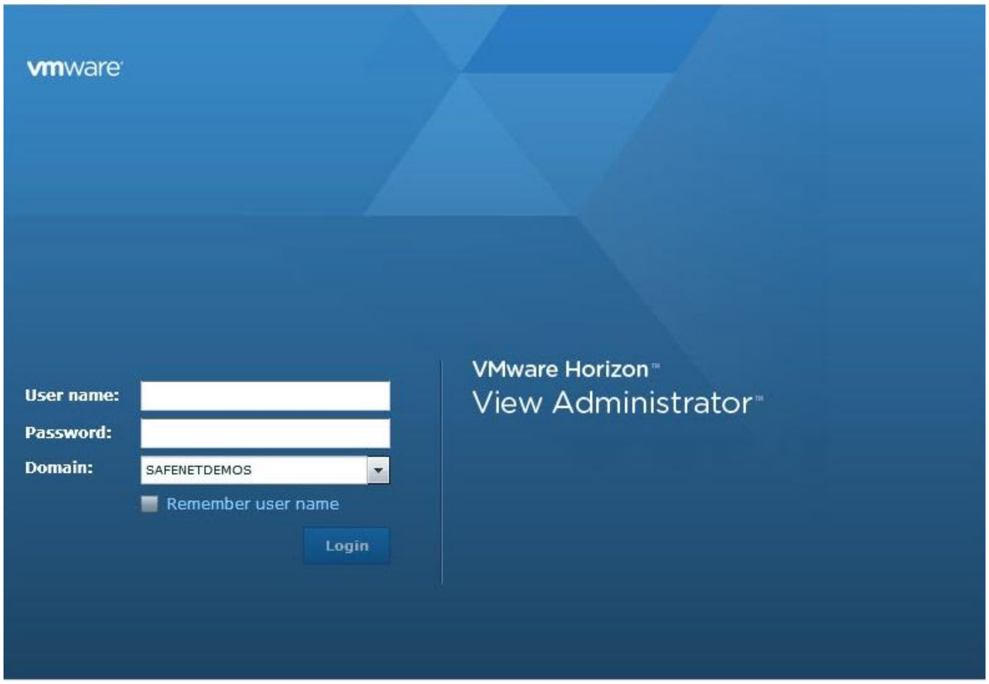
Software Tokens

- SafeNet eToken Virtual
- SafeNet eToken Rescue

Configuring VMware Horizon 6 Client

Configure the VMware Horizon 6 environment through the VMware Horizon View Server for two-factor authentication so users can authenticate using certificates on their eTokens.

1. Log in to the VMware Horizon View Administrator using the URL http://<ViewServer>/admin.



User name:

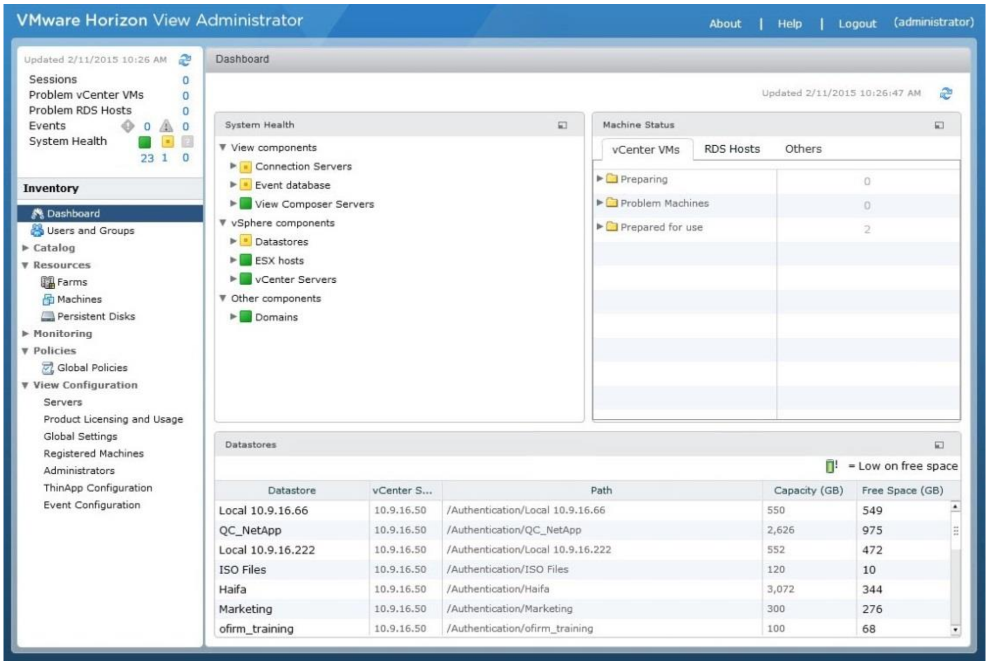
Password:

Domain: SAFENETDEMOS

□ Remember user name

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

2. Under **Inventory**, click **View Configuration > Servers**.



Updated 2/11/2015 10:26 AM

Sessions			0
Problem vCenter VMs			0
Problem RDS Hosts			0
Events		0	0
System Health	23	1	0

Updated 2/11/2015 10:26:47 AM

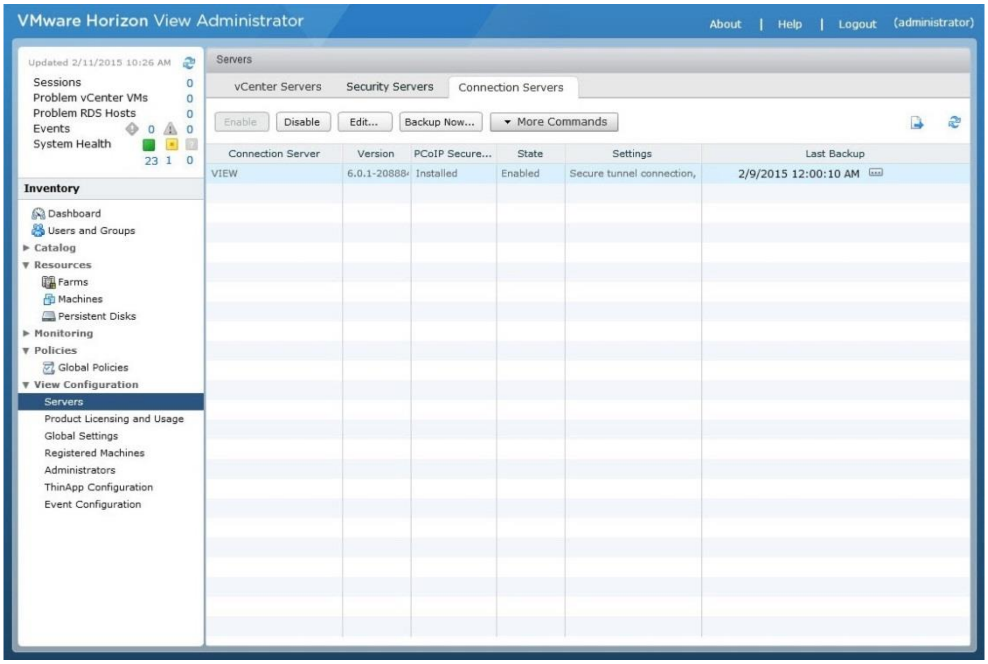
Preparing	0
Problem Machines	0
Prepared for use	2

= Low on free space

Datastore	vCenter S...	Path	Capacity (GB)	Free Space (GB)
Local 10.9.16.66	10.9.16.50	/Authentication/Local 10.9.16.66	550	549
QC_NetApp	10.9.16.50	/Authentication/QC_NetApp	2,626	975
Local 10.9.16.222	10.9.16.50	/Authentication/Local 10.9.16.222	552	472
ISO Files	10.9.16.50	/Authentication/ISO Files	120	10
Haifa	10.9.16.50	/Authentication/Haifa	3,072	344
Marketing	10.9.16.50	/Authentication/Marketing	300	276
ofirm_training	10.9.16.50	/Authentication/ofirm_training	100	68

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

3. In the **Servers** window, click the **Connection Servers** tab.



Connection Server	Version	PCoIP Secure...	State	Settings	Last Backup
VIEW	6.0.1-20888	Installed	Enabled	Secure tunnel connection,	2/9/2015 12:00:10 AM

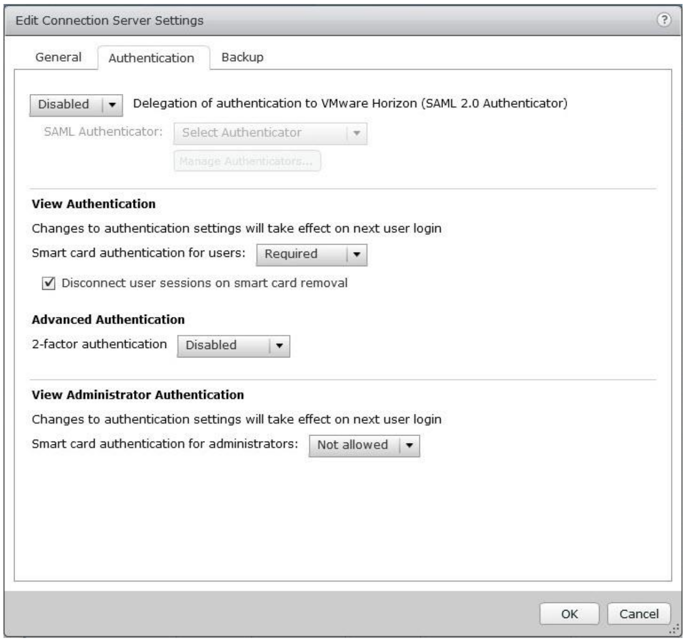
(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

4. Click the **Connection Server**, and then click **Edit**.

5. On the **Edit Connection Server Settings** window, click the **Authentication** tab.

6. Under **View Authentication**, complete the following, and then click **OK**.

Smart card authentication for users	Select **Required**.
Disconnect user sessions on smart card removal	(Optional) Select this option.



Disabled ▾ Delegation of authentication to VMware Horizon (SAML 2.0 Authenticator)

SAML Authenticator: Select Authenticator ▾

Manage Authenticators...

View Authentication

Changes to authentication settings will take effect on next user login

Smart card authentication for users: Required ▾

☑ Disconnect user sessions on smart card removal

Advanced Authentication

2-factor authentication Disabled ▾

View Administrator Authentication

Changes to authentication settings will take effect on next user login

Smart card authentication for administrators: Not allowed ▾

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

Setting Certificates in the VMware Horizon 6 Environment

- Complete the procedures in this section to configure VMware Horizon for two-factor authentication so users authenticate using certificates on their eTokens.

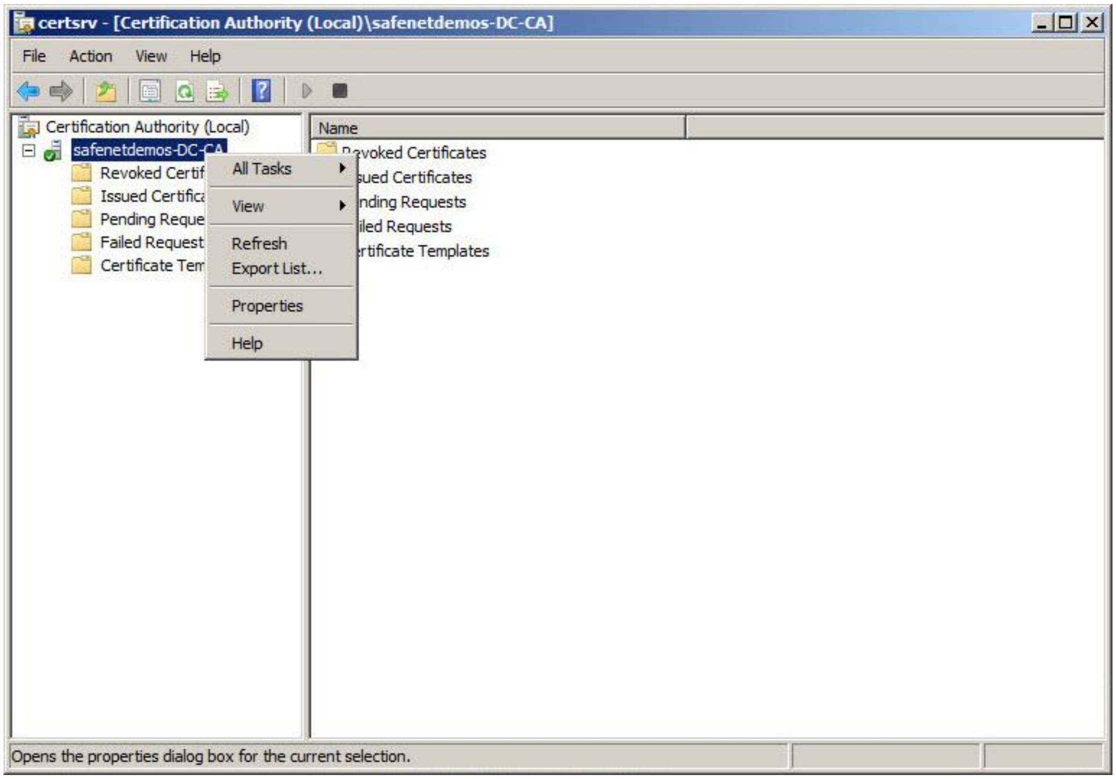
> **NOTE:** When working with CBA in the VMware Horizon 6 environment, make sure all servers in the environment are familiar with the Certificate Authority.

- Obtaining the Root Certificate from the CA, page 9
- Adding the Root Certificates to the Connection Server, page 13
- Configuring View Connection Server Configuration Properties, page 14
- Configuring Active Directory for Smart Card Authentication, page 14
- Creating Certificate Templates, page 14
- Installing and Configuring the VMware Horizon View Agent, page 15

> **NOTE:** When working with CBA in the VMware Horizon 6 environment, make sure all servers in the environment are familiar with the Certificate Authority.

Obtaining the Root Certificate from the CA

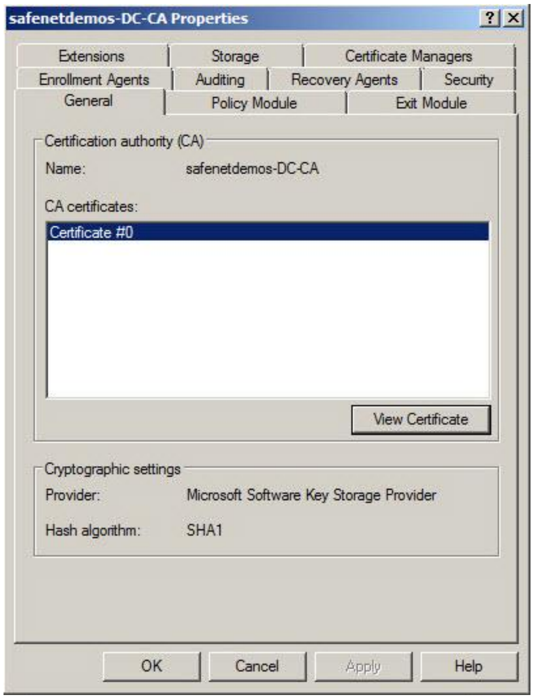
1. Open the **Certificate Authority** window, right-click the requested CA, and then select **Properties**.



Opens the properties dialog box for the current selection.

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

2. On the **General** tab, click **View Certificate**.



Certification authority (CA)

Name: safenetdemos-DC-CA

CA certificates:

Certificate #0

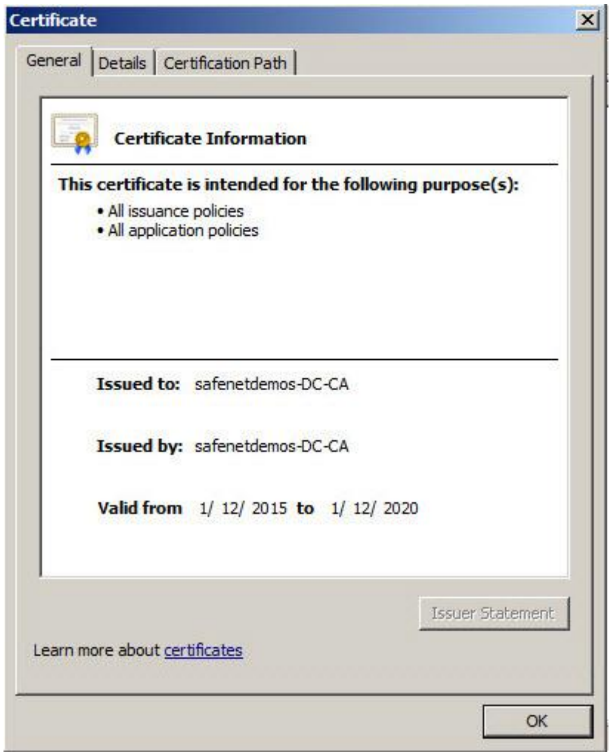
Cryptographic settings

Provider: Microsoft Software Key Storage Provider

Hash algorithm: SHA1

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

3. On the **Certificate** window, click the **Details** tab.



Certificate Information

This certificate is intended for the following purpose(s):

- All issuance policies
- All application policies

Issued to: safenetdemos-DC-CA

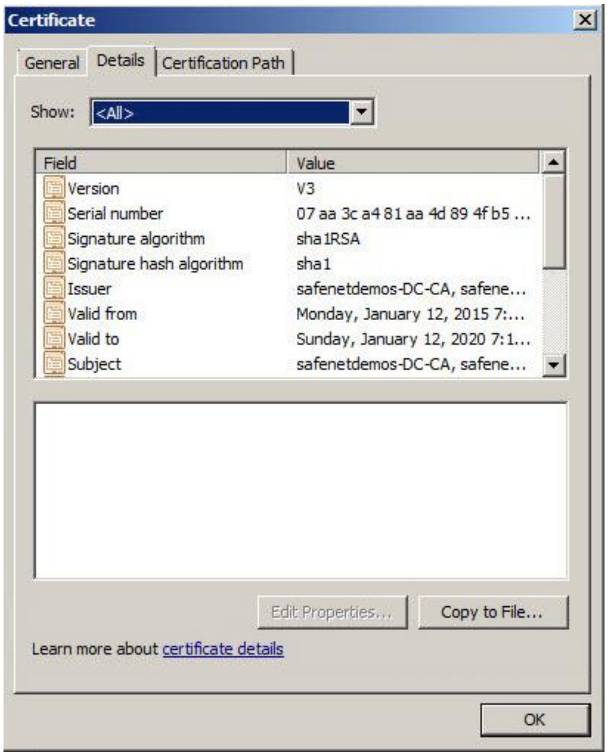
Issued by: safenetdemos-DC-CA

Valid from 1/ 12/ 2015 **to** 1/ 12/ 2020

Learn more about certificates

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

4. On the **Details** tab, click **Copy to File**.

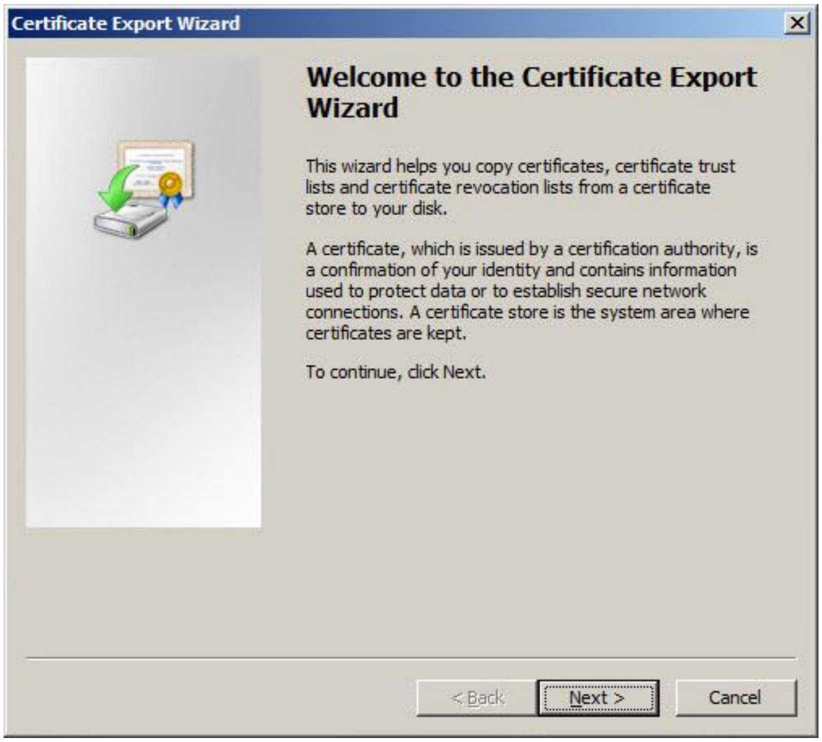


Field	Value
Version	V3
Serial number	07 aa 3c a4 81 aa 4d 89 4f b5 ...
Signature algorithm	sha1RSA
Signature hash algorithm	sha1
Issuer	safenetdemos-DC-CA, safene...
Valid from	Monday, January 12, 2015 7:...
Valid to	Sunday, January 12, 2020 7:1...
Subject	safenetdemos-DC-CA, safene...

Learn more about certificate details

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

5. The **Certificate Export Wizard** is displayed. On the **Welcome** screen, click **Next**.



Welcome to the Certificate Export Wizard

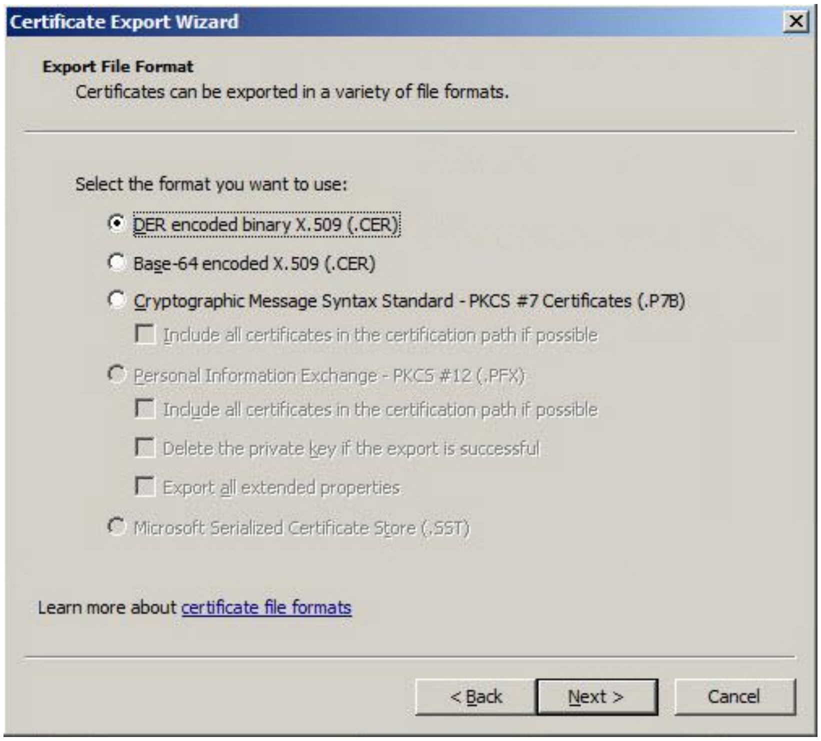
This wizard helps you copy certificates, certificate trust lists and certificate revocation lists from a certificate store to your disk.

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.

To continue, click Next.

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

6. Select the **DER encoded library X.509 (CER)** file format, and then click **Next**.



Export File Format

Certificates can be exported in a variety of file formats.

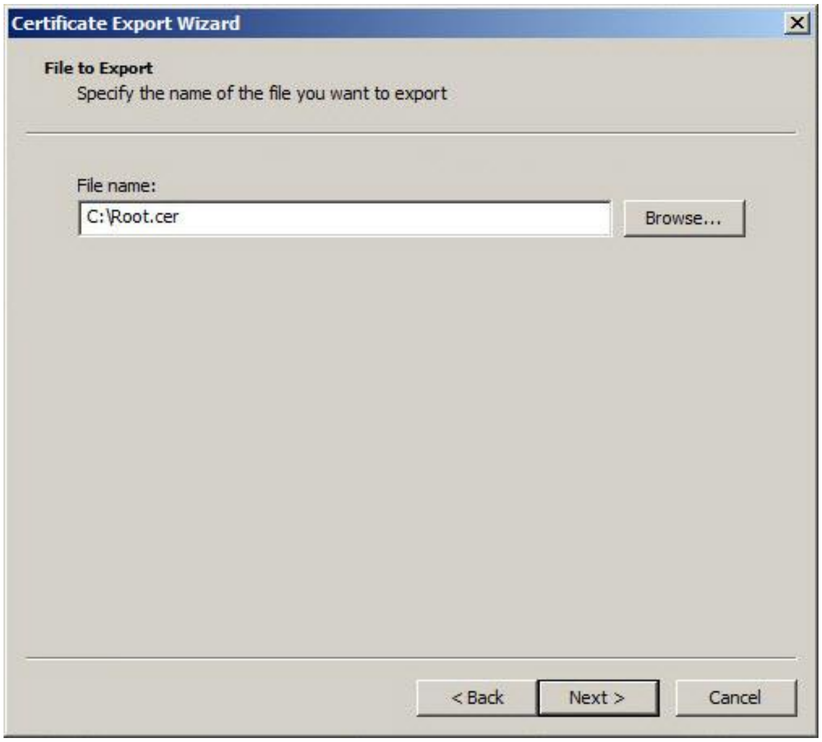
Select the format you want to use:

- ● DER encoded binary X.509 (.CER)
- ○ Base-64 encoded X.509 (.CER)
- ○ Cryptographic Message Syntax Standard - PKCS #7 Certificates (.P7B)
  - □ Include all certificates in the certification path if possible
- ○ Personal Information Exchange - PKCS #12 (.PFX)
  - □ Include all certificates in the certification path if possible
  - □ Delete the private key if the export is successful
  - □ Export all extended properties
- ○ Microsoft Serialized Certificate Store (.SST)

Learn more about certificate file formats

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

7. Click **Browse**, select the file to export, and then **Next**.



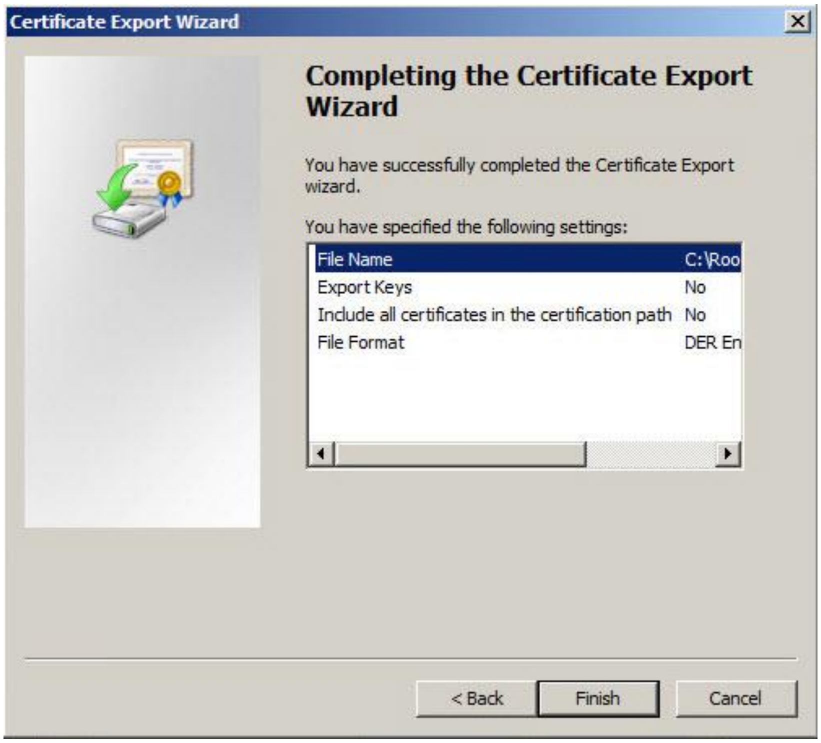
File to Export

Specify the name of the file you want to export

File name: C:\Root.cer

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

8. Click **Finish** to close the Certificate Export Wizard.



Certificate Export Wizard

Completing the Certificate Export Wizard

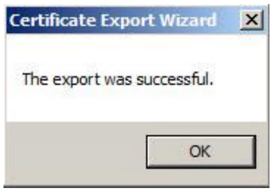
You have successfully completed the Certificate Export wizard.

You have specified the following settings:

File Name	C:\Roo
Export Keys	No
Include all certificates in the certification path	No
File Format	DER En

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

9. Click **OK** when the export successfully completes.



Certificate Export Wizard

The export was successful.

(The screen image above is from Microsoft®. Trademarks are the property of their respective owners.)

Adding the Root Certificates to the Connection Server

Add the root certificate to a server truststore file so that VMware Horizon View Connection Server instances and security servers can validate and authenticate smart card users to their View desktops.

For this procedure, you will need the **keytool** utility, which is located in the VMware View installation folder (for example, C:\Program Files\VMware\VMware View\Server\jre\bin).

1. On the View Connection Server or security server host, use the **keytool** utility to import the root certificate into the server truststore file—run the following command:

   keytool.exe –import –alias alias –file c:\certnew.cer –keystore trust.key

   The value of the <**keystore**> parameter is the file to store the imported key. In this procedure, the value is **trust.key**.

2. Provide a password for the keystore file. You will need this password if you add certificates to the keystore file later.

3. Copy the truststore file that you just created to the SSL gateway configuration folder on the View Connection Server—run the following command:

   copy trust.key ..\..\sslgateway\conf\trust.key

Configuring View Connection Server Configuration Properties

To enable smart card authentication, you must modify the View Connection Server configuration properties on your View Connection Server or security server host.

1. Browse to **C:\Program Files\VMware\VMware View\Server\sslgateway\conf**, and locate the **locked.properties** file.

   If the **locked.properties** file does not exist in this configuration folder on the View Connection Server or security server host, create a blank text file and name it **locked.properties**.

2. Assign the following values to the properties:

   - **trustKeyfile**=**trust.key**
   - **trustStoretype**=**JKS**
   - **useCertAuth**=**true**

3. Save the file.
4. Restart the system.

Configuring Active Directory for Smart Card Authentication

Smart card logins rely on user principal names (UPNs), so the Active Directory accounts of smart card users must have valid UPNs for authentication before the smart card enrollment.

If you use a CA to issue smart card login or domain controller certificates, you must add the root certificate to the Trusted Root Certification Authorities group policy in Active Directory.

If the Windows domain controller acts as the root CA, you do not need to add it to the Trusted Root Certification Authorities.

If you use an intermediate certification authority to issue smart card login or domain controller certificates, you must add the intermediate certificate to the Intermediate Certification Authorities group policy in Active Directory.

Creating Certificate Templates

Smartcard Logon or Smartcard User templates must be available to authenticate with the smart card. In addition, VMware Horizon 6 with View requires a minimum certificate key size of 1024 bits.

If you already have these templates, you can skip this step.

Follow this procedure to create (duplicate) the existing SmartCard Logon or Smartcard User template, and modify the minimum key size of the new certificate template.

1. Open the **Certificate Authority** window, and expand the CA directory.
2. Right-click on **Certificates**, and then select **Manage**.
3. Right-click on either **Smartcard User** or **Smartcard Logon**, and then select **Duplicate Template**.
4. Make sure the **Minimum key size** is set to **1024**.

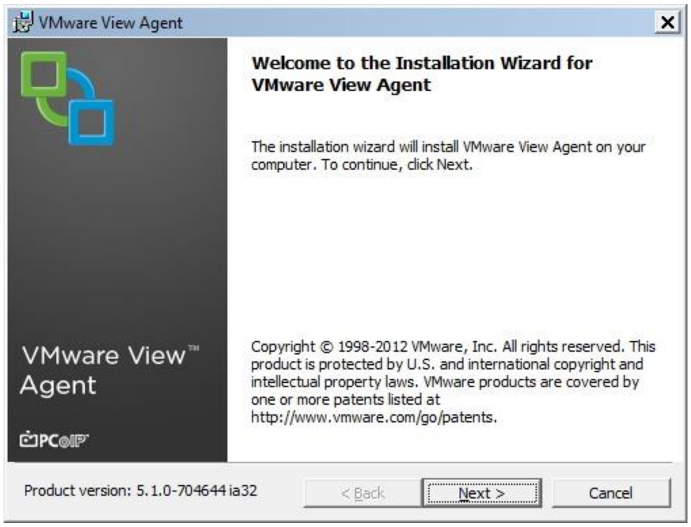
5. Return to the **Certificate Authority** window, right-click on **Certificates**, and then select **New** > **Certificate Template to Issue**.
6. On the **Enable Certificate Templates** window, select the new duplicate certificate, and then click **OK**.

Installing and Configuring the VMware Horizon View Agent

Install the VMware Horizon View Agent on the following machines:

- All virtual desktops that are managed by the VMware vCenter Server to enable communication with the View Connection Server
- All virtual desktops that you use as templates for automated desktop pools, parents for linked-clone desktop pools, and desktop sources in manual desktop pools

1. Double-click the View Agent installer file.
2. On the *Welcome* window, click **Next**.



Welcome to the Installation Wizard for VMware View Agent

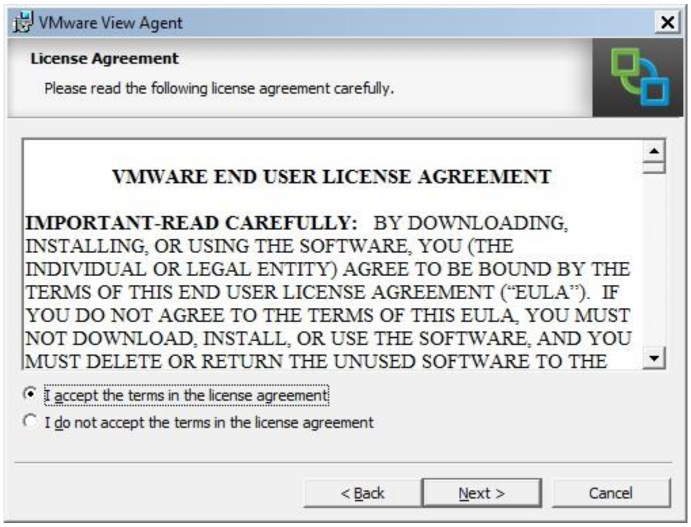
The installation wizard will install VMware View Agent on your computer. To continue, click Next.

Copyright © 1998-2012 VMware, Inc. All rights reserved. This product is protected by U.S. and international copyright and intellectual property laws. VMware products are covered by one or more patents listed at http://www.vmware.com/go/patents.

Product version: 5.1.0-704644 ia32

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

3. On the **License Agreement** window, read the VMware license agreement, select **I accept the terms in the license agreement**, and then click **Next**.



License Agreement

Please read the following license agreement carefully.

VMWARE END USER LICENSE AGREEMENT

IMPORTANT-READ CAREFULLY: BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE, YOU (THE INDIVIDUAL OR LEGAL ENTITY) AGREE TO BE BOUND BY THE TERMS OF THIS END USER LICENSE AGREEMENT ("EULA"). IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MUST NOT DOWNLOAD, INSTALL, OR USE THE SOFTWARE, AND YOU MUST DELETE OR RETURN THE UNUSED SOFTWARE TO THE

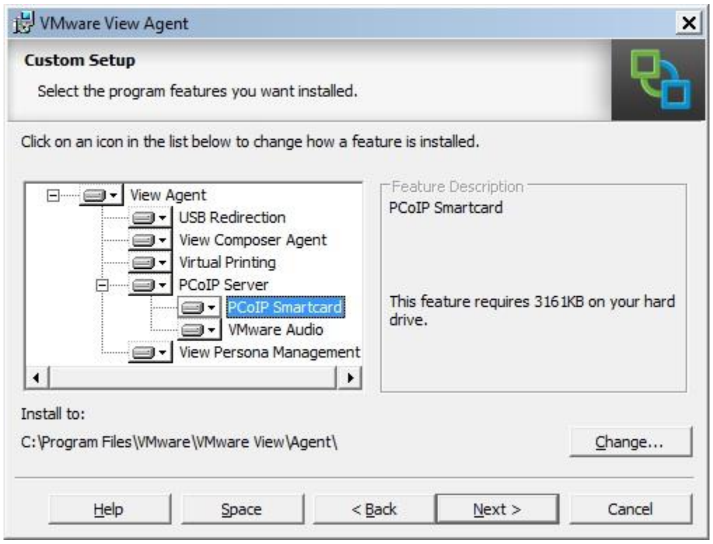
● I accept the terms in the license agreement

○ I do not accept the terms in the license agreement

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

4. Select **Custom**. The **Custom Setup** window is displayed.

5. Under **View Agent > PCoIP Server**, right-click **PCoIP Smartcard**, select **This feature will be installed on local hard drive** from the menu, and then click **Next**.



VMware View Agent

Custom Setup

Select the program features you want installed.

Click on an icon in the list below to change how a feature is installed.

- View Agent
  - USB Redirection
  - View Composer Agent
  - Virtual Printing
  - PCoIP Server
    - PCoIP Smartcard
    - VMware Audio
  - View Persona Management

Feature Description

PCoIP Smartcard

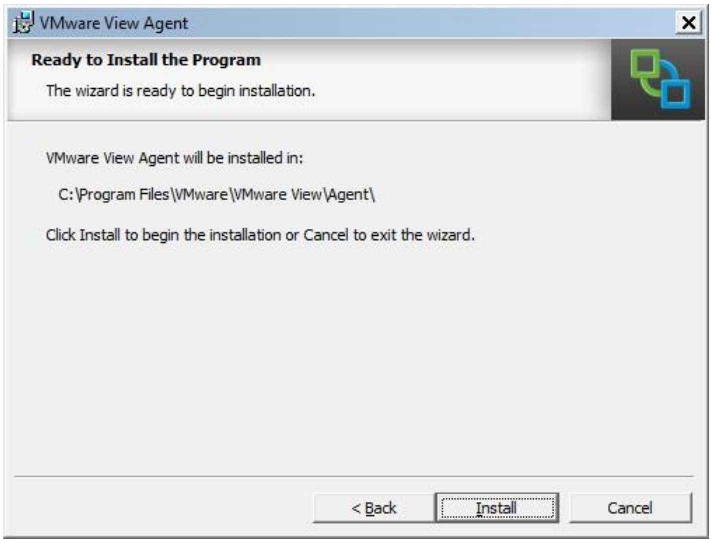
This feature requires 3161KB on your hard drive.

Install to:

C:\Program Files\VMware\VMware View\Agent\

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

6. On the **Ready to Install the Program** window, click **Install**.



VMware View Agent

Ready to Install the Program

The wizard is ready to begin installation.

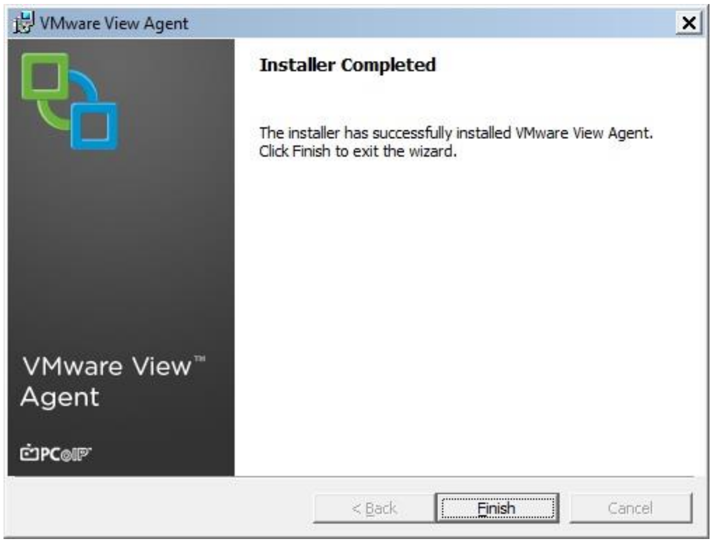
VMware View Agent will be installed in:

C:\Program Files\VMware\VMware View\Agent\

Click Install to begin the installation or Cancel to exit the wizard.

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

7. On the **Installer Completed** window, click **Finish**.

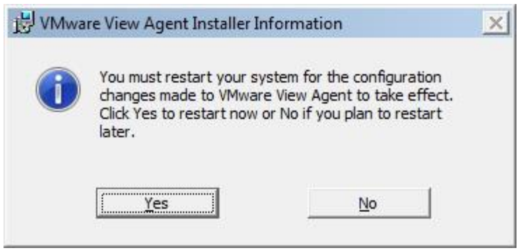


Installer Completed

The installer has successfully installed VMware View Agent. Click Finish to exit the wizard.

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

8. When prompted to restart the computer, click **Yes**.

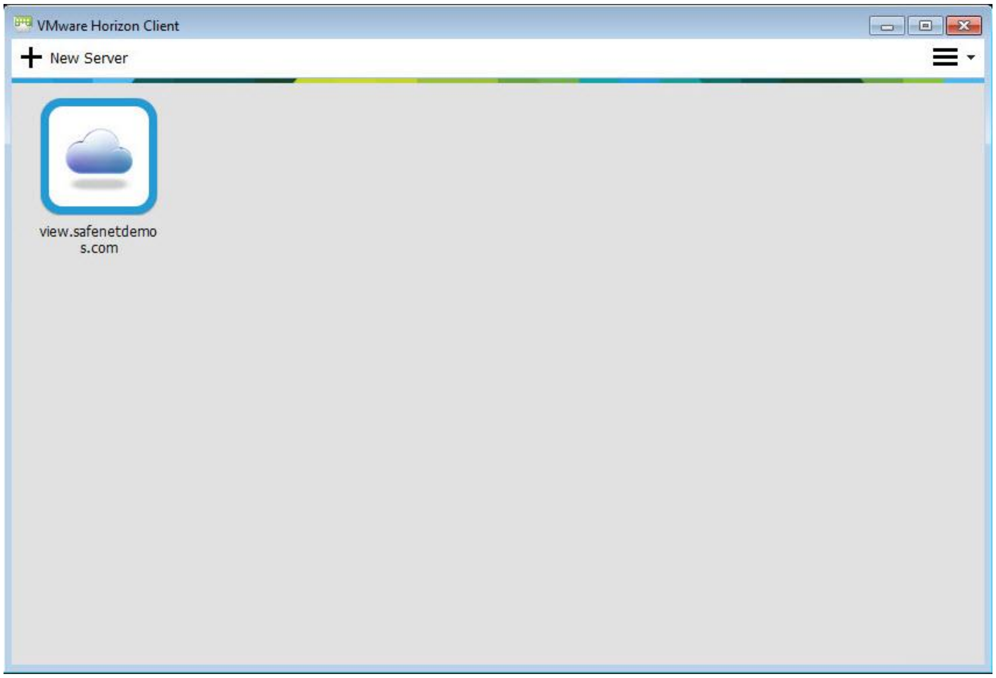


You must restart your system for the configuration changes made to VMware View Agent to take effect. Click Yes to restart now or No if you plan to restart later.

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

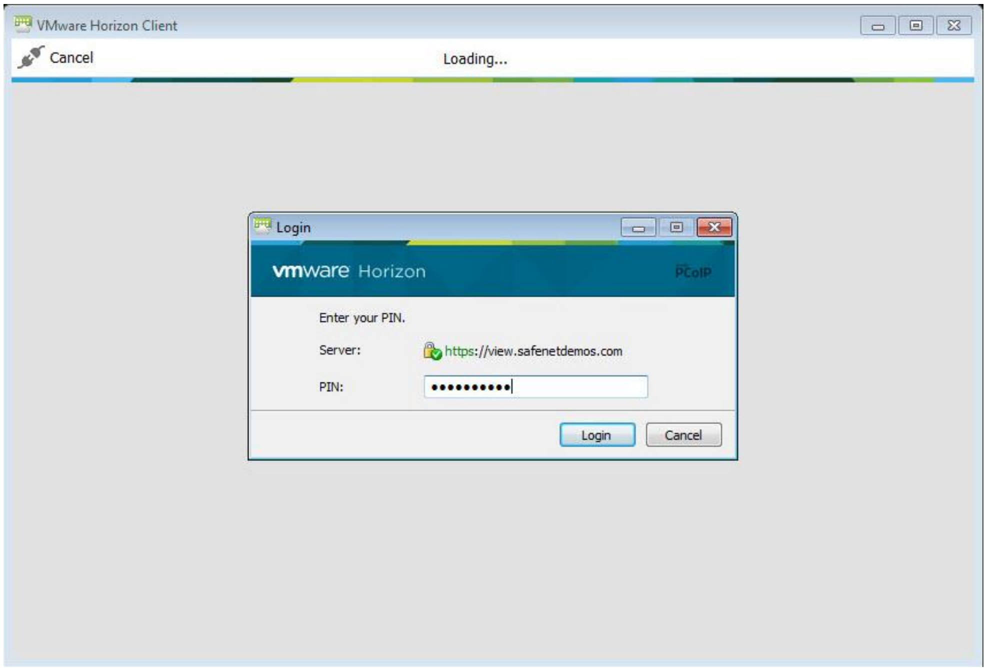
Running the Solution

1. Open a VMware Horizon View Client.



(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

2. Insert the SafeNet eToken and connect to the VMware Horizon 6 environment.
3. Enter your token PIN in the **PIN** field, and then click **Login**.



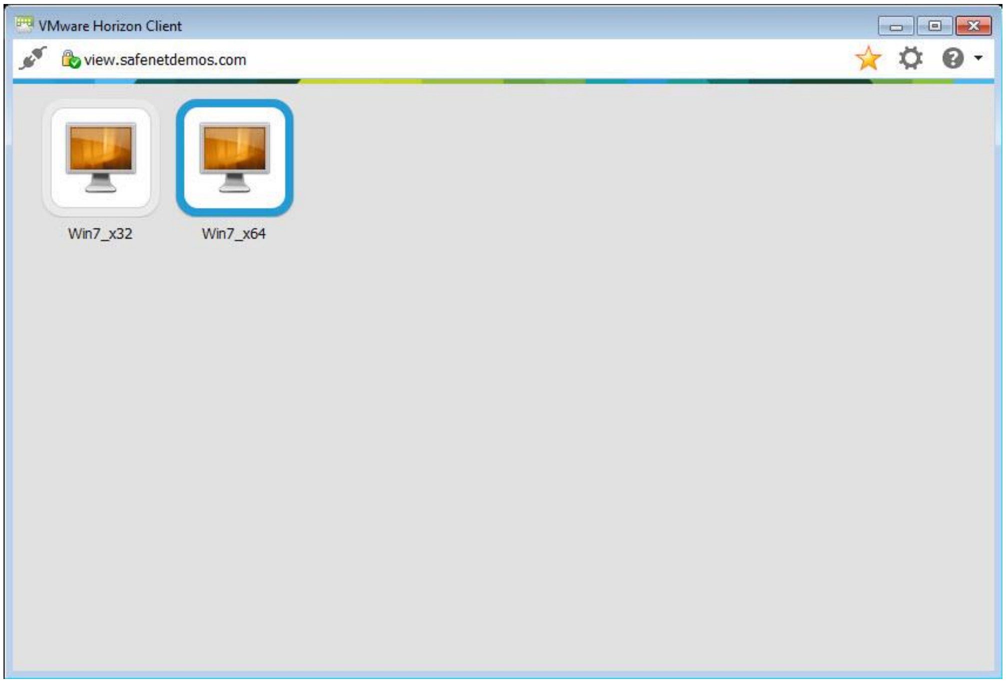
Enter your PIN.

Server: https://view.safenetdemos.com

PIN: ••••••••••

(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

If the credentials are successfully authenticated, the client machine is connected to VMware Horizon 6, and you can access a VM in your assigned virtual machine pool.



(The screen image above is from VMware® Horizon View™. Trademarks are the property of their respective owners.)

Support Contacts

If you encounter a problem while installing, registering, or operating this product, please make sure that you have read the documentation. If you cannot resolve the issue, contact your supplier or SafeNet Customer Support. SafeNet Customer Support operates 24 hours a day, 7 days a week. Your level of access to this service is governed by the support plan arrangements made between SafeNet and your organization. Please consult this support plan for further information about your entitlements, including the hours when telephone support is available to you.

Contact Method	Contact Information	
Address	SafeNet, Inc. 4690 Millennium Drive Belcamp, Maryland 21017 USA	
Phone	United States	1-800-545-6608
	International	1-410-931-7520
Technical Support Customer Portal	https://serviceportal.safenet-inc.com Existing customers with a Technical Support Customer Portal account can log in to manage incidents, get the latest software upgrades, and access the SafeNet Knowledge Base.	