

Stunnel 5.56 for OpenVMS I64 and Alpha

June 2020

1. Introduction

Thank you for your interest in this port of stunnel to VSI OpenVMS. The current release of stunnel for VSI OpenVMS is based on the stunnel 5.56 distribution.

Stunnel (<https://www.stunnel.org/>) is a proxy designed to add SSL/TLS encryption functionality to existing client and server applications without any changes to application code. Stunnel is optimized for security and scalability, making it well-suited for large numbers of concurrent connections. Stunnel uses the OpenSSL library for encryption and is distributed under the GNU GPL version 2 license or later with an OpenSSL exception.

This port of the stunnel for VSI OpenVMS includes all functionality provided by the open source release with the exception of IPv6 support, which will be included in a future release. Additional information about stunnel can be found at <https://www.stunnel.org/>.

2. Acknowledgements

VMS Software Inc. would like to acknowledge the work of stunnel author Michał Trojnara and all community members for their ongoing efforts in developing and supporting this open source software project. VMS Software Inc. would also like to thank Duncan Morris for his thorough testing of stunnel on VSI OpenVMS, which identified a significant thread-related issue that could cause a deadlock situation. In addition to identifying the problem Duncan also kindly provided a fix that is included in this release.

3. What's new in this release

For a detailed description of the features and bug fixes included in this release, please read <https://www.stunnel.org/NEWS.html>.

SSL/TLS support is statically linked into this release of stunnel for VSI OpenVMS and uses OpenSSL 1.1.1g. This release of stunnel for VSI OpenVMS is multi-threaded and can take full advantage of multiple processor cores or CPU's to achieve high levels of scalability.

This release includes a fix that addresses a problem whereby a deadlock could occur in the `select()` function when waiting for the same socket on multiple threads. This release also includes a change to ensure that the system logical name `stunnel$root` is defined upon completion of the installation process, making it easier for administrators to find and update template stunnel configuration files.

4. Requirements

The kit you are receiving has been compiled and built using the operating system and product versions listed below. While it is highly likely that you will have no problems installing and using the kit on systems running higher versions of the operating system or products listed, we cannot say for sure that you will be so lucky if your system is running older versions.

- VSI OpenVMS Version 8.4-1H1 or higher
- VSI TCP/IP, HPE TCP/IP Services for OpenVMS, or MultiNet TCP/IP

In addition to the above requirements, it is recommended that the software is installed on an ODS-5-enabled file system.

5. Recommended reading

Before using stunnel for VSI OpenVMS, it is recommended that users read the documentation available at <https://www.stunnel.org/docs.html> in order to better understand how to use and configure the software.

6. Installing the kit

The kit is provided as an OpenVMS PCSI kit (VSI-I64VMS-STUNNEL-V0556-0B-1.PCSI or VSI-AXPVMS-STUNNEL-V0556-0B-1.PCSI, depending on hardware platform) that can be installed by a suitably privileged user using the following command:

```
$ PRODUCT INSTALL STUNNEL
```

The installation will then proceed as follows (output may differ slightly from that shown, depending on platform and other factors):

```
Performing product kit validation of signed kits ...
```

```
The following product has been selected:
```

```
  VSI I64VMS STUNNEL V5.56-0B          Layered Product
```

```
Do you want to continue? [YES]
```

```
Configuration phase starting ...
```

```
You will be asked to choose options, if any, for each selected
product and for any products that may be installed to satisfy
software dependency requirements.
```

```
Configuring VSI I64VMS STUNNEL V5.56-0B: STUNNEL for OpenVMS
```

```
  © 1998-2020 Michal Trojnara, 2020 VMS Software Inc.
```

```
  VSI Software Inc.
```

```
* This product does not have any configuration options.
```

```
Execution phase starting ...
```

```
The following product will be installed to destination:
```

```
  VSI I64VMS STUNNEL V5.56-0B
DISK$IA21_842L1:[VMS$COMMON.]
```

```
Portion done: 0%...90%...100%
```

```
The following product has been installed:
```

```
  VSI I64VMS STUNNEL V5.56-0B          Layered Product
```

```
VSI I64VMS STUNNEL V5.56-0B: STUNNEL for OpenVMS
```

Post-installation tasks are required.

To start STUNNEL at system boot time, add the following lines to SYS\$MANAGER:SYSTARTUP_VMS.COM:

```
$ file := SYS$STARTUP:STUNNEL$STARTUP.COM
$ if f$search("''file'") .nes. "" then @'file'
```

To shutdown STUNNEL at system shutdown, add the following lines to SYS\$MANAGER:SYSHUTDOWN.COM:

```
$ file := SYS$STARTUP:STUNNEL$SHUTDOWN.COM
$ if f$search("''file'") .nes. "" then @'file'
```

Before starting STUNNEL you will need to create the configuration file STUNNEL\$ROOT:[ETC]STUNNEL.CONF.

6.1. **Post-installation steps**

After the installation has successfully completed, include the commands displayed at the end of the installation procedure in SYSTARTUP_VMS.COM and SYSHUTDOWN.COM to ensure that stunnel is started and stopped when OpenVMS is booted and shutdown.

Before you can use stunnel it is necessary to create a configuration file that defines the services stunnel will support. By default the configuration file used by stunnel for VSI OpenVMS will be stunnel\$root:[etc]stunnel.conf; however you can modify the file sys\$startup:stunnel\$run.com to specify another configuration file name if you so wish, but keep in mind that any such changes may be overwritten if a new stunnel kit is installed, and it is therefore recommended to use stunnel\$root:[etc]stunnel.conf.

The specific details of defining stunnel services depends somewhat on the type of the service, and it is recommended that you read thoroughly the documentation provided at <https://www.stunnel.org/docs.html> in order to become familiar with the configuration process. Sample configurations for various services can also be found on the internet and adapted as necessary.

To get you started, stunnel for VSI OpenVMS includes several simple sample configuration files, including the files telnet-client.conf and telnet-server.conf, (both in stunnel\$root:[etc]) which can be used to set up a secure telnet tunnel between two OpenVMS servers. To use these sample configurations, on the client OpenVMS system telnet-client.conf should be copied or renamed to stunnel.conf and edited to change the accept and connect parameters as appropriate to your environment (specifically the host name should be changed to that of the target server), and similarly on the server system telnet-server.conf should be copied or renamed to stunnel.conf and edited to change the accept parameter as appropriate to match your client configuration. You should then be able to start stunnel on both nodes, and if on the client system you telnet to localhost using the port specified accept port number you should be connected through to the server node via the tunnel.

The template configuration file (stunnel\$root:[etc] stunnel^.conf.template) is also provided, which includes details for a number of services. This file may be copied to stunnel\$root:[etc]stunnel.conf and modified as necessary.

Note that stunnel for VSI OpenVMS includes a self-signed certificate. This should only be used for basic testing purposes; the use of self-signed certificates for any purpose is not recommended. It should also be noted that the self-signed certificate included with the kit

has an expiration date and it may therefore be necessary to obtain a new certificate regardless.

6.2. Privileges and quotas

The privileges `TMPMBX`, `NETMBX`, `BYPASS`, `SYSPRV`, and `DETACH` are required in order to run the stunnel start-up and shutdown scripts, and the stunnel process (run as a detached process) will inherit the default privileges for the username under which it is started.

The stunnel process can require considerable resources in order to operate efficiently when supporting large numbers of connections. The following quota values should be adequate for most purposes; however resource usage should be carefully monitored, and quotas adjusted as necessary.

Maxjobs:	0	Fillm:	256	Byt1m:	128000
Maxacctjobs:	0	Shrfillm:	0	Pbyt1m:	0
Maxdetach:	0	BI01m:	150	JTquota:	4096
Prclm:	50	DI01m:	150	WSdef:	4096
Prio:	4	AST1m:	300	WSquo:	8192
Queprio:	4	TQE1m:	100	WSextent:	16384
CPU:	(none)	Enq1m:	4000	Pgflquo:	256000

If the stunnel process is expected to support large numbers of concurrent connections then it may also be necessary to increase the `CHANNELCNT` system parameter (this parameter can usually be safely set to its maximum value of 65535).

6.3. Installing in an alternative location

By default stunnel will be installed in `SYS$SYSDEVICE:[VMS$COMMON]`. If you wish to install the software in an alternative location this can be achieved using the `/DESTINATION` qualifier with the `PRODUCT INSTALL` command to specify the desired location; however it is important to note that an additional manual step will then be required to complete the installation. Specifically, when an alternative destination is specified, start-up, shutdown, and related command procedures will be placed into subdirectories residing under the specified destination directory. If you wish to run these files from your standard `SYS$STARTUP` and `SYS$MANAGER` directories they will need to be copied from the destination subdirectories into the appropriate locations.

7. What's missing?

The supplied kit for VSI OpenVMS does not currently support IPv6. It is expected that this problem will be resolved in future releases.