

Tru64 UNIX Best Practice

Displaying and Modifying Kernel Subsystem Attributes

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Product Version: Tru64 UNIX Version 5.1A or earlier

This Best Practice describes how to display and modify kernel subsystem attributes for Compaq Tru64 UNIX Version 5.1A and earlier.

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Displaying and Modifying Kernel Subsystem Attributes

This Best Practice describes how to display and modify kernel subsystem attributes for Compaq Tru64 UNIX Version 5.1A and earlier.

See the Tru64 UNIX Best Practices Web page for more information about Best Practices documentation:

http://www.tru64unix.compaq.com/docs/best_practices/index.html

Is This Best Practice Right for You?

Not all Best Practices apply to all configurations, so you must be sure that this Best Practice is appropriate for your system and circumstances. To use this Best Practice, you must meet the requirements described in the following table:

| Requirement | Description |
|------------------------|--|
| Operating System | Tru64 UNIX Version 5.1A or earlier |
| Impact on Availability | Changes to some attributes require a system reboot |

Before You Begin

Before you apply this Best Practice, you must understand some background information and perform some preliminary tasks.

Some older versions of Tru64 UNIX do not support some attributes. Others restrict the methods that you can use to modify and display attributes, or they require operating system patches to use the attributes. See the *System Tuning and Configuration* manual for your version of the operating system for more information on these issues.

Applying the Best Practice

Before you apply this Best Practice, be sure to follow the recommendations in *Before You Begin*.

The operating system includes various subsystems that define or extend the kernel. Kernel subsystem attributes are used to set kernel variables, which control subsystem behavior or track subsystem statistics. Attributes are assigned default values at boot time. In some cases, the default values of some attributes may not be appropriate, so you can modify these values to provide optimal performance. The following sections discuss how to display and modify kernel subsystem attributes.

Displaying Attribute Values

There are various methods that you can use to display the current value of a kernel subsystem attribute and other descriptive information. Use the following methods to display attribute values:

- The Kernel Tuner (`dxkerneltuner`) graphical user interface (GUI) displays permanent, current (run-time), minimum, and maximum values of attributes. Access the GUI through the Common Desktop Environment (CDE) Application Manager window; select the `System_Admin` icon, and then select the `MonitoringTuning` icon. You can then choose the subsystem whose attributes you want to display.
- The `sysconfig -q subsystem [attribute]` command displays the current (run-time) value of the specified attribute or, if an attribute is not specified, all the attributes for the specified subsystem:

```
sysconfig -q subsystem [attribute]
```

For example:

```
# sysconfig -q vm ubc_maxpercent
vm:
ubc_maxpercent = 100
```

- The `sysconfig -Q subsystem [attribute]` command to display the maximum and minimum values of the attributes for the specified subsystem. If you specify a particular attribute, the system displays information only for that attribute.

The output also specifies, in the `op` field, the operations that you can perform on the attribute:

- C - The attribute can be modified when the subsystem is initially loaded; that is, the attribute supports boot time, permanent modifications.

- R - The attribute can be tuned at run time; that is, you can modify the value that the system is currently using.
- Q - The attribute's current value can be displayed (queried).

For example:

```
# sysconfig -Q vfs bufcache
vfs:
bufcache -      type=INT op=CQ min_val=0 max_val=50
```

The output of the previous command shows that the minimum value of the `bufcache` attribute is 0 and the maximum value is 50. The output also shows that you cannot modify the current (run-time) value.

For some older versions of the operating system, you must use the `dbx p` (print) command to display the current value of a kernel variable, instead of an attribute. For example:

```
# dbx -k /vmunix
dbx version 3.11.10
Type 'help' for help.

(dbx) p ipport_userreserved
5000
(dbx)
```

See `dxkerneltuner(8X)`, `sysconfig(8)`, and `dbx(1)` for your version of the operating system for more information:

http://www.tru64unix.compaq.com/docs/pub_page/doc_list.html

Modifying Attribute Values

There are various methods you can use to modify attribute values. The method you use depends on the version of the operating system you are running, and whether you want to modify the current (run-time) value of an attribute or modify an attribute's permanent value. You must be root to modify attribute values.

The following sections describe how to modify the current and permanent values.

Current Value

In some cases, you can modify the current (run-time) value of an attribute. This allows you to determine if modifying an attribute will improve your system performance without rebooting the system. Not all attributes can be tuned at run time, and the temporary modifications are lost when you

reboot the system. Use the `sysconfig -Q` command to determine whether an attribute can be tuned at run time.

To modify an attribute's current (run-time) value, use one of the following methods:

- The Kernel Tuner (`dxkerneltuner`) GUI, if the attribute supports this operation. Access the GUI through the Common Desktop Environment (CDE) Application Manager window; select the `System_Admin` icon, and then select the `MonitoringTuning` icon. Choose the subsystem whose attribute you want to modify, and enter the new value in the `Current Value` field.
- The `sysconfig -r` command, if the attribute supports this operation. Use the following command syntax:

```
sysconfig -r subsystem attribute=value
```

For example:

```
# sysconfig -r inet tcp_keepinit=30
tcp_keepinit: reconfigured
```

For some older versions of the operating system, you must use the `dbx assign` command to modify the current value of a kernel variable, instead of an attribute. However, modifications made with the `dbx assign` command are lost when you reboot the system. Use the following command syntax:

```
dbx assign attribute=value
```

For example:

```
# dbx -k /vmunix
dbx version 3.11.10
Type 'help' for help.

(dbx) assign ippport_userreserved=60000
60000
(dbx)
```

See `dxkerneltuner(8X)`, `sysconfig(8)`, and `dbx(1)` for your version of the operating system for more information:

http://www.tru64unix.compaq.com/docs/pub_page/doc_list.html

Permanent Value

To modify an attribute's permanent (boot-time) value, the `sysconfigtab` file must contain the subsystem name, the attribute name, and the value of the attribute. Do not manually modify the `sysconfigtab` file. To make these modifications, use one of the following methods:

- The Kernel Tuner (`dxkerneltuner`) GUI. Access the GUI through the Common Desktop Environment (CDE) Application Manager window, select the `System_Admin` icon, and then select the `MonitoringTuning` icon. Choose the subsystem whose attribute you want to modify, and enter the new value in the `Boot Time Value` field.
- The `sysconfigdb` command. Use the following command syntax:

```
sysconfigdb -a -f stanza_file subsystem
```

The *stanza_file* is a specially formatted file that contains the name of the subsystem and a list of attributes and their values. This file is merged into the `sysconfigtab` file. See `stanza(4)` for your version of the operating system for more information:

http://www.tru64unix.compaq.com/docs/pub_page/doc_list.html

To use the new attribute value, you must invoke the `sysconfig -r` command if the attribute can be tuned at run time, or reboot the system.

In addition, you can use the `dbx patch` command to modify the value of a variable, as well as the `ondisk /vmunix` image value.

See `dxkerneltuner(8X)`, `sysconfig(8)`, and `sysconfigdb(8)` for more information. See the *System Administration* manual for your version of the operating system for information about modifying the system configuration file:

http://www.tru64unix.compaq.com/docs/pub_page/doc_list.html

Troubleshooting

Some older versions of Tru64 UNIX do not support some attributes. Others restrict the methods that you can use to modify and display attributes, or they require operating system patches to use the attributes. See the *System Configuration and Tuning* manual for your version of the operating system for more information on these issues:

http://www.tru64unix.compaq.com/docs/pub_page/doc_list.html

Comments and Questions

We value your comments and questions on the information in this document. Please mail your comments to us at this address:

best_practices@zk3.dec.com

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