VMS Software

T4 Installation and Configuration Guide for OpenVMS

Release Notes

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Operating Systems: VSI OpenVMS Alpha V8.4-2L1 or higher
VSI OpenVMS IA-64 V8.4-1H1 or higher
VSI OpenVMS x86-64 V9.2-3 or higher

Kit Names: VSI-AXPVMS-T4-V0404-F-1.PCSI$COMPRESSED
VSI-I64VMS-T4-V0404-F-1.PCSI$COMPRESSED
VSI-X86VMS-T4-V0404-F-1.PCSI$COMPRESSED

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1. Introduction

Thank you for using T4. This is an OpenVMS performance monitoring and data collection tool that gathers and stores system performance data for analysis. T4 is not officially supported by VSI and is supplied for VSI OpenVMS Alpha V8.4-2L1 or higher, VSI OpenVMS IA-64 V8.4-1H1 or higher, and VSI OpenVMS x86-64 V9.2-3 or higher.

This kit is not compatible with any earlier versions of OpenVMS.

To get maximum benefit from the T4 data you will be able to collect with this kit, you may want to utilize the TLViz and CSVPNG companion products, or the newer Open Source PDview utility (see http://www.vmsresource.org.uk/t4viewer.html. These tools are specifically designed to save you time when you are analysing the CSV (Comma Separated Value) data files that the T4 collector creates. An OpenVMS version of CSVPNG is included with the T4 kit, and the Visual BASIC sources for TLViz can be provided on request (VSI does not currently provide a ready-built version of TLViz). Versions of TLViz and its Java equivalent JTLViz can also be found elsewhere on the Internet. It should be noted that VSI does not endorse or support these T4 data visualization products.

2. T4 V4.4-F Release Notes

This release includes minor improvements to error handling in WBMSDA.COM. Specifically, there was a flaw in the error handling of the T4 command procedure WBMSDA.COM such that the procedure would become stuck in an infinite loop if for any reason it could not open the desired output file. The error handling has been improved such that the command procedure will now report the error and terminate.

3. Installing the Kit

3.1. The T4 V4.4-F Kit

Your zipped up T4 kit includes the following files (*xxx* is either "X86", "AXP", or "I64", depending on platform):

- VSI-*xxx*VMS-T4-V0404-F-1.PCSI$COMPRESSED – The T4 V4.4-F PCSI kit
- VSI-*xxx*VMS-T4-V0404-F-1.PCSI$COMPRESSED_VNC – Signed manifest

3.2. Privileges Required for T4 Installation

You will need the SYSNAM privilege to establish the logical names required to successfully install T4 and make it ready to run.

3.3. Reset File Attributes

Once you have moved this PCSI kit to your OpenVMS system, you may need to reset the file attributes. These can sometimes be altered in transit depending on how the transfer was accomplished. If necessary, the appropriate reset can be accomplished with the following command:

```
$ SET FILE/ATTRIBUTE=(RFM:FIX,LRL:512,MRS:512,ORG:SEQ,RAT:NONE)
VSI-VMS-T4-V0404-E-1.PCSI$COMPRESSED
```

3.4. Deassign T4$SYS Logical Name

If you are already running a version of T4, be sure you deassign your current T4$SYS system-wide logical name before installing the new kit.

```
$ DEASSIGN T4$SYS /SYS
```

3.5. Install the Latest T4 Kit

You can now install the latest T4 V4.4-F kit using:

```
$ PRODUCT INSTALL T4
```

This installs the kit to the [.T4$SYS] subdirectory beneath SYS$SYSDEVICE:[VMS$COMMON] (that is, SYS$SYSDEVICE:[VMS$COMMON.T4$SYS])

To install to a different directory, use the **/DESTINATION** option as follows:

```
$ PRODUCT INSTALL T4/DESTINATION=disk$somewhere:[dir.tree]
```

This installs the kit to the [.T4$SYS] subdirectory beneath the destination directory (that is, ***disk$somewhere:[dir.tree.T4$SYS]***).

The T4 kit must be installed separately on each node where you expect to run it.

Once you have installed the T4 V4.4-F kit, you will find many more files of additional reference material.

3.6. Making the T4 Logical Names Permanent

This is a critical step to ensure full utilization of T4 on your systems. By defining key T4-related logical names are defined as permanent, interrupted T4 sessions can resume automatically after a system reboot, preventing data loss. The logical names of interest, T4$SYS and T4$DATA, are discussed below.

To define the T4$SYS logical name and make it permanent, add the definition to the system startup SYLOGICALS.COM command procedure and run the following command:

```
$ DEFINE /SYSTEM /EXEC T4$SYS SYS$SYSDEVICE:[VMS$COMMON.T4$SYS]
```

3.7. Creating a T4$DATA Storage Area

When running T4 collections, you must have a convenient and suitably sized disk location available to store the performance data generated by T4. Configure this data disk before installing and reference it using the T4$DATA logical name. It is equally important to make this logical name permanent by adding the definition to the system startup code SYLOGICALS.COM command procedure which allows T4 sessions to resume following system reboots.

```
$ DEFINE /SYSTEM /EXEC T4$DATA Your_Data_Disk:[000000.T4$DATA]
```

You can establish a separate T4$DATA area for each OpenVMS system or you can set up a single T4$DATA disk that is available to all nodes on your OpenVMS cluster.

Warning

Do not use your system disk for T4$DATA.

3.8. Set up a Local Batch Queue to Run T4

For each OpenVMS node that is going to be monitored with T4, a local batch queue is required to run T4 jobs on that node. This may be an existing queue (assuming it has available job slots), or a dedicated T4 batch queue can be created for that node, as shown below.

First, start the queue manager if not already started:

```
$ START/QUEUE/MANAGER/NEW
```

Create and start up a new batch queue:

```
$ INITIALIZE/QUEUE/START/BATCH T4$BATCH /JOB_LIMIT=10
$ SHOW QUEUE/BATCH/FULL
Batch queue T4$BATCH, idle, on NODEX::
/BASE_PRIORITY=4 /JOB_LIMIT=10 /OWNER=[SYSTEM]/PROTECTION=(S:M,O:D,G:R,W:S)
```

You will need one batch queue and one T4 collection session for each OpenVMS node you are going to monitor. As noted above, all the collected and processed data from these sessions will be saved to the T4$DATA directory.

4. Running T4

4.1. Required Quotas

The User Account (for example, T4_USER) that you plan to use to run T4 will require the following QUOTAS:

- PRCLM must be at least 20.
- TQELM must be at least 100.
- PGFLQUOTA must be at least 500000.

```
$ MC AUTHORIZE
UAF> MODIFY T4_USER /PRCLM=20/TQELM=100/PGFLQUOTA=500000
UAF> EXIT
```

4.2. Required Privileges

The user responsible for launching T4 history creation sessions must have the ALTPRI privilege. This allows the OpenVMS Monitor Utility to run at the recommended process priority of 15.

5. Disk Space

5.1. Estimating Disk Space Requirements

For critical and performance-sensitive systems, VSI recommends launching T4 in long-term history mode by responding **Yes** when prompted with the following question:

```
Re-Submit data collection job daily [N] : Y
```

This approach builds a detailed, day-by-day performance history over time.

The actual size you will need for your T4 history area depends on several key factors:

- the number of nodes under measurement
- the number of hours of measurement each day
- the number of devices to be measured
- the number of processes on each system
- the sampling rate (default = 60 seconds)
- the OpenVMS version

To estimate the required disk space, VSI recommends starting with at least 500,000 blocks. Run a trial session (see quick instructions below) of 1 to 2 hours and determine how much disk space is needed for that run.

Then, adjust the size of the T4$DATA storage area as necessary to meet your needs.

Warning

Do not use your system disk for T4$DATA.

T4 includes some rudimentary capabilities for assisting you in the management of your T4$DATA performance history area. Since the data that T4 helps you collect may prove invaluable to you in the future, VSI recommends that you think through and apply your standard local site policies for backing up, archiving, and preserving this potentially priceless historical system information.

5.2. Running a T4 V4.4-F Trial Session

Once T4 is installed, the T4 user account is configured with the required privileges and process limits, a T4 batch queue is established on each monitored node, and the T4$DATA storage area is created, you are ready to launch your first T4 V4.4-F collection session.

To help estimate the required disk space you will require to run T4 in its recommended long-term history mode, run the following command and respond to the prompts according to the guidelines shown below:

```
$ @T4$SYS:T4$CONFIG.COM
```

Start Time

Pick a time that is 5 minutes in the future as this will give you enough time to work your way through the configuration procedure prompts. That way the T4 collection session will be launched prior to the time you specify and you can make sure that you get a full hour of data.

End Time

Pick a time that will give you a total run time of two hours.

Batch queue

Remember to use your T4$BATCH queue that is local to the node you are monitoring.

Network Interface Device

Enter a question mark to get a list of all available network interface devices. Then, highlight that list, and paste it as the answer to the question. This will cause T4 to monitor each of your Network adapters. To monitor all your network adapters, enter **ALL**.

Sampling Interval

Use the default value, which is 60 seconds.

Data Directory

Use T4$DATA.

Re-submit data collection job daily

Answer **NO** to this question as you are using this run to help determine your storage needs before launching T4 in long-term history collection mode.

Email Address

If the node that you are monitoring can send emails, and you would like to receive email notifications from T4, enter your email address here.

Once the run is complete, check the sizes of the files created in the T4$DATA directory. This will give you an idea of the approximate storage costs per hour for this OpenVMS node. The sections below describe the types of files created during a T4 session and the suggested retention periods of each type of data.

5.3. Launching T4 in Long-Term History Mode

After determining an appropriate size for the T4$DATA area by following the steps above, you are ready to launch T4 in long-term history mode. Long-term history mode for T4 is explicitly designed to maximize the benefits that T4 can provide. At the same time it helps to minimize how much time you will have to spend and keep that down to an absolute bare minimum.

Here are some recommendations for parameter values to use in response to the questions triggered by running the following command:

```
$ @T4$SYS:T4$CONFIG.COM
```

Start Time

Use the default which is tomorrow at one minute after midnight.

End Time

Use the default which is tomorrow at 23:59. These settings for Start Time and End Time mean that you will have round-the-clock performance data for the systems that are most vital to you.

Batch queue

Remember to use the T4$BATCH queue that you created and that is local to the node you are measuring.

Network Interface Device

Enter the names of the devices that are a regular part of your production environment. You can enter a question mark to get a list of all available network interface devices. If you want to measure all of them, highlight that list and paste it in as the answer to this question.

Sampling Interval

Use the default value, which is 60 seconds. This has proved to be an excellent default compromise value for long-term history creation.

Data Directory

Use T4$DATA.

Re-submit data collection job daily

Answer **YES** to this question. When you do this, each time T4 runs, the first thing it will do is submit a new batch job for the following day. If you have established T4$DATA and T4$SYS as system wide logical names in your SYLOGICALS.COM file, then this single launch operation will create a full long-term history for this node.

Email Address

Using this or not using this feature is your call.

T4 collection sessions will continue collecting and storing performance data until the batch jobs are deleted.

5.4. Types of Files Created in T4$DATA

T4 produces a composite CSV file daily for each node being monitored. The names of these files are of the form:

`T4_nodename_Collection_Date_start_time_end_time_COMP.CSV`

For example, a one hour run on node PRFE40 might look like:

`T4_PRFE40_28JUN2005_1400_1500_COMP.CSV`

These *COMP.CSV files are typically the first files reviewed.

The output of a T4 collection session includes:

- CSV files
- ZIP files
- LOG files
- DAT files (for OpenVMS MONITOR and for T4FCMON)

Note that after the CSV and DAT files are ZIPped, T4 will delete them, leaving only the ZIP files.

The key CSV files are:

- *COMP.CSV
- *DISK.CSV
- *SCS.CSV
- *T4FCMON.CSV

The remaining CSV files are considered intermediate files and can be deleted after a few days.

VSI recommends that you retain all ZIP files that contain CSV's for at least eighteen months. VSI recommends retaining the ZIP files which contain DAT's for at least 45 days.

Even beyond eighteen months, if older CSV files need to be removed, VSI recommends archiving them to a permanent storage location that remains accessible when needed. At some point, you may need to review data from two or three years ago to compare current performance with historical behavior. This is only possible if these performance timeline files are retained and properly preserved.

6. Terms and Conditions for Using T4 V4.4-F

T4 V4.4-F is subject to the following terms and conditions:

- T4 V4.4-F is supplied 'as is.' without warranties, either expressed or implied.
- T4 V4.4-F is not a Commercial 'Off-The-Shelf' software product.
- T4 V4.4-F is neither freeware nor shareware, and cannot be freely distributed other than by VMS Software, Inc, subsidiaries, successors and assignees.
- T4 V4.4-F remains the sole intellectual property of Hewlett-Packard Enterprise Company and VMS Software, Inc., subsidiaries, successors and assignees.
- T4 V4.4-F may not be redistributed or supplied to any third party, either for commercial gain or otherwise without the prior written consent of VMS Software, Inc.
- T4 V4.4-F is deemed to be supported *only* by consulting services purchased directly from VMS Software, Inc, subsidiaries, successors and assignees, specific for this purpose and by prior agreement.
- You must not request any kind of support from any other VMS Software, Inc. entity, such as any Customer Support Center or Engineering group. This support restriction also applies to any issues of coexistence or interoperability with any other software or hardware, including (but not limited to) supported VSI or HPE products.