FORCEPOINT

Stonesoft VPN Client

for Windows

Product Guide

6.2

Revision A

Contents

Introduction

The Stonesoft® VPN Client provides a secure virtual private network (VPN) connection for end-user computers running on Microsoft Windows platforms to a Firewall/VPN gateway on Forcepoint™ Next Generation Firewall (Forcepoint NGFW); formerly known as Stonesoft NGFW.

The Stonesoft VPN Client protects private information transferring over the Internet and allows verification of the end user's identity. Remote end users are able to connect to internal networks securely. The Stonesoft VPN Client mainly runs in the background, automatically prompting the end user to authenticate when a VPN is required.

You can find information about installation, configuration, troubleshooting, and use scenarios in this guide. Additional information about the Stonesoft VPN Client is covered in the following documents:

- Configuring VPN access for the Stonesoft VPN Client end users — See the *Forcepoint Next Generation Firewall Product Guide*.
- Using the Stonesoft VPN Client — See the *Stonesoft VPN Client User Guide*.
- Windows platform requirements — See the *Stonesoft VPN Client Release Notes*.

Find product documentation

On the Forcepoint support website, you can find information about a released product, including product documentation, technical articles, and more.

You can get additional information and support for your product on the Forcepoint support website at https://support.forcepoint.com. There, you can access product documentation, Knowledge Base articles, downloads, cases, and contact information.

How the Stonesoft VPN Client works

In the Management Client, VPN and Gateway elements and settings are configured into a VPN profile. The profile is assigned to end users, then firewall policy is edited to allow incoming connections from the Stonesoft VPN Client. When it is configured for the first time, the Stonesoft VPN Client connects back to the firewall.

There might be a limit on the gateway of how many end users can connect at the same time. However, there is no license or serial code enforcement in the Stonesoft VPN Client. The Stonesoft VPN Client is licensed as part of the Firewall/VPN gateway. You can freely install it on any number of hosts.

VPN types

Stonesoft VPN Client for Windows supports IPsec and SSL VPN tunnels; select the one that is right for your environment.

The information in this document applies both to IPsec VPNs and SSL VPNs unless otherwise noted.

The encrypted tunnels for SSL VPNs use TCP port 443, which is usually allowed by intermediate firewalls by default.

SSL VPN tunnels and the SSL VPN Portal are different remote access methods.

- You access SSL VPN tunnels using the Stonesoft VPN Client.
- You access the SSL VPN Portal using a web browser.

SSL VPN tunnels and the SSL VPN Portal cannot be on the same IP address and port pair simultaneously. If both are needed, we recommend configuring the SSL VPN tunnel to use port 443 and adding the port number to the URI when accessing the portal. The SSL VPN Portal is not within the scope of this document.

Stonesoft VPN Client configuration and updates

The Stonesoft VPN Client settings are mostly configured through Forcepoint NGFW Security Management Center (SMC); formerly known as Stonesoft Management Center (SMC).

The Stonesoft VPN Client downloads a configuration file from the Firewall/VPN gateways to set the correct options for establishing a mobile VPN with that gateway. These options include the following:

- encryption
- authentication
- endpoints to contact
- IP addresses that are accessible through the VPN

When changes are made on the gateway, each Stonesoft VPN Client updates the configuration the next time the Stonesoft VPN Client starts a new VPN connection. Due to the centralized configuration method, the Stonesoft VPN Client can connect to Forcepoint NGFW Firewall/VPN gateways only.

Virtual IP addresses for the Stonesoft VPN Client

The primary access method for production use is the Virtual Adapter feature. This feature allows the Stonesoft VPN Client to have a second, virtual IP address that is independent of the end-user computer address in the local network.

The virtual IP address is only used in communications through the VPN tunnels. The VPN gateway gets the IP address and network settings of the Stonesoft VPN Client from an external DHCP server and forwards the information to the Stonesoft VPN Client. For one-way access without DNS resolving, the VPN gateway can

alternatively be set up to apply NAT to translate the Stonesoft VPN Client connections. This method is meant for testing purposes.

The VPN gateway specifies the destination IP addresses for traffic that the Stonesoft VPN Client sends into the VPN tunnel. The IP addresses are configured as Site elements for each gateway in the Management Client. When the Sites contain specific internal networks, the Stonesoft VPN Client receives a configuration for *split tunneling*. Split tunneling means that only the specified portion of traffic uses the VPN tunnel, and other connections use the local network as usual.

Most DHCP servers allow a configuration in which a particular client computer is always assigned a particular IP address. For example, the DHCP server might assign the IP address based on the MAC address if VPN clients have fixed MAC addresses for their Virtual Adapters. By default, when the Stonesoft VPN Client virtual adapter requests an IP address, it uses the MAC address of the physical interface used in the VPN connection.

To configure the IP address distribution on the gateway, see and the *Forcepoint Next Generation Firewall Product Guide*.

How settings for IPsec connections work

For IPsec connections, the Stonesoft VPN Client might need to use different settings at different locations due to different port filtering and NAT arrangements.

The Stonesoft VPN Client can work within the allowed settings to automatically try to connect using different port combinations if the automatic IKE retry option is active in the Stonesoft VPN Client installation. The Stonesoft VPN Client tries the settings one by one in the following order until the connection succeeds or all options are exhausted:

1) Enable or disable the option to use random local source ports on the client.

2) Use only destination port UDP/4500 (NAT-T port) for the gateway, instead of both port UDP/500 and UDP/4500.

3) Use a combination of a random local source port and destination port UDP/4500 for the gateway.

The end user is notified if the Stonesoft VPN Client is unable to use one of the necessary ports.

Deployment

To allow end users to access company networks through the Stonesoft VPN Client, plan your deployment carefully.

Installation types

You can install the Stonesoft VPN Client in interactive mode by manually starting the installer, or in silent mode through a remote software deployment service.

A standard installation uses the downloaded Stonesoft VPN Client files. There are two ways to install the Stonesoft VPN Client in a standard installation:

- Wizard — Uses a guided installation and configuration process
- Silent batch file — Uses a script to install the Stonesoft VPN Client without end-user interaction

A custom installation uses a third-party program to make a custom installation package that includes the gateway information and the VPN Client settings.

Installation file types

Several files are available to use for installing the Stonesoft VPN Client.

- Stonesoft-VPN-Client.exe
- Stonesoft-VPN-Client-x64.msi
- Stonesoft-VPN-Client-x86.msi

The variable, <version>, is the exact version number that changes each time an update is released. The x64 .msi package is meant for a 64-bit operating system and the x86 .msi for a 32-bit operating system installation. The executable package uses the correct package for the operating system automatically.

You can install the Stonesoft VPN Client locally with the .exe installer. The .msi packages allow remote installation or customized installations that remove the need for some end-user actions:

- With a standard installation package, the end-users type the gateway IP address manually, authenticate themselves to the gateway, and verify the certificate fingerprint of the gateway. Alternatively, you can export the contact details of the gateway to a file and instruct the end users to copy the file to the correct location.
- If you generate a custom installation package, you can include the gateway information in the installation package, requiring no end-user intervention.

Related tasks

Download the installation file on page 7

Standard installation

End users either install the Stonesoft VPN Client following the instructions in the installation wizard, or you can provide a batch file for silent installation.

Use the following commands for silent installation, replacing `<version>` with the exact version number in the file you are using:

- .exe file — `Stonesoft_VPN_<version>.exe /quiet`
- .msi file — `msiexec /i Stonesoft-VPN-Client-<version>-x64.msi /quiet` or `msiexec /i Stonesoft-VPN-Client-<version>-x86.msi /quiet`

Custom installation

You can customize the Stonesoft VPN Client installation package by creating a Microsoft Installer (MSI) transform file from the Stonesoft-VPN-Client-<version>-x64.msi or Stonesoft-VPN-Client-<version>-x86.msi file.

The contact information of the security gateways and the VPN Client settings are added to the transform file. To customize the installation package, you must be familiar with MSI transforms and know how to apply transforms to installation packages.

User authentication

End users must authenticate before they can connect to a gateway.

You can select different authentication methods for each gateway. If several authentication methods are allowed for an end user, the end user can select between the methods in the Stonesoft VPN Client.

Two basic authentication methods are available:

- User name and password — The gateway can be integrated with external authentication servers.
- Certificate — Various certificate authentication options are available for the Stonesoft VPN Client.

Note: Certificate authentication is only supported with IPsec connections. SSL VPNs never use client certificates.

Note: Different methods can be used on the same gateway simultaneously.

The user name and password method supports integration with external RADIUS or TACACS+ authentication servers. This integration allows various authentication schemes such as RSA SecurID cards or Active Directory/ Network Policy Server (NPS) authentication.

The Stonesoft VPN Client always sends the user name and password using the UTF-8 character encoding. When using external authentication servers, make sure that they support UTF-8 encoding if the user names or passwords contain letters outside the US-ASCII character set.

For a detailed overview to user authentication and step-by-step configuration instructions, see the *Forcepoint Next Generation Firewall Product Guide*.

Related concepts

Authenticating with client certificates

Installing and upgrading the Stonesoft VPN Client

You can add the Stonesoft VPN Client as a new installation or you can upgrade the Stonesoft VPN Client.

The installation process requires gateway configuration changes using the Management Client before the installation of the Stonesoft VPN Client on the end user computer.

- Before installing the Stonesoft VPN Client, you must configure the VPN-related elements and settings using the Management Client.
  - Create a VPN, or add the Client Gateway element to an existing VPN and configure the Client settings in the internal Gateway and VPN Profile elements.
  - Create the user accounts, or integrate an existing LDAP database or an external authentication service with the SMC.
  - Edit the firewall policy so that the policy allows incoming connections from the Stonesoft VPN Client.
- Both the administrator and the end user can install the Stonesoft VPN Client. You can use the standard Stonesoft VPN Client installation package or create a custom installation package. Either installation option requires that you download the installation files.

- A standard installation package allows the end user to install the Stonesoft VPN Client through the installation wizard.
- In a custom installation package, you can include the contact information for the gateway so that the end users do not need to add it manually.

- During the upgrade process, the earlier version of the Stonesoft VPN Client is removed and replaced with the current version with the same settings.

Note: You can find the instructions for tasks performed in the Management Client in the *Forcepoint Next Generation Firewall Product Guide*.

Download the installation file

The Stonesoft VPN Client installation files are available on the Forcepoint downloads page.

CAUTION: Do not use files that have invalid checksums. If downloading the files again does not help, contact Forcepoint support.

Steps

1) Go to https://support.forcepoint.com/Downloads, enter your logon credentials, then navigate to the appropriate product and version.

2) Download the installation files.

   These packages are available:

   - .exe — Standard installations
   - .msi — Custom installation package creation

3) Change to the directory that contains the files to be checked.

4) Generate a checksum of the file using the command `sha1sum filename` or `sha256sum filename`, where `filename` is the name of the installation file.

   Example:

   ```
   sha1sum Stonesoft-VPN-Client-6.2.0.0000.exe
   ```

   ```
   1334641d17859e7f2585a744a993be75473c6930 Stonesoft-VPN-Client-6.2.0.0000.exe
   ```

5) Verify the checksums.

   a) Compare the displayed output to the checksum on the website.

   b) Proceed according to the result of the comparison:

      - If the values match, the files are safe to use.
      - If there is a difference in the values, try downloading the files again.

      Note: Windows does not have SHA-1 or SHA-256 checksum programs by default, but there are several third-party programs available.

Install with the wizard

You can use the Stonesoft VPN Client .exe file to install the Stonesoft VPN Client with a wizard.

Before you begin

You must have downloaded the installation .exe file.

Steps

1) Right-click the installation executable file and select **Run as Administrator**.
   The **Stonesoft VPN Client Setup** window opens.

2) Click **Install**.
   The **Stonesoft VPN Client Setup** wizard opens.

3) Click **Next**.

4) Accept the License Agreement and click **Next** to continue.

5) Click **Install**.
   If you see one or more confirmation messages from Windows during the installation, accept them. The installation of all drivers and components must be allowed for the Stonesoft VPN Client to work correctly.

6) When the installation is complete, click **Finish**.
   The **Stonesoft VPN Client Setup** window shows a confirmation message.

7) Click **Close**.

Install using a custom installation package

Customizing the installation allows you to add information into the installation package, and to install and update the Stonesoft VPN Client remotely.

Before you begin

To customize the installation package, you must be familiar with MSI transforms and know how to apply transforms to installation packages.

A custom installation package includes the gateway information and the VPN Client settings that the Stonesoft VPN Client end users need for connecting to security gateways. When the Stonesoft VPN Client is installed from the custom installation package, the gateways are automatically added to the Stonesoft VPN Client. End users do not need to add the gateways manually after the installation.

Save the gateway contact information to a file

You can save the contact information for security gateways to a file. The file can then be added into a custom installation package or copied to the end-user computers that already have a Stonesoft VPN Client installed.

The gateway contact information allows end users to connect to new gateways without needing to add the security gateway address manually and without verifying the gateway certificate fingerprint.

Export gateway contact information

You must export the contact information from the Management Client into a file to add the gateway contact information to the installation package.

Exporting the gateway contact information allows you to distribute the contact information files to end users. You can add the files to a custom installation package or send them to end users so that they can copy the files manually to their computer.

The contact information is always gateway-specific.

Steps

For more details about the product and how to configure features, click **Help** or press **F1**.

1) In the Management Client, select **Configuration**, then browse to **VPN** > **Gateways**.

2) For each contact you want to export:

   a) Right-click the internal Gateway element for which you want to save the configuration and select **Tools** > **Save Gateway Contact Information**.

   b) Browse to the folder where you want to save the contact information file.

   c) Enter a file name and click **Save**.
   The contact information of the selected security gateway is saved in an `.xml` file.

Copy gateway contact information files manually

You can add new gateways to an existing Stonesoft VPN Client by copying the exported gateway contact information files to the client computers.

Provide the files to the Stonesoft VPN Client end users and instruct them to copy the files to the correct location.

Steps

1) Place the exported gateway contact information file in a location that is accessible to the client computer.

2) Copy the security gateway contact information .xml file to the <system_drive>\ProgramData\Forcepoint\Stonesoft VPN Client\gateway_info directory on the client computer.

Create a transform file

Customize the Stonesoft VPN Client installation package, and add the gateway information to it. The installation package is customized by creating an MSI (Microsoft Installer) transform file from the Stonesoft-VPN-Client-<version>-x64.msi or Stonesoft-VPN-Client-<version>-x86.msi file.

Before you begin

The following workflow assumes that you are familiar with MSI transforms and know how to apply them to installation packages.

You can create a custom installation package from the .msi file with any Windows installation package editor, for example, with Orca. Orca is a Windows Installer package editor provided as part of the Microsoft Windows software development kit (SDK).

In the following tables, some of the values are predefined values that you must use in specific columns. The predefined values are shown in ***bold italic.*** You can select the other values as needed.

Steps

1) Open the Stonesoft VPN Client .msi file in the third-party installer program.

2) In the transform file, add a component.
   Enter the following values in the columns:

   Table 1: Information for a new component

Column	Value
Component	Enter a unique name for the component.
ComponentID	Enter a unique ID for the component.
Directory_	***GATEWAY_INFO***
Attributes	***16*** (msidbComponentAttributesPermanent)
KeyPath	Enter a unique name for the gateway contact information file. Do not use the actual name of the file. Both the actual name of the file and this additional unique name are used later in this task.

3) Add a feature.
   Enter the following values in the columns:

   Table 2: Information for a new feature

Column	Value
Feature	Enter a unique name for the feature.
Display	***0***
Level	***1***
Attributes	***24*** (msidbFeatureAttributesDisallowAdvertise and msidbFeatureAttributesUIDisallowAbsent)

4) Map the new component and the new feature.
Enter the following values in the columns:

Table 3: Information for mapping the new component and the new feature

Column	Value
Feature_	Enter a name for the new feature.
Component_	Enter a name for the new component.

5) Add gateway contact information to the file table.
You must add the contact information for each security gateway into the **File** table. If there are several security gateways, add the contact information of each gateway on a separate row in the table.
Enter the following values in the columns:

Table 4: Adding gateway contact information

Column	Value
File	Enter the same unique file name used in the **KeyPath** column in the **Component** table.
Component_	Enter the name of the component.
FileName	Enter the name of the gateway contact information file.
FileSize	Enter the size of the gateway contact information file in bytes.
Attributes	***8192*** (msidbFileAttributesNoncompressed)
Sequence	Enter the next available number after the highest number in the **Sequence** column. For example, if the highest number is 28, enter 29 as the value.

6) Add new media.
Enter the following values in the columns:

Table 5: Information for adding new media

Column	Value
DiskId	Enter the next available number after the highest number in the **DiskId** column. For example, if the highest number is 2, enter 3 as the value.
LastSequence	Enter the last sequence value used in the **File** table.

7) Save the transform file.
   a) Select a suitable folder and enter a name for the transform file.
   b) Click **Save**.
   The transform file you created is a new .mst file.

Install with a transform file

You can use the .mst file together with the Stonesoft VPN Client VPN .msi file to install the Stonesoft VPN Client remotely or locally on the command line.

If you want the end users to install the Stonesoft VPN Client on the command line, send them the transform file, the gateway contact information files, and installation instructions.

Steps

1) Copy the transform file to the same directory as the .msi file.

2) Create the path in the directory where you have the installation files:
\ProgramData\Forcepoint\Stonesoft VPN Client\gateway_info

3) Copy the exported gateway contact information files to the gateway_info directory.

4) To start a remote installation, run the .msi file with the transform .mst file following the instructions of the software solution you are using.

5) For command-line installation, start the installation in one of the following ways:
   - If an earlier version of the Stonesoft VPN Client is already installed on the computer, run one of these commands:

     ```
     msiexec /i Stonesoft-VPN-Client-<version>-x64.msi REINSTALLMODE=vomus REINSTALL=ALL
      TRANSFORMS=<transform_file>
     ```

     ```
     msiexec /i Stonesoft-VPN-Client-<version>-x86.msi REINSTALLMODE=vomus REINSTALL=ALL
      TRANSFORMS=<transform_file>
     ```

   - If an earlier version of the Stonesoft VPN Client is not installed on the computer, run one of these commands:

     ```
     msiexec /i Stonesoft-VPN-Client-<version>-x64.msi TRANSFORMS=<transform_file>
     ```

     ```
     msiexec /i Stonesoft-VPN-Client-<version>-x86.msi TRANSFORMS=<transform_file>
     ```

     `<version>` is the exact version number that changes each time an update is released.

Related information
Custom installation scenario

Upgrade the Stonesoft VPN Client

When there is a new version of the Stonesoft VPN Client, you can upgrade the existing installation.

Steps

1) Download the installation .exe file.

Note: If you are not the administrator, the administrator supplies this file.

2) Double-click the executable file.
   A confirmation message appears.

3) Click **Yes**.
   The **Welcome** screen for the installation wizard opens.

4) Click **Next** to start the upgrade.
   During the upgrade process, the earlier version of the Stonesoft VPN Client is removed and replaced with the current version using the same settings.

5) Accept the License Agreement and click **Next** to continue.

6) When the upgrade is finished, click **Finish** to close the wizard.

Related tasks
Download the installation file on page 7
Install using a custom installation package on page 8

Configuring certificates

The Stonesoft VPN Client can authenticate end users using internal or external certificates. You can use certificates only with IPsec-based Stonesoft VPN Client connections.

In certificate-based authentication, you or the end user must first create a certificate request. The request process also generates a private key for the certificate. The certificate cannot be used without the private key, which should always be protected by a passphrase to prevent unauthorized use of the certificate. The certificate request must be signed by a valid certificate authority (CA) to produce a valid certificate. For a gateway to accept the client certificate as proof of identity, it must be configured to trust the CA that has signed the Stonesoft VPN Client certificate.

Supported certificate authentication schemes

There are four general options for setting up certificates required for authentication.

Certificate option	What to do
Create certificates using the Management Server internal tools	Create a certificate request in the Stonesoft VPN Client. Then sign the request through the Management Client using the Management Server internal VPN CA.
Create certificates externally	Import certificates with their associated private key into the Stonesoft VPN Client.
Certificate and private key stored on a smart card	The Stonesoft VPN Client calls the external smart card software on the computer and there is no need for any configuration steps on the Stonesoft VPN Client. The smart card is ready to use and is available when inserted if the smart card reader is correctly configured in Windows.

Certificate option	What to do
Locally stored certificates in the Microsoft Certificates Store	Certificates are stored in the Microsoft Certificates Store on the end-user computer and are automatically available for use with the Stonesoft VPN Client.

When the certificate request is generated in the Stonesoft VPN Client, the resulting certificate is called an *Internal Certificate* in the Stonesoft VPN Client. When the certificate request is created using other tools, the certificate is called an *External Certificate* in the Stonesoft VPN Client.

User identities

Certificates are a proof of the certificate holder identity. The exact form of the identity used can vary.

Two fields in internal certificates can be used for authentication in mobile VPNs:

- **Subject Name** — Contains a *Distinguished Name* (DN) that can consist of multiple items such as *Common Name* (CN), *Organization* (O), *Country* (C), and *Email Address* (E).
- **Subject Alternative Name** — Usually contains the user's email address. Some client certificates do not have a Subject Alternative Name. This field is used in authentication if it is available in the client certificate.

Depending on the certificate, an end user can authenticate to a gateway either with an email address, a subject name, a DNS name, or an IP address. The end user can change their user ID type in the Stonesoft VPN Client, except for certificates stored on smart cards or in the Microsoft Certificates Store. The certificate information is matched against details defined in the User elements in the Management Client or in an external LDAP database.

Authenticating with internal certificates

The Stonesoft VPN Client has tools for creating a certificate request and the associated private key.

When the certificate request is ready, the end user must deliver the certificate request to a trusted CA for signing. The request can be signed using the SMC internal VPN CA or some other certificate authority. The signed certificate is sent back to the end user, who must import it in the Stonesoft VPN Client. To use the certificate for authentication, the end user must enter the passphrase that protects the private key each time they connect. The passphrase was selected by the end user when creating a certificate request or when they decide to change the key.

Create a basic certificate request

You can create a basic certificate request for an internal certificate in the Stonesoft VPN Client.

Steps

1) Start the **Certificate Request Wizard**.
   a) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
   b) Click the **Certificates** tab.
   c) Click **Create Certificate Request**.

2) Verify that **Basic Mode** is selected and click **Next**.

3) In the **User Name** field, enter the user name.
   The user name must correspond to what is defined on the gateway.

   Note: If you are not the administrator, contact the administrator if you are unsure what to enter as the user name.

4) In the **Passphrase** field, enter and confirm a passphrase to use whenever you authenticate yourself using the certificate.
   You can select this passphrase yourself. We recommend choosing a passphrase that meets the following requirements:
   - Be at least eight characters long
   - Contain a combination of numbers, letters, and special characters

   Note: Secure passphrases are never based on personal information such as names, birthdays, ID numbers, or phone numbers.

5) Click **Create**. You are prompted to save the certificate request.

6) Click **Save**. A file save dialog box opens.

7) Save and send the file for signing.
   a) Browse to the correct folder, enter a file name, and click **Save**. Make sure that **Certificate Requests (*.csr)** is selected as the file type.

   b) (Optional) Click **Launch Default Windows E-Mail Application** to create a message in your default email application.

   c) If you are not the administrator, send the certificate request .csr file that you saved to the administrator for signing.

8) Click **Finish** to close the wizard.

Next steps

When you receive the signed internal certificate, import it.

Create an advanced certificate request

An advanced certificate request offers more options than a basic certificate request for defining the properties of the certificate request and the private key. The exact options to use depend on the capabilities of the CA and the requirements and preferences of your organization.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.

2) Click the **Certificates** tab.

3) Click **Create Certificate Request**.

4) Select **Advanced Mode** and click **Next**.

5) Enter the information according to your environment as described in the table.

Table 6: Create certificate request options

Setting	Description
Subject Name	Distinguished name that identifies the end user on the gateway.
Alternative Subject Type	Type of attribute to use as the Subject Alternative name.
Alternative Subject Value	Value of the attribute that is used as the Subject Alternative name.
Private Key Type	Algorithm for generating the private key.
Private Key Length	Length of the private key.
Passphrase	Passphrase you want the end user to enter and confirm when the user authenticates using the certificate. We recommend choosing a passphrase that meets the following requirements: • Be at least eight characters long • Contain a combination of numbers, letters, and special characters **Note:** Secure passphrases are never based on personal information such as names, birthdays, ID numbers, or phone numbers.

6) Click **Next**.

7) (Optional) Select additional options for Key Usage and Extended Key Usage according to your environment.

8) Click **Create**. The certificate request is created and saved as a .csr file.

Next steps

If you configured internal certificates as a gateway authentication method, complete the following tasks:

- Inform end users that they must create a certificate request in the Stonesoft VPN Client.
- Provide end users with the information they must enter.
- Inform end users which options they must select when they create the certificate request.

Obtain signed certificates

Certificate requests generated in the Stonesoft VPN Client are signed by the Management Server internal VPN CA or by a third-party CA.

The CA that signs the Stonesoft VPN Client certificate must be defined as a trusted VPN certificate authority in the SMC. To sign a certificate request internally, use the certificate signing tool in the **VPN** branch of the

Configuration view in the Management Client. See the *Forcepoint Next Generation Firewall Product Guide* for more information.

Import a signed certificate

A signed certificate must be imported into the Stonesoft VPN Client.

Note: If you are not the administrator, the administrator signs your certificate request for an internal certificate and sends it back to you.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
2) Click the **Certificates** tab.
3) Click **Import Certificate**.
4) Verify that **Internal Certificate** is selected and click **Next**.
5) Click **Select**.
   A Windows file browser opens.
6) Browse to the correct folder, select the signed certificate, and click **Open**.
7) Click **Finish** to close the wizard.

Result

The certificate is now listed on the **Certificates** tab. The **Certificates** tab displays, among other information, the expiration date of the certificate.

Authenticating with external certificates

You might prefer to use external tools to create the certificate request instead of having it created in the Stonesoft VPN Client. This method is useful if the end users already have suitable signed certificates and private keys that can be used.

There are of three ways of using previously generated external certificates with the Stonesoft VPN Client. You can use:

- An external certificate stored on a smart card
- A certificate stored in the Microsoft Certificates Store on your local computer
- An imported certificate in the Stonesoft VPN Client

Locally stored certificates used for the Microsoft Certificates Store on the end-user computer are automatically available for use with the Stonesoft VPN Client. In all other cases, the end users must import both the certificate and the private key in the Stonesoft VPN Client. The certificates and the private keys can be imported either as a single PKCS # 12 file or as two separate files. You must inform the end users which options they must select when importing the external certificates.

Only certificates signed by the Management Server internal VPN certificate authority are trusted by default. Other certificate signers must be configured as trusted on the gateway to allow the end users to authenticate. See the *Forcepoint Next Generation Firewall Product Guide* for more information.

Import a PKCS #12 file

Import the file containing the certificate and the private key.

Steps

1) Open the **Import Certificate Wizard**.
   a) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
   b) Click the **Certificates** tab.
   c) Click **Import Certificate**.
2) Select **External Certificate**.
3) Select **PKCS # 12 File** and click **Next**.
4) Click **Browse** and select the PKCS #12 file to import.
5) In the **PKCS #12 Password** field, enter the PKCS #12 password for the certificate file.
6) In the **Passphrase** field, enter and confirm a passphrase to use whenever you authenticate yourself using the certificate.
   You can select this passphrase yourself. We recommend choosing a passphrase that meets the following requirements:
   - Be at least eight characters long
   - Contain a combination of numbers, letters, and special characters

   Note: Secure passphrases are never based on personal information such as names, birthdays, ID numbers, or phone numbers.
7) Click **Next** > **Finish**.

Result

The signed certificate is now listed on the **Certificates** tab. The **Certificates** tab displays, among other information, the expiration date of the certificate.

Import separate certificate and private key files

If there is an existing external certificate and private key files that you want to use for authentication, you can import them into the Stonesoft VPN Client.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
2) Click the **Certificates** tab.
3) Click **Import Certificate**. The **Import Certificate Wizard** opens.
4) Select **External Certificate**.
5) Select **Separate Certificate and Private Key Files** and click **Next**.
6) Click **Browse** to select the certificate file and private key file to import.
7) Click **Next** > **Finish**.

Result

The certificate is now listed on the **Certificates** tab. The **Certificates** tab displays, among other information, the expiration date of the certificate.

Change the certificate passphrase

You must enter a passphrase every time the Stonesoft VPN Client asks you to authenticate yourself using this certificate. You can change the passphrase of a certificate that you have imported through the Stonesoft VPN Client.

You can choose this passphrase yourself. We recommend choosing a passphrase that meets the following requirements:

- It is at least eight characters long.
- It contains a combination of numbers, letters, and special characters.

Note: Secure passphrases are never based on personal information such as names, birthdays, ID numbers, or phone numbers.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
2) Click the **Certificates** tab.
3) Right-click the certificate and select **Change Key Passphrase**.

4) Enter the current passphrase and the new passphrase in both fields provided, and click **OK**.

Note: If you leave the new passphrase fields empty, the private key of the certificate is not encrypted. For security reasons, it is highly recommended that you enter a passphrase.

View user certificate details

To learn more about a user certificate, you can access the Microsoft Certificates Store on your computer and the issuer certificate in the Trusted Root Certification Store.

Although the **Windows Certificate** dialog box provides tools for installing the user certificate, installing the user certificate is not necessary for the operation of the Stonesoft VPN Client.

Note: This operating system dialog box is not part of the Stonesoft VPN Client. If you want more instructions for it, press **F1** to view the context-specific Windows help for this dialog box.

The **General**, **Details**, and **Certification Path** tabs provide detailed information about the certificate.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.

2) Click the **Certificates** tab.

3) Right-click the certificate and select **Details of User Certificate** or **Details of Issuer Certificate**.
The **Windows Certificate** dialog box opens.

Change the certificate user ID type

Several user IDs can be available for each imported certificate. The options available depend on which types of information are included in the certificate.

CAUTION: If you are not the administrator, do not change the user ID type unless the administrator specifically instructs you to do so.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.

2) Click the **Certificates** tab.

3) Right-click the certificate that you want to change and select one of these options:
   - **Certificate ID to Use > E-mail**
   - **Certificate ID to Use > Subject Name**
   - **Certificate ID to Use > DNS Name**
   - **Certificate ID to Use > IP Address.**

Enable CRL checks

For IPsec connections, you can optionally enable Certificate Revocation List (CRL) checks to verify the validity of gateway certificates.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
2) Click the **Advanced** tab.
3) Select **Check Gateway Certificate Validity on Certificate-Specified CRLs**.
4) Click **Apply**.
5) Click **Close**.

Certificate expiration

For added security, certificates have an expiration date. Certificates signed by the Management Server internal VPN CA are valid for three years from their creation.

It is not possible to extend the validity of the certificates. To continue using certificate authentication for more than three years on the same installation, you must create a new certificate.

The CA also has an expiration date. The Management Server internal VPN CA is valid for 10 years. A new CA is automatically created six months before the expiration, and you must create new certificates for the clients and sign them with the new CA.

Delete certificates

Sometimes, an imported certificate might become unnecessary. In such cases, you can delete the obsolete certificate through the Stonesoft VPN Client.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
2) Click the **Certificates** tab.
3) Right-click the certificate and select **Delete Certificate**.
   A confirmation dialog box appears.
4) Click **Yes** to permanently delete the certificate.

Troubleshooting VPN connections

If you are having problems with your VPN connections, consider these options for resolving the issue.

Access logs and diagnostics

Logs and diagnostics are a useful resource for administrators and Forcepoint support when troubleshooting VPNs.

There are two ways to gather the diagnostics and log files. The most convenient way to gather information from end-user computers is to instruct end users to collect a diagnostics file that also includes the logs. You can also view the logs separately when you are troubleshooting a Stonesoft VPN Client locally.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.

2) Click the **Diagnostics** tab.

Collect diagnostic information

Diagnostics collect all the relevant information on how the Stonesoft VPN Client operates, including logs, network interface status, routes, and active connections.

The diagnostics are collected in a single archive for easy transfer. The file does not contain secret information such as passwords, but it does contain information related to the VPN configuration such as internal IP addresses. Depending on your operating environment, the file might need to be handled securely.

Diagnostics information is meant for administrators. If you are experiencing connection problems with the Stonesoft VPN Client, the administrator might ask you to collect and send in a file containing diagnostics information about your installation.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.

2) Click the **Diagnostics** tab.

3) Click **Collect Diagnostics**.
   The **Collect Diagnostics** dialog box opens and displays the progress of the data collection. You might see an additional dialog box open when system information is gathered.

4) When the data collection finishes, click **Save Diagnostics**.

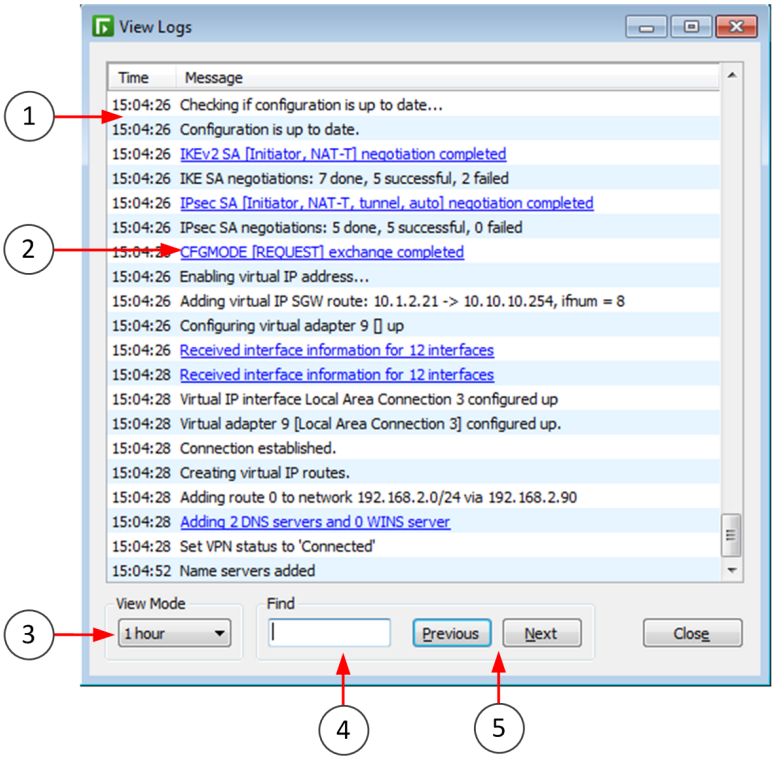
5) Browse to the location where you want to save the file, enter a file name, and click **Save**.

Reading logs

The Stonesoft VPN Client maintains its own log of events related to its operation. You can view this log directly in the Stonesoft VPN Client.

This log is also included in the diagnostics file. Depending on the issue you are troubleshooting, there might be additional relevant logs in the Windows logs.

Figure 1: View Logs dialog box



1 Log entries

2 Links to view more detailed information

3 Modes to view logs in real time, from a certain time period, all stored logs, or the most recent logs with detailed information

4 Keyword search to look for specific log entries

Note: This option is not available in all view modes.

5 Navigation to find more occurrences of the keyword

Capture network traffic

From the Stonesoft VPN Client, you can record the network traffic of the local computer during a problem situation to help with troubleshooting.

If you are not the administrator, the administrator might ask for the traffic capture files. Alternatively, the administrator might capture local network traffic through your Stonesoft VPN Client. The traffic recordings are saved on the local computer in the traffic dump files adapter.pcap and protocol.pcap in the specified folder.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.

2) Click the **Diagnostics** tab.

3) Click **Capture Traffic**.
   The **Capture Traffic** dialog box opens.

4) (Optional) Click **Browse** and browse to the folder where you want to save the traffic capture files.

5) Click **Start Capture**.
   The traffic capture begins.

6) Click **Stop Capture** when all traffic related to the problem has been recorded.

7) Click **Close** to close the **Capture Traffic** dialog box.

Accessing and customizing traffic dump files

Traffic captures record the network traffic of the local computer to help with troubleshooting when network problems are suspected.

The recorded traffic is saved on the local computer in the traffic dump files adapter.pcap and protocol.pcap. These files can be opened with any program that can display .pcap files.

You can customize how traffic is captured by changing the values for the registry key HKEY_LOCAL_MACHINE \SYSTEM\CurrentControlSet\services\sgravpn\Parameters on the local computer.

Table 7: Registry values for customizing traffic captures

Name	Type	Description
CaptureMaxSize	REG_DWORD	The maximum traffic capture file size in MB. If not defined, the maximum size is 10 MB.
CaptureDirectory	REG_SZ	The default directory in which traffic capture files are stored.
CaptureSnapLength	REG_DWORD	The number of bytes captured from each network packet. If not defined, the whole packet is captured.
CaptureSystemStartup	REG_DWORD	If set to 1, the traffic capture is started immediately when the operating system starts.

Solving connectivity issues

You can resolve some connectivity issues by adjusting different VPN settings.

Using different connection settings

Some connectivity problems can be solved by configuring the Stonesoft VPN Client to automatically try different combinations of retry settings.

The automatic retry setting is useful in dealing with network connections that severely restrict the allowed communications. In such situations, you can browse the Internet outside the VPN connection, but the Stonesoft VPN Client is unable to connect to the VPN gateway. The retry option is on the **Advanced** tab in **Stonesoft VPN Client Properties** dialog box.

Activate or deactivate random local VPN ports

For IPsec VPN connections, you can configure the Stonesoft VPN Client to select random local VPN ports when opening a VPN connection.

Note: By default, the Stonesoft VPN Client uses local ports 500 and 4500 for VPN connections.

VPN connections might fail because the default local ports that the Stonesoft VPN Client uses for VPN connections, ports 500 and 4500, cannot be used in your environment.

If these default ports cannot be used for VPN connections, enable a random selection of ports from the 1025–65535 range every time a VPN connection is made.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
2) Click the **Advanced** tab.
3) Select or deselect **Use Random Local VPN Connection Ports**.
4) Click **Apply**.
5) Click **Close**.

Change the Stonesoft VPN Client MTU

If you experience network problems, you can adjust the maximum transmission unit (MTU) size for your Stonesoft VPN Client installation.

Large chunks of data that you send over networks are broken down into several smaller units, called *packets*, for transfer. The MTU defines how large the packets can be. A larger MTU is more efficient, but the packet size might have to be reduced if the packets are sent through a network or device that cannot handle large packets.

Important: If you are not the administrator, do not change the Stonesoft VPN Client MTU unless the administrator tells you to.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
2) Click the **Advanced** tab.
3) Select the **MTU** from the list or type in the MTU value.
   If you are not the administrator, the administrator tells you what value to use.
4) Click **Apply** and **Close**.
5) Restart the computer.

Change the Stonesoft VPN Client MAC address

If you experience networking problems, you can adjust the MAC (media access control) address of your Stonesoft VPN Client. Changing the MAC address requires Windows administrator rights.

Note:
The Stonesoft VPN Client MAC address can also be changed through the command line or with a script by running the sgvmac.exe command.

Example: To change the MAC address to 06:05:04:03:02:01, enter:

```
sgvmac.exe 06:05:04:03:02:01
```

A media access control address (MAC address) is a unique identifier assigned to the Stonesoft VPN Client for communications on the network. Changing the MAC address affects the virtual IP address the Stonesoft VPN Client gets when connecting to the gateway.

Important: If you are not the administrator, do not make this change unless the administrator tells you to.

Steps

1) In the system tray on the Windows taskbar, right-click the Stonesoft VPN Client icon, then select **Properties**.
2) Click the **Advanced** tab.
3) Click **Select MAC Address**.
   The **MAC Address for Virtual IP Address** dialog box opens.
   Windows might display a security dialog box before the **MAC Address for Virtual IP Address** dialog box opens.
4) Select or type the correct MAC Address and click **Apply**.

   Note: If you are not the administrator, your administrator provides the information.
5) Click **Close**.
6) Click **Apply** and **Close** in the **Stonesoft VPN Client Properties** dialog box.

Using the Stonesoft VPN Client in automated mode

You can configure the Stonesoft VPN Client to establish and maintain VPN connections automatically. This mode is useful for situations where there is no user present to start the VPN connection, such as for automated teller machines.

How automated mode works

When Stonesoft VPN Client is started in automated mode, it automatically creates a VPN connection to the VPN gateway specified in the Stonesoft VPN Client configuration. It also automatically creates a VPN when the computer on which the Stonesoft VPN Client has been installed is started.

The Stonesoft VPN Client user is authenticated either with a certificate or with a password. The first certificate found in the Stonesoft VPN Client Certificate directory is used with certificate authentication.

Important: If you want to use the Stonesoft VPN Client in automated mode on a computer that already has the Stonesoft VPN Client installed, you must first uninstall the existing Stonesoft VPN Client. Then reinstall it according to the instructions in this document.

The Stonesoft VPN Client user interface is not started automatically when the Stonesoft VPN Client has been installed in automated mode. If necessary, you can start the user interface from the Programs folder in the Start menu. In automated mode, the user interface can only be used for monitoring the connection status. All commands from the user interface are ignored.

Preparing files for installation

Several files are always needed for installing and authenticating the Stonesoft VPN Client for use in automated mode.

- Stonesoft VPN Client installation file
- Gateway contact information file for the Stonesoft VPN Client
- Depending on the authentication method, one of these files:
  - Password file — You must have the password file for the Stonesoft VPN Client.
  - Certificate file — You must have a private key file and a certificate file for the Stonesoft VPN Client.

Note: The private key must not be encrypted.

If the Stonesoft VPN Client user is authenticated with a password, you must create a .txt file that defines the user name and the password. Optionally, the signature type that matches the gateway certificate (RSA, DSS, or ECDSA) can also be defined. If the signature type is not specified in the password file, RSA is used.

The user name and the password are defined in the password file using this format:

<user>user name</user>

<pass>password</pass>

The signature type is defined in one of the following ways:

<auth>RSA</auth>

<auth>DSS</auth>

<auth>ECDSA</auth>

The private key file and certificate file or the password file are used to authenticate the user. Only one of the authentication methods can be used at the same time. The gateway contact information file contains the information the Stonesoft VPN Client needs for making an initial connection to a gateway. The installer asks for the gateway contact information and for the authentication files (the private key file and certificate file, or the password file) during the installation. The gateway contact information file is created in the Management Client.

Example scripts for installation

Several files are always needed for installing and authenticating the Stonesoft VPN Client for use in automated mode.

Example script 1 — This script is for certificate authentication.

```
@echo.
@echo * Installing Stonesoft VPN Client...
%1 /quiet /log install_log.txt SG_INSTALL_MODE=Automated
@echo.
@echo * Stopping Stonesoft VPN Client Service...
net stop sgipsecvpn
@echo.
@echo * Copying configuration files...
copy %2 "%ALLUSERSPROFILE%\Forcepoint\Stonesoft VPN Client\certificates\client.crt"
copy %3 "%ALLUSERSPROFILE%\Forcepoint\Stonesoft VPN Client\certificates\client.prv"
copy %4 "%ALLUSERSPROFILE%\Forcepoint\Stonesoft VPN Client\gateway_info\contact_info_a.xml"
@echo.
@echo * Starting Stonesoft VPN Client Service...
net start sgipsecvpn
```

Example script 2 — This script is for user name and password authentication.

```
@echo.
@echo * Installing Stonesoft VPN Client...
%1 /quiet /log install_log.txt SG_INSTALL_MODE=Automated
@echo.
@echo * Stopping Stonesoft VPN Client Service...
net stop sgipsecvpn
@echo.
@echo * Copying configuration files...
copy %2 "%ALLUSERSPROFILE%\Forcepoint\Stonesoft VPN Client\passwd.txt"
copy %3 "%ALLUSERSPROFILE%\Forcepoint\Stonesoft VPN Client\gateway_info\contact_info_a.xml"
@echo.
@echo * Starting Stonesoft VPN Client Service...
net start sgipsecvpn
```

Each example script works in this order:

1) The script starts the installer with the following arguments: `/quiet /log install_log.txt SG_INSTALL_MODE=Automated`. It also creates a log file `install_log.txt` from the installation process.

2) The script starts the Stonesoft VPN Client. The Stonesoft VPN Client service is still shut down because the files used in authentication and the gateway contact information file are still missing.

3) The script copies the missing files to the directory `%ALLUSERSPROFILE%\Forcepoint\Stonesoft VPN Client`.

4) The script starts the Stonesoft VPN Client service.

Example script for installation using Local Machine Certificates

This script installs the Stonesoft VPN Client in automated mode and uses Local Machine Certificates with a private key without a PIN or password.

To use this script, the SHA1 thumbprint of the certificate must be in the Local Machine Personal Certificate store, or you must import a PKCS#12 file that contains the certificate and the private key to the Local Machine Personal Certificate store. For already installed certificates, you can obtain the thumbprints from the following registry key: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\SystemCertificates\MY\Certificates. The sub keys are the SHA1 thumbprints.

Example script

```
@echo.

@echo * Installing Stonesoft VPN Client...

%1 /quiet /log install_log.txt SG_INSTALL_MODE=Automated

@echo.

@echo * Stopping Stonesoft VPN Client Service...

net stop sgipsecvpn

@echo.

@echo.* Installing registry entry

regedit -s %2

@echo * Copying configuration files...

copy %3 "%ALLUSERSPROFILE%\Forcepoint\Stonesoft VPN Client\gateway_info\contact_info_a.xml"

@echo.

@echo * Starting Stonesoft VPN Client Service...

net start sgipsecvpn
```

Example registry entry file

```
Windows Registry Editor Version 5.00

; Use this registry path for 64-bit OS
[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Forcepoint\Stonesoft VPN Client]
"AutomatedVPNCert"="ABCDEF1234567890ABCDEF1234567890ABCDEF12"

; Use this registry path for 32-bit OS
[HKEY_LOCAL_MACHINE\SOFTWARE\Forcepoint\Stonesoft VPN Client]
"AutomatedVPNCert"="ABCDEF1234567890ABCDEF1234567890ABCDEF12"
```

Replace the example thumbprint (`ABCDEF1234567890ABCDEF1234567890ABCDEF12`) with the SHA1 hash of the certificate.

Install the Stonesoft VPN Client in silent mode

When you install the Stonesoft VPN Client with a command-line script in silent mode, the installation runs without any messages about the progress of the installation.

You can install the Stonesoft VPN Client silently with your own script or with one of the example scripts.

Steps

1) Customize the example scripts according to your environment or create your own script.

Note: If you use your own script, use the same destination file names for the certificate and the private key as in the example script — client.crt and client.prv.

2) To use the script, put all relevant files in the same directory:
   - Script file
   - Stonesoft VPN Client installation file
   - Gateway contact information file for the Stonesoft VPN Client
   - Certificate file and private key file for the IPsec Stonesoft VPN Client if a certificate is used for authentication
   - Password file for the Stonesoft VPN Client if a password is used for authentication

3) Open a command prompt as an administrator.

4) Run the script and enter the parameters according to the selected authentication method:
   - If you use a certificate (Example Script 1), enter:

     ```
     script.bat <INSTALLER.EXE> <CERTIFICATE> <PRIVATE_KEY> <GW_CONTACT_INFO_FILE>
     ```

   - If you use a password (Example Script 2), enter:

     ```
     script.bat <INSTALLER.EXE> <PASSWORD> <GW_CONTACT_INFO_FILE>
     ```

Result

When the installation is finished, Stonesoft VPN Client has been configured for use in automated mode. It starts automatically and tries to establish a VPN to the gateway.

Next steps

If the number of Stonesoft VPN Client installations is large, it might be necessary to adjust the default connection retry times.

Connection retry times in automated mode

If the Stonesoft VPN Client is used in automated mode, it automatically tries to reconnect to the VPN gateway if the VPN connection is lost.

The default connection retry times for the automated Stonesoft VPN Client are:

- Minimum connection retry time: 3 seconds
- Maximum connection retry time: 192 seconds.

In installations that have many automated Stonesoft VPN Client installations, it might be necessary to adjust the default connection retry times. Changing the connection retry times might be useful to ensure connectivity after network outages, for example. To adjust the default connection retry times, edit the retryconf.txt file and save it to the directory <system_drive>\ProgramData\Forcepoint\Stonesoft VPN Client\retryconf.txt. The Stonesoft VPN Client must be installed before you can save the retryconf.txt file to the directory.

The syntax for adjusting the connection retry times using the retryconf.txt file is the following:

<min>minimum connection retry time in seconds</min>

<max>maximum connection retry time in seconds</max>

<rnd>percentage of randomness in connection retry time</rnd>

The default connection retry time is an increasing multiple of the minimum connection retry time, but it does not exceed the maximum connection retry value. The randomness percentage adds time*rnd(-1.0 ..

1.0)*percentage/100 to the connection retry time during each attempt. However, the connection retry time never exceeds the maximum connection retry time or goes below the minimum connection retry time.

Unless specified in the configuration file, the randomness percentage is not used. If the retryconf.txt file does not exist in the directory, the default connection retry times are used.

Error handling in automated mode

If errors occur in VPN connections, the Stonesoft VPN Client automatically attempts to recover. There are two types of errors — unrecoverable and recoverable.

Unrecoverable errors

Unrecoverable errors cannot be resolved automatically and require user interaction.

If the Stonesoft VPN Client encounters an unrecoverable error, it shuts down and does not attempt a restart. Unrecoverable errors include:

- A required certificate, private key, or gateway information file is missing or contains invalid information.
- The private key is encrypted and requires entering a passphrase.
- The password file is incorrectly formatted or contains incorrect information (for example, there is a typo in the user name or password).

Recoverable errors

Certain types of errors are recoverable and do not require user interaction.

When the Stonesoft VPN Client encounters a recoverable error, it automatically tries to establish a new VPN connection to the gateway. Depending on the error, the next connection attempt is either a normal connection to the next gateway endpoint or an initial connection.

The Stonesoft VPN Client tries to make a normal connection when the following errors occur:

- Any connection state fails due to a recoverable error.
- Gateway connectivity problems have been detected (dead peer detection).

The Stonesoft VPN Client tries to make an initial connection when the following errors are encountered:

- Configuration load fails. A failure can happen if the Stonesoft VPN Client receives an invalid configuration file from the gateway.
- The Stonesoft VPN Client has already attempted to connect to all gateway endpoints to solve the error.

When an error that does not require an initial connection occurs, the Stonesoft VPN Client always tries to connect to the next gateway endpoint. When an initial connection is required, the Stonesoft VPN Client starts the connection attempts from the first gateway endpoint specified in the gateway information file. If the configuration file is not retrieved from the gateway, the Stonesoft VPN Client attempts to connect to the next gateway endpoint.

If an initial connection is required to recover from an error, the Stonesoft VPN Client usually waits for 3 seconds before initiating the connection. If the initial connection fails, the delay before the next connection attempt increases exponentially — 3 s, 6 s, 12 s, up to a maximum of one hour.

If the number of Stonesoft VPN Client installations is large, it might be necessary to adjust the default connection retry times.