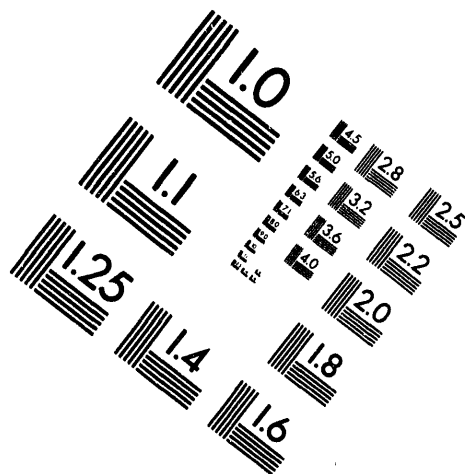
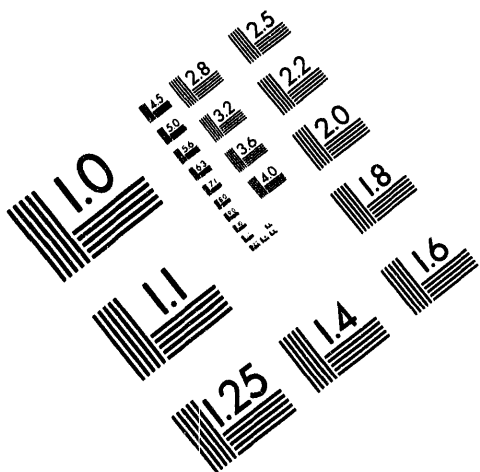




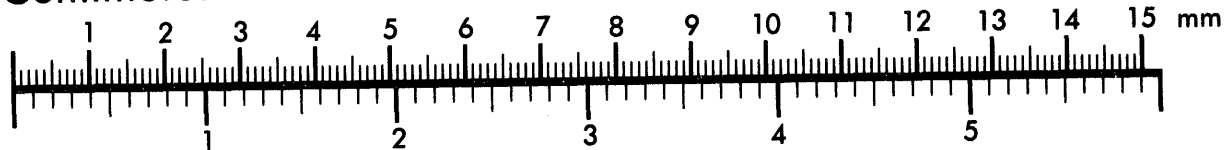
AIM

Association for Information and Image Management

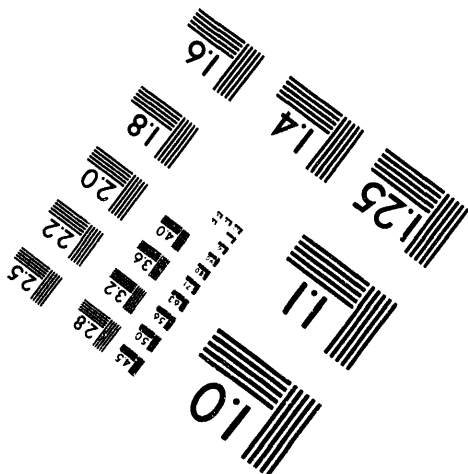
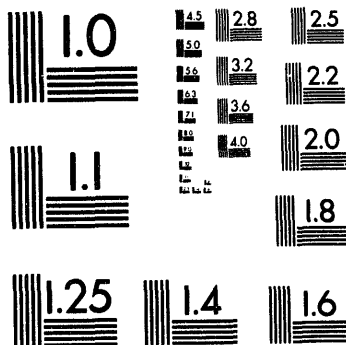
1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202



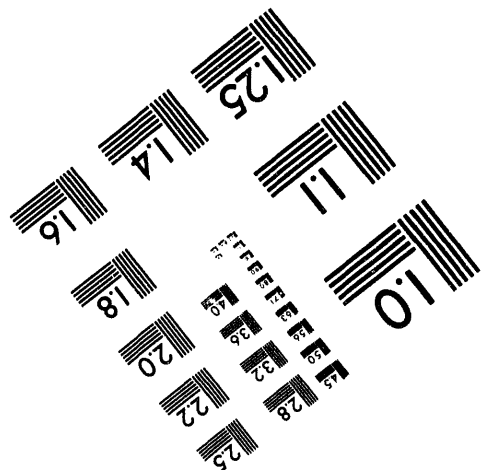
Centimeter



Inches



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1 of 1

CIAC

Computer Incident Advisory Capability

**The Console Password
Feature
for
Dec Workstations
CIAC-2303**

Allan L. Van Lehn

October, 1993

MASTER

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The Console Password Feature for DEC Workstations

Overview

Introduction


Newer VAXstations and all DECstations offer a "hardware" password feature that, when enabled, restricts unauthorized access to your system console terminal when turned on or restarted. VAXstation 3100s shipped after July, 1989 offer this feature. A description of this feature should be part of the *Hardware User Guide* for your workstation; however, some of the early systems did not document this security enhancement. This document is based on the author's investigation as well as information provided by the Digital Equipment Corporation.

Notation used in this document

Due to the different commands and syntax, VAXstations and DECstations will be described in two separate sections within this document. In the VAXstation section of this document, uppercase commands are used only to improve readability; lowercase commands are acceptable. Console input may be in uppercase or lowercase (VAXstations are not case sensitive, but DECstations are). Commands may be abbreviated to the minimum set of unique letters. Commands are not acted upon until the Return key is pressed, thus allowing corrections to be made with the <␣> (delete key) or < **Control-U** > (hold down the control key while pressing the letter U).

Notation	Meaning
>>> or >>	Console or chevron prompt. VAXstations use the three chevron prompt (>>>) and DECstations use the two chevron prompt (>>).
R>	A DECstation console that has its password set will use R> for its prompt, indicating it is in restricted mode.
< >	Angle brackets enclose items which show the range of digits or name (possibly an abbreviation) of the data to be supplied.
[]	Square brackets surround optional items.
{ }	Curly brackets (braces) indicate you must select only one of the enclosed optional items.
	The vertical bar character separates optional items and may be read as a logical "or."
Control-C	Aborts an operation in progress.
Control-Q	Resumes output to the screen.
Control-S	Suspends output to the screen.
Control-U	Is the line erase key sequence.
⌫	Character delete key.

Warnings


 When a DEC workstation is first shipped, its console system operates in privileged command mode. If you do nothing to change from privileged mode, there will be no console command restrictions. Anyone with physical console access can activate *any* console command, the most vulnerable being *interactive booting*. When you set and enable the console password, you can restrict the available console commands to:

- (1) booting without parameters from the default device,
- (2) a command used to enable privileged command mode and,
- (3) other commands that do not provide information or control to unauthorized personnel.

⚠ If you have set a password and then forget what it is, you must have a DEC Field Service Engineer open up your system to re-enable privileged command mode.


VAXstations

Selecting and entering the VAXstation console password

Step	Command / Action
1	<p>Select a password:</p> <p>The password must be a hexadecimal string of characters (0 through 9 and A through F) with a length of exactly sixteen characters. Examples of valid passwords are:</p> <p style="text-align: center;">1ACED33BD23AF301 DAC324EABEA222EA 111111111AACCDEE</p> <p>Examples of invalid passwords are:</p> <p style="text-align: center;">FACE (not 16 characters long) 442ED2FFAC213SE2 (illegal hex character, S)</p> <p> If the password is the wrong length, contains a non-hex character, or does not match (old password to old password or new password to new password), the SET PSWD command fails and the following error message displays: ?31 ILL PSWD</p> <p>The system does not prevent password reuse, but it is good security practice to select a previously unused one.</p>
2	<p>Enter the password:</p> <p>Use the privileged <i>SET PSWD</i> command to enter a new password into the console system:</p> <p>>>> SET PSWD</p>

☞ If you have set a password and then forget what it is, you must have a DEC Field Service Engineer open up your system to re-enable privileged command mode.

VAXstations

Selecting and entering the VAXstation console password	Step	Command / Action
	1	<p>Select a password:</p> <p>The password must be a hexadecimal string of characters (0 through 9 and A through F) with a length of exactly sixteen characters. Examples of valid passwords are:</p> <p style="text-align: center;">1ACED33BD23AF301 DAC324EABEA222EA 11111111AACCDEE</p> <p>Examples of invalid passwords are:</p> <p style="text-align: center;">FACE (not 16 characters long) 442ED2FFAC213SE2 (illegal hex character, S)</p> <p> If the password is the wrong length, contains a non-hex character, or does not match (old password to old password or new password to new password), the <i>SET PSWD</i> command fails and the following error message displays: ?31 ILL PSWD</p> <p>The system does not prevent password reuse, but it is good security practice to select a previously unused one.</p>
	2	<p>Enter the password:</p> <p>Use the privileged <i>SET PSWD</i> command to enter a new password into the console system:</p> <p>>>> SET PSWD</p>

Placing the VAXstation in privileged mode

Use the LOGIN command to place a VAXstation in privileged mode. This makes all console commands accessible. The form of the command is

```
>>> LOGIN
```

⚠ If a password is not enabled, the error message returned is: ?32 PSWD NOTEN

If a password is enabled, the console prompts for password entry:

```
3100 series      4000 series  
? >>>           or    PSWD0 >>>
```

If the correct password is entered, the VAXstation is placed in privileged mode. You then have access to all commands until issuing a command that exits console privileged mode (see the section "Exiting Privileged Mode," below).

⚠ If an incorrect password is entered, the error message returned is: ?23 ILL CMD

Learning the status of the password

To check on the status of the password feature, use the command:

```
>>> SHOW PSE
```

If a "1" or "PSE = 00000001" is displayed, the password is enabled. If a "0" or "PSE = 00000000" is displayed, the password is disabled.

⚠ If the console is already in unprivileged mode, entering this command will result in the error message, ?23 ILL CMD, indicating that the password is enabled.

Exiting privileged mode

The following console commands, executed while the console is in privileged mode, cause an exit from privileged mode before any other operations are begun (also see asterisked commands in the Console Commands table on the next page):

```
>>> BOOT (with any supplied parameters)  
>>> CONTINUE  
>>> HALT  
>>> START
```

Once privileged mode is exited, you must use the LOGIN command and correctly enter the console password to regain privileged mode.

VAXstation 3100 Series console commands

The following commands are for the VAXstation 3100 series computers. Use the help command to find commands available on your particular make and model.

Category	Command
Unprivileged commands	<pre> >>> BOOT >>> CONTINUE >>> HALT >>> LOGIN </pre>
Privileged commands	<pre> >>> BOOT* [/R5:]<bflg> [<ddau>{:}] >>> CONTINUE* >>> DEPOSIT [{ /B /W /L }] [{ /P /V /I }] [/G] [/U] /N:<n>[{ <addr> <sym> + - * @ } [<datum>]] >>> DTE >>> EXAMINE [{ /B /W /L }] [{ /P /V /I }] [/G] [/U] /N:<n>[{ <addr> <sym> + - * @ }] >>> FIND [{ /MEMORY /RPB }] >>> HALT* >>> HELP >>> INITIALIZE >>> LOGIN >>> REPEAT <cmd> >>> SET BFLG <bflg> "8 hex digits" >>> SET BOOT <ddau> >>> SET HALT <1-3> >>> SET KBD <0-15> >>> SET MOP <0-1> >>> SET PSE <0-1> >>> SET PSWD >>> SET TRIG <0-1> >>> SHOW { BFLG BOOT DEV ESTAT ETHER HALT KBD MEM MOP PSE SCSIA SCSIB TRIG } >>> START* <addr> >>> TEST <n> [<m>] >>> UNJAM >>> XFER <addr> <cnt> ... </pre> <p>* executing these commands will terminate console privileged mode</p>

VAXstation 4000 Series console commands

The following commands are for the VAXstation 4000 series computers. Use the help command to find commands available on your particular make and model.

Category	Command
Unprivileged commands	<pre> >>> BOOT >>> CONTINUE >>> HALT >>> LOGIN >>> ! "begin comment" </pre>
Privileged commands	<pre> >>> BOOT* [/[R5:]<bflg>] [<ddau>[:]] >>> CONTINUE* >>> DEPOSIT [{ /B /W /L }] [{ /P /V /I }] [/G] [/U] [/N:<n>][<addr> <sym> + - * @] [<datum>]] >>> EXAMINE [{ /B /W /L }] [{ /P /V /I }] [/G] [/U] [/N:<n>][<addr> <sym> + - * @] >>> FIND [{ /MEMORY /RPB }] >>> HALT* >>> HELP >>> INITIALIZE >>> LOGIN >>> REPEAT <cmd> >>> SET BFLG <bflg> "8 hex digits" >>> SET BOOT <ddau> >>> SET DIAGENV <1-3> >>> SET HALT <1-3> >>> SET KBD <0-15> >>> SET MOP <0-1> >>> SET PSE <0-1> >>> SET PSWD >>> SET SCSI <0-7> >>> SET TRIG <0-1> >>> SHOW { BFLG BOOT CONFIG DEV DIAGENV ERROR ESTAT ETHER FBOOT HALT KBD MEM MOP PSE SCSI TRIG } >>> START* <addr> >>> TEST [/UTIL] <devnam devnbr> >>> UNJAM >>> X <addr> <cnt> ... >>> ? "help command" >>> ! "begin comment" </pre> <p>* executing these commands will terminate console privileged mode</p>

DECstations

Setting the DECstation console password

If you have multiple monitors connected to your workstation, the monitor connected to the option slot with the lowest number is the system console. This monitor displays all system information. The following commands are for the DECstation 5000 model 200:

Step	Command/Action
1	<p>Select a password:</p> <p>The password <i>must</i> be an ASCII string of characters with a minimum length of six characters. The system does not prevent password reuse, but it is good security practice to select a previously unused one.</p>
2	<p>Enter the password:</p> <p>Use the privileged command <code>< passwd -s ></code> to enter a new password into the console system:</p> <pre>>> passwd -s</pre> <p>If the console password is already set and the console is in restricted mode, you must use the <code>passwd</code> command without arguments to activate privileged command mode. The <code>passwd</code> command then prompts with the prompt "PWD: "</p> <p>The console does not echo (display) any password as you enter it.</p>
3	<p>Confirm the correct entry of the new password:</p> <p>Enter the new password and press Return. If the password character string is legal, the console prompts you to re-enter the new password, in order to verify that it was correctly entered:</p> <pre>PWD: PWD:</pre> <p>Re-enter the new password and press Return. If the second (verification) password exactly matches the first (new) password, the new password is accepted.</p>

Enabling and disabling the password

Action	Command/Method
Enable	The password takes effect after the system is reset (by pushing the reset button on the back of the system unit or by powering up). The console prompt becomes R .
Disable	The privileged command <code>passwd -c</code> clears the existing password. When the console password is cleared, console access is unrestricted and the console prompt becomes >> .

DECstation console commands

The following commands are for the DECstation 5000 model 200 computers. Use the help command to find commands available on your particular make and model.

Categories	Commands
Unprivileged commands	R> passwd R> boot
Privileged commands	>> ? [command name] "Help command" >> boot [[-z #] [-n] #/path [arguments...]] >> cat #/scriptname >> cnfg [#] >> d [-bhw] [-s #] RANGE value >> e [-bhwcdoux] [-s #] RANGE >> erl [-c] >> go [address] >> init [[#] -m] [arguments...] >> ls [#] >> passwd [-c] [-s] >> printenv [EnvironmentVariableName] >> restart >> script name >> setenv EnvironmentVariableName value >> sh [-belvS] [#scriptname] [arguments...] >> t [-l] #/testname [arguments...] >> unsetenv EnvironmentVariableName

Conclusion

We are living in an age where our society relies more and more on computers and computerized information. The insider threat is an ever-present danger. Using the console *password* feature can help defend your computer system, its programs, and its data from attack.

Reader Comments

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