

**ARM<sup>®</sup> DS-5**

**Version 5.22**

## **Debugger Command Reference**

**ARM<sup>®</sup>**

**ARM® DS-5****Debugger Command Reference**

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# Preface

This preface introduces the *ARM® DS-5 Debugger Command Reference*.

It contains the following:

- [About this book](#) on page 6.

## About this book

This book contains a full list of debugger commands with usage instructions and examples.

## Using this book

This book is organized into the following chapters:

**Chapter 1 DS-5 Debugger commands**

**Chapter 2 CMM-style commands supported by the debugger**

**Appendix A GNU Free Documentation License**

## Glossary

The ARM Glossary is a list of terms used in ARM documentation, together with definitions for those terms. The ARM Glossary does not contain terms that are industry standard unless the ARM meaning differs from the generally accepted meaning.

See the [ARM Glossary](#) for more information.

## Typographic conventions

*italic*

Introduces special terminology, denotes cross-references, and citations.

**bold**

Highlights interface elements, such as menu names. Denotes signal names. Also used for terms in descriptive lists, where appropriate.

`monospace`

Denotes text that you can enter at the keyboard, such as commands, file and program names, and source code.

monospace

Denotes a permitted abbreviation for a command or option. You can enter the underlined text instead of the full command or option name.

`monospace italic`

Denotes arguments to monospace text where the argument is to be replaced by a specific value.

`monospace bold`

Denotes language keywords when used outside example code.

<and>

Encloses replaceable terms for assembler syntax where they appear in code or code fragments. For example:

```
MRC p15, 0, <Rd>, <CRn>, <CRm>, <Opcode_2>
```

SMALL CAPITALS

Used in body text for a few terms that have specific technical meanings, that are defined in the *ARM glossary*. For example, IMPLEMENTATION DEFINED, IMPLEMENTATION SPECIFIC, UNKNOWN, and UNPREDICTABLE.

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## Other information

- [ARM Information Center](#).
- [ARM Technical Support Knowledge Articles](#).
- [Support and Maintenance](#).
- [ARM Glossary](#).

# Chapter 1

## DS-5 Debugger commands

DS-5 Debugger commands are a comprehensive set of commands to debug embedded applications. This is an overview of the conformance and usage rules for DS-5 Debugger commands and describes how to use each of the commands with examples.

It contains the following sections:

- [1.1 Conformance and usage rules for DS-5 Debugger commands on page 1-9.](#)
- [1.2 DS-5 Debugger commands listed in groups on page 1-17.](#)
- [1.3 DS-5 Debugger commands listed in alphabetical order on page 1-39.](#)



## 1.1 Conformance and usage rules for DS-5 Debugger commands

This section contains the following subsections:

- [1.1.1 Syntax on page 1-9.](#)
- [1.1.2 Special characters and environment variables in paths on page 1-10.](#)
- [1.1.3 Expressions within DS-5 on page 1-10.](#)
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- [1.1.6 Regular expressions in the C expression parser on page 1-13.](#)
- [1.1.7 The C++ scoping resolution operator on page 1-14.](#)
- [1.1.8 printf\(\) style format string on page 1-15.](#)

### 1.1.1 Syntax

DS-5 Debugger commands accept arguments and flags. A flag acts as an optional switch and is introduced with a forward slash character. Where a command supports flags, the flags are described as part of the command syntax.

```
command [argument] [/flag]...
```

#### Note

- Commands are not case sensitive.
- Abbreviations are underlined.

In commands that use */flag*, the position of */flag* should generally be as shown in the command syntax. The commands you submit to the debugger must conform to the following rules:

- Each command line can contain only one debugger command.
- When referring to symbols, you must use the same case as the source code.

You can execute the commands by entering them in the debugger command-line console or by running debugger script files. Alternatively in Eclipse, you can open the DS-5 Debug perspective where you can use the menus, icons, and toolbars provided or you can enter DS-5 Debugger commands in the Commands view.

The debugger requires enough letters to uniquely identify the command you enter. Many commands have alternative names, or aliases, that you might find easier to remember. For example, `backtrace` and `where` are aliases for the `info stack` command.

Some command names and aliases can be abbreviated. For example, `info stack` can be abbreviated to `is`. The syntax definition for each command shows how it can be abbreviated by underlining it for example, `info stack`.

In the syntax definition of each command:

- square brackets `[...]` enclose optional parameters
- braces `{...}` enclose required parameters
- a vertical pipe `|` indicates alternatives from which you must choose one
- parameters that can be repeated are followed by an ellipsis `(...)`.

Do not type square brackets, braces, or the vertical pipe. Replace parameters in italics with the value you want. When you supply more than one parameter, use the separator as shown in the syntax definition for each command. If a parameter is a name that includes spaces, enclose it in double quotation marks.

Descriptive comments can be placed either at the end of a command or on a separate line. You can use the `#` character to identify a descriptive comment.

## 1.1.2 Special characters and environment variables in paths

List of characters and variables that you can use for path shortcuts in DS-5 Debugger commands.

When specifying paths, you can use any of the following:

- a tilde character (~) at the start of a path to refer to your home directory
- an environment variable, for example:
  - %LOG\_DIRECTORY%
  - \${LOG\_DIRECTORY}
  - \$LOG\_DIRECTORY
- a backslash (\) or forward slash (/) as a directory separator.

### Related references

[1.3.140 set escapes-in-filenames on page 1-184.](#)

## 1.1.3 Expressions within DS-5

Some DS-5 commands accept expressions. There are many types of expressions accepted by the debugger that enable you to extend the operation of a command. For example, binary mathematical expressions, references to module names, or calls to functions.

### Usage of \$ character to access registers and variables within DS-5 expressions

In an expression you can access the content of registers by using the \$ character and the register name, for example:

```
print 4+$R0      # add 4 to the content of R0 register and print result
```

Results from the `print` commands are recorded in debugger variables. Other commands, such as breakpoint or watchpoint creating commands, the `start` command, and the `memory` command, also use debugger variables to record the ID of the new resource. Each of these debugger variables is assigned a number and can be used subsequently in expressions by using the \$ character.

You can access print results or resource IDs using the debugger variables:

\$  
Print result or ID in the last assigned debugger variable.

\$\$  
Print result or ID in the second-to-last debugger variable.

\$n  
Print result or ID in the debugger variable with number *n*.

You can also use the following debugger variables:

\$cwd  
Current working directory.

\$cdir  
Current compilation directory.

\$entrypoint  
Entry point of the current image.

\$idir  
Current image directory.

\$sdir  
Current script directory.

\$datetime  
Current date and time in string format.

\$timems  
Number of milliseconds since 1st Jan 1970.

\$pid  
Current operating system process ID.

<code>\$thread</code>	Current thread ID for a multi-threaded application.
<code>\$core</code>	Current processor ID for a Symmetric MultiProcessing (SMP) systems.
<code>\$vmid</code>	Current <i>Virtual Machine ID</i> (VMID) for systems that support hypervisor / virtual machine debugging.

---

**Note**

- `$thread` is uniquely assigned by the debugger for the current context reported by the OS awareness plugin. If no OS awareness plugin is loaded, `$thread` tracks the current core, `$core`.
  - `$pid` is assigned for the debugger for the current context by the OS awareness plugin. If no OS awareness plugin is loaded, `$pid` tracks the current core, `$core`.
- 

### Related references

[1.1.4 Built-in functions within DS-5 expressions on page 1-11.](#)  
[1.1.8 printf\(\) style format string on page 1-15.](#)  
[1.3.104 output on page 1-148.](#)  
[1.3.80 inspect, print on page 1-124.](#)  
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### Related information

[About OS awareness.](#)

## 1.1.4 Built-in functions within DS-5 expressions

In a DS-5 Debugger expression, you can use built-in functions to provide more functionality.

You can use the following built-in functions within DS-5 debugger expressions:

```
int strcmp(const char *str1, const char *str2);
```

Compares two strings and returns an integer.

Return values are:

- <0 Indicates that the second argument string value comes after the first argument string value in the machine collating sequences, `str1 < str2`.
- 0 Indicates that the two strings are identical in content.
- >0 Indicates that the first argument string value comes after the second argument string value in the machine collating sequences, `str2 < str1`.

```
int strncmp(const char *str1, const char *str2, size_t n);
```

Compares at most *n* characters of two strings and returns an integer.

Return values are:

- <0 Indicates that the second argument string value comes after the first argument string value in the machine collating sequences, `str1 < str2`.
- 0 Indicates that the two strings are identical in content.

>0 Indicates that the first argument string value comes after the second argument string value in the machine collating sequences, `str2 < str1`.

```
char *strcpy(char *str1, const char *str2);
    Copies str2 to str1 including "\0" and returns str1.
char *strncpy(char *str1, const char *str2, size_t n);
    Copies at most n characters of str2 to str1 including "\0" and returns str1. If str2 has fewer
    than n characters then fill with "\0".
void *memcpy(void *s, const void *cs, size_t n);
    Copies at most n characters from cs to s and returns s.
```

### Example 1-1 Examples

```
break main.c:45 if strcmp(myVar, "10") == 0    # Set conditional breakpoint that stops
                                              # when strings are identical
```

### Related references

[1.1.3 Expressions within DS-5 on page 1-10.](#)  
[1.1.8 printf\(\) style format string on page 1-15.](#)  
[1.3.104 output on page 1-148.](#)  
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## 1.1.5 Usage of wildcards

You can use wildcards to enhance your pattern matching in DS-5 Debugger expressions.

The following types of wildcard pattern matching can be used:

- Globbs. This is the default.
- Regular expressions.

You can use the DS-5 Debugger command `set wildcard-style` to change the default setting.

### Globs

Globs are a mechanism for examining the contents of strings, and can be used to search variables for strings matching specific patterns.

Commands that support wildcards can use globs with the following syntax:

```
*           Specifies zero or more characters
?           Specifies only one character
\           Specifies an escape character to match on strings containing either * or ?
```

[*character*]

Specifies a range of characters. You can use `!character` to match characters that are not listed in the range.

### Example 1-2 Examples

This is an example of Globs where a wildcard is expected:

```
info functions m*          # List all functions starting with m
```

### Regular expressions

Commands that support wildcards can use regular expressions.

The exact regular expression syntax supported is described in a book called *Mastering Regular Expressions*.

### Example 1-3 Examples

This is an example of regular expressions where a wildcard is expected:

```
info functions m.* # List all functions starting with m
```

### Related references

[1.3.154 set wildcard-style on page 1-200.](#)

[1.3.189 show wildcard-style on page 1-233.](#)

### Related information

[Jeffrey E. F.Friedl, Mastering Regular Expressions. ISBN 0-596-52812-4.](#)

## 1.1.6 Regular expressions in the C expression parser

The C expression parser in DS-5 Debugger supports regular expressions. Regular expressions are a mechanism for examining the contents of strings, and can be used to search variables for strings matching specific patterns. The debugger extends C expression syntax to support regular expressions using the `=~` and `!~` operators in the style of Perl, as shown in the following examples:

This example evaluates to 1 if the regular expression that uses `=~` matches anywhere in the string and 0 if it does not match:

```
expression =~ regular_expression
```

This example evaluates to 0 if the regular expression that uses `!~` matches anywhere in the string and 1 if it does not match:

```
expression !~ regular_expression
```

Where:

#### expression

is any expression of type `char *` or `char[]`. For example, a variable name.

### regular\_expression

is a regular expression in the form `/regex/modifiers` or `m/regex/modifiers`.

For example, if `str` is a variable of type `char*`, the following are valid expressions:

```
str =~ /abc/
```

```
((char *) void_pointer) !~ m/abc/i
```

The exact regular expression syntax supported is described by the *Mastering Regular Expressions* book in the chapter discussing Java regex support. An exception to this is the parsing of the handling of modifiers. The following modifiers are supported by the debugger:

**i**

enable case insensitive matching

**m**

multiline mode (^ and \$ match embedded newline)

**s**

dotall mode (. matches line terminators)

**x**

comments mode (permit whitespace and comments).

### Related information

[Jeffrey E. F.Friedl, Mastering Regular Expressions. ISBN 0-596-52812-4.](#)

## 1.1.7 The C++ scoping resolution operator

In C++, the `::` (scope resolution) operator is a global identifier for variable or function names that are out of scope. The expression evaluator supports scoping operations using the scope resolution, member and member pointer operators. This can be used to reference variables and functions within files, namespaces or classes.

The following is an example from the `demo.cpp` file:

```
static int FILE_STATIC_VARIABLE = 20;
class OuterClass
{
public:
    OuterClass(int i)
    {
        value = i;
    }

    class InnerClass
    {
public:
        int demoFunction()
        {
            return 25;
        }
    };
    void increment()
    {
        value++;
    }
    int value;
};

namespace NAME_SPACE_OUTER
{
    const int TEST_VAR = 20;
    namespace NAME_SPACE_INNER
    {
        const int TEST_VAR = 19;
        int nameSpaceFoo ()
        {
            return 60;
        }
    };
};
```

```
int main()
{
    OuterClass oc(14);
    OuterClass *ptr_oc = &oc;

    ptr_oc->increment();
}
```

You can query this example by using any of the following expressions:

```
OuterClass::InnerClass::demoFunction
"demo.c"::FILE_STATIC_VARIABLE
NAME_SPACE_OUTER::TEST_VAR
NAME_SPACE_OUTER::NAME_SPACE_INNER::TEST_VAR
```

If you set a breakpoint at `ptr_oc->increment()` and run to it, then the following expressions can also be used to query the instances of the outer class:

```
oc.value
ptr_oc->value
```

### 1.1.8 printf() style format string

Certain commands use `printf()` style format strings to specify how to format values. For example the `set print double-format` and `set print float-format` commands specify how to format floating-point values. It works in a similar way to the ANSI C standard library function `printf()`.

#### Format string syntax

The commands specify the format using a string. If there are no % characters in the string, the message is written out and any arguments are ignored. The % symbol is used to indicate the start of an argument conversion specification.

The syntax of the format string is:

```
%[flag...][fieldwidth][precision]format
```

where:

**flag**

An optional conversion modification flag.

"\_"

result is left-justified

"#"

result uses a conversion-dependent alternate form

"+"

result includes a sign

" "

result includes a leading space for positive values

"0"

result is zero-padded

","

result includes locale-specific grouping separator

"("

result encloses negative numbers in parentheses.

**fieldwidth**

An optional minimum field width specified in decimal.

**precision**

An optional precision specified in decimal, with a preceding . (period character) to identify it.

**format**

The possible conversion specifier characters are:

**%**

A literal % character.

**a, A, e, E, f, g or G**

Results in a decimal number formatted using scientific notation or floating point notation. The capital letter forms use a capital E in scientific notation rather than an e.

**d or u**

Results in a decimal integer. d indicates a signed integer. u indicates an unsigned integer.

**h or H**

Results in a Hexadecimal character in lower or upper case.

**x or X**

Results in an unsigned Hexadecimal character in lower or upper case.

**o**

Results in an octal integer.

**c or C**

Results in a Unicode character in lower or upper case.

**s**

Results in a string.

**b or B**

Results in a string containing either "true" or "false" in lower or upper case.

**n**

Results in a platform-specific line separator.

**t or T**

Prefix for date and time conversion specifier characters. For example:

`"%ta %tb %td %tT"` results in `"Sun Jul 20 16:17:00"`

## Related references

[1.1.3 Expressions within DS-5 on page 1-10.](#)

[1.1.4 Built-in functions within DS-5 expressions on page 1-11.](#)

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## 1.2 DS-5 Debugger commands listed in groups

Displays all the commands in functional groups according to specific tasks.

This section contains the following subsections:

- [1.2.1 Breakpoints and watchpoints on page 1-17.](#)
- [1.2.2 Execution control on page 1-19.](#)
- [1.2.3 Tracing on page 1-21.](#)
- [1.2.4 Scripts on page 1-21.](#)
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- [1.2.22 Support on page 1-37.](#)

### 1.2.1 Breakpoints and watchpoints

List of all the DS-5 Debugger commands that enable you to control the starting and stopping of the debugger using breakpoints and watchpoints.

**awatch**

Sets a watchpoint for a data symbol. The debugger stops the target when the memory at the specified address is read or written.

**break**

Sets an execution breakpoint at a specific location.

**break-script**

Assigns a script file to a specific breakpoint. The script executes when the breakpoint is triggered.

**break-stop-on-threads, break-stop-on-cores**

Applies an existing breakpoint to one or more threads or processors.

**break-stop-on-vmid**

Applies an existing hardware breakpoint to a *Virtual Machine* (VM).

**clear**

Deletes a breakpoint at a specific location.

**clearwatch**

Deletes a watchpoint at a specific location.

**condition**

Sets a break condition for a specific breakpoint or watchpoint.

**delete breakpoints**

Deletes one or more breakpoints or watchpoints.

**disable breakpoints**

Disables one or more breakpoints or watchpoints.

**enable breakpoints**

Enables one or more breakpoints or watchpoints by number.

<b>hbreak</b>	Sets a hardware execution breakpoint at a specific location.
<b>ignore</b>	Sets the ignore counter for a breakpoint or watchpoint condition.
<b>info breakpoints, info watchpoints</b>	Displays information about the status of all breakpoints and watchpoints.
<b>info breakpoints capabilities, info watchpoints capabilities</b>	Displays a list of parameters that you can use with breakpoint and watchpoint commands for the current connection.
<b>resolve</b>	Re-evaluates the specified breakpoints or watchpoints and those with addresses that can be resolved are set.
<b>rwatch</b>	Sets a watchpoint for a data symbol. The debugger stops the target when the memory at the specified address is read.
<b>set breakpoint</b>	Controls the automatic behavior of breakpoints and watchpoints.
<b>silence</b>	Disables the printing of stop messages for a specific breakpoint.
<b>tbreak</b>	Sets an execution breakpoint at a specific location and deletes the breakpoint when it is hit.
<b>thbreak</b>	Sets a hardware execution breakpoint at a specific location and deletes the breakpoint when it is hit.
<b>unsilence</b>	Enables the printing of stop messages for a specific breakpoint.
<b>watch</b>	Sets a watchpoint for a data symbol. The debugger stops the target when the memory at the specified address is written.

Enter **help** followed by a command name for more information on a specific command.

### Related references

- [1.3.7 break on page 1-50.](#)
- [1.3.43 hbreak on page 1-85.](#)
- [1.3.199 tbreak on page 1-243.](#)
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- [1.3.215 watch on page 1-261.](#)
- [1.3.121 rwatch on page 1-166.](#)
- [1.3.16 clearwatch on page 1-59.](#)
- [1.3.5 awatch on page 1-48.](#)
- [1.3.128 set breakpoint on page 1-173.](#)
- [1.3.25 disable breakpoints on page 1-68.](#)
- [1.3.22 delete breakpoints on page 1-65.](#)
- [1.3.49 info breakpoints, info watchpoints on page 1-93.](#)
- [1.3.51 info capabilities on page 1-95.](#)
- [1.3.50 info breakpoints capabilities, info watchpoints capabilities on page 1-94.](#)
- [1.3.8 break-script on page 1-52.](#)
- [1.3.9 break-stop-on-cores, break-stop-on-threads on page 1-53.](#)
- [1.3.10 break-stop-on-vmid on page 1-54.](#)
- [1.3.17 condition on page 1-60.](#)

[1.3.46 ignore on page 1-90.](#)

[1.3.190 silence on page 1-234.](#)

[1.3.211 unsilence on page 1-257.](#)

## 1.2.2 Execution control

List of all the DS-5 Debugger commands that enable you to control the starting and stopping of the debugger.

**advance**

Sets a temporary breakpoint and calls the debugger `continue` command. The temporary breakpoint is subsequently deleted when it is hit.

**continue**

Continues running the target.

**finish**

Continues running the device to the next instruction after the selected stack frame finishes.

**handle**

Controls the handler settings for one or more signals or exceptions.

**info signals, info handle**

Displays information about the handling of signals or processor exceptions.

**interrupt, stop**

Interrupts the target and stops the application if it is running.

**next**

Steps through an application at the source level stopping at the first instruction of each source line but stepping over all function calls.

**nexti**

Steps through an application at the instruction level but stepping over all function calls.

**nexts**

Steps through an application at the source level stopping at the first instruction of each source statement but stepping over all function calls.

**reset**

Performs a reset on the target.

**reverse-continue**

Continues running the target backwards until a breakpoint or watchpoint is hit.

**reverse-next**

Rewinds execution to the preceding source line in the current function.

**reverse-nexti**

Rewinds execution at the instruction level, stepping over all function calls.

**reverse-step**

Steps back through an application a specified number of source lines at a time, stepping into all function calls.

**reverse-stepi**

Steps back through an application a specified number of instructions at a time.

**reverse-step-out**

Rewinds execution through the specified number of stack frames.

**run**

Starts running the target.

**set blocking-run-control**

Controls whether run control operations such as stepping and running are blocked until the target stops or released immediately.

<code>set debug-from</code>	Specifies the address of the temporary breakpoint for subsequent use by the <code>start</code> command.
<code>set step-mode</code>	Controls the default behavior of the <code>step</code> and <code>steps</code> commands.
<code>show blocking-run-control</code>	Displays the setting for blocking run control operations such as stepping and running.
<code>show debug-from</code>	Displays the setting for the expression that is used by the <code>start</code> command to set a temporary breakpoint.
<code>show step-mode</code>	Displays the step setting for functions without debug information.
<code>start</code>	Sets a temporary breakpoint, calls the debugger run command, and then deletes the temporary breakpoint when it is hit. By default, the temporary breakpoint is set at the address of the global function <code>main()</code> .
<code>step</code>	Steps through an application at the source level stopping on the first instruction of each source line including stepping into all function calls.
<code>stepi</code>	Steps through an application at the instruction level including stepping into all function calls.
<code>steps</code>	Steps through an application at the source level stopping on the first instruction of each source statement (for example, statements in a <code>for()</code> loop) including stepping into all function calls.
<code>thread, core</code>	Displays information about the current thread or processor.
<code>thread apply, core apply</code>	Switches control to a specific thread or processor to execute a debugger command and then switches back to the original state.
<code>wait</code>	Instructs the debugger to wait until the target stops.

Enter `help` followed by a command name for more information on a specific command.

### Related references

[1.3.192 start on page 1-236.](#)  
[1.3.127 set blocking-run-control on page 1-172.](#)  
[1.3.162 show blocking-run-control on page 1-208.](#)  
[1.3.131 set debug-from on page 1-176.](#)  
[1.3.166 show debug-from on page 1-212.](#)  
[1.3.18 continue on page 1-61.](#)  
[1.3.2 advance on page 1-44.](#)  
[1.3.81 interrupt, stop on page 1-126.](#)  
[1.3.214 wait on page 1-260.](#)  
[1.3.111 reset on page 1-156.](#)  
[1.3.194 step on page 1-238.](#)  
[1.3.195 stepi on page 1-239.](#)  
[1.3.196 steps on page 1-240.](#)  
[1.3.100 next on page 1-144.](#)  
[1.3.101 nexti on page 1-145.](#)

[1.3.102 nexts](#) on page 1-146.  
[1.3.19 core, thread](#) on page 1-62.  
[1.3.20 core apply, thread apply](#) on page 1-63.  
[1.3.148 set step-mode](#) on page 1-194.  
[1.3.183 show step-mode](#) on page 1-227.  
[1.3.58 info handle, info signals](#) on page 1-102.  
[1.3.42 handle](#) on page 1-84.  
[1.3.114 reverse-continue](#) on page 1-159.  
[1.3.115 reverse-next](#) on page 1-160.  
[1.3.116 reverse-nexti](#) on page 1-161.  
[1.3.117 reverse-step](#) on page 1-162.  
[1.3.118 reverse-stept](#) on page 1-163.  
[1.3.119 reverse-step-out](#) on page 1-164.

### 1.2.3 Tracing

List of all the DS-5 Debugger commands that can be used to capture trace.

`trace start`  
Starts the trace capture on the specified trace capture device.

`trace stop`  
Stops the trace capture on the specified trace capture device.

`trace clear`  
Clears the trace on the specified trace capture device.

`trace list`  
Lists the trace capture devices and trace sources.

`trace info`  
Displays details about trace capture devices and trace sources.

`trace dump`  
Dumps trace data to a directory, along with target trace configuration metadata.

`trace report`  
Produces a trace report for the currently selected core.

Enter `help` followed by a command name for more information on a specific command.

#### Related references

[1.3.203 trace clear](#) on page 1-249.  
[1.3.204 trace dump](#) on page 1-250.  
[1.3.205 trace info](#) on page 1-252.  
[1.3.206 trace list](#) on page 1-252.  
[1.3.207 trace report](#) on page 1-252.  
[1.3.208 trace start](#) on page 1-255.  
[1.3.209 trace stop](#) on page 1-255.

### 1.2.4 Scripts

List of all the DS-5 Debugger commands that can be used to control the debugger using script files.

`define`  
Enables you to derive new user-defined commands from existing commands.

`document`  
Enables you to add integrated help for a new user-defined command.

`newvar`  
Declares and initializes a new debugger convenience variable.

`end`  
Enables you to terminate conditional blocks when using the `define`, `if`, and `while` commands.

**if**

Enables you to write scripts that conditionally execute debugger commands.

**source**

Loads and runs a script file to control and debug your target.

**while**

Enables you to write scripts with conditional loops that execute debugger commands.

Enter **help** followed by a command name for more information on a specific command.

### Related references

[1.3.21 \*define\* on page 1-64.](#)

[1.3.29 \*document\* on page 1-71.](#)

[1.3.36 \*end\* on page 1-78.](#)

[1.3.45 \*if\* on page 1-89.](#)

[1.3.218 \*while\* on page 1-264.](#)

[1.3.191 \*source\* on page 1-235.](#)

[1.3.99 \*newvar\* on page 1-143.](#)

## 1.2.5 Call stack

List of all the DS-5 Debugger commands that display information about the call stack and others that control the current position in the call stack.

**down**

Moves and displays the current frame pointer down the call stack towards the bottom frame.

**down-silently**

Moves the current frame pointer down the call stack towards the bottom frame.

**frame**

Sets the current frame pointer in the call stack and also displays the function name and source line number for the specified frame.

**info frame**

Displays stack frame information at the selected position.

**info stack, backtrace, where**

Displays a numbered list of the calling stack frames including the function names and source line numbers.

**select-frame**

Moves the current frame pointer in the call stack.

**set backtrace**

Controls the default behavior when using the **info stack** command.

**show backtrace**

Displays the behavior settings for use with the **info stack** command.

**up**

Moves and displays the current frame pointer up the call stack towards the top frame.

**up-silently**

Moves the current frame pointer up the call stack towards the top frame.

Enter **help** followed by a command name for more information on a specific command.

### Related references

[1.3.126 \*set backtrace\* on page 1-171.](#)

[1.3.6 \*backtrace, info stack, where\* on page 1-49.](#)

[1.3.161 \*show backtrace\* on page 1-207.](#)

[1.3.41 \*frame\* on page 1-83.](#)

[1.3.56 \*info frame\* on page 1-100.](#)

[1.3.30 \*down\* on page 1-72.](#)

[1.3.31 \*down-silently\* on page 1-73.](#)

[1.3.212 up](#) on page 1-258.

[1.3.213 up-silently](#) on page 1-259.

[1.3.122 select-frame](#) on page 1-167.

## 1.2.6 Operating System (OS)

List of all the DS-5 Debugger commands that enable you to debug applications running on a target with an operating system.

**sharedlibrary**

Loads symbols from shared libraries.

**nosharedlibrary**

Discards all loaded shared library symbols.

**info os-log**

Displays the contents of the *Operating System* (OS) log buffer for connections that support this feature.

**info os-modules**

Displays a list of loadable kernel modules for connections that support this feature.

**info os-version**

Displays the version of the *Operating System* (OS) for connections that support this feature.

**info processes**

Displays information about the user space processes.

**info sharedlibrary**

Displays the names of the loaded shared libraries, the base address, and whether the debug symbols of the shared libraries are loaded or not.

**info threads**

Displays information about the available threads.

**set auto-solib-add**

Controls the automatic loading of shared library symbols.

**set os**

Controls *Operating System* (OS) settings in the debugger. An OS-aware connection must be established before you can use this command.

**set solib-search-path**

Specifies additional directories to search for shared library symbols.

**set stop-on-solib-events**

Controls whether the debugger stops execution when a shared object is loaded or unloaded.

**set sysroot, set solib-absolute-prefix**

Specifies the system root directory to search for shared library symbols.

**show auto-solib-add**

Displays the automatic setting for use when loading shared library symbols.

**show os**

Displays the *Operating System* (OS) control settings.

**show solib-search path**

Displays the search paths in use by the debugger when searching for shared libraries.

**show stop-on-solib-events**

Displays the debugger setting that controls whether execution stops when shared library events occur.

**show sysroot, show solib-absolute-prefix**

Displays the system root directory in use by the debugger when searching for shared library symbols.

**thread apply, core apply**

Switches control to a specific thread or processor to execute a debugger command and then switches back to the original state.

**thread, core**

Displays information about the current thread or processor.

Enter **help** followed by a command name for more information on a specific command.

## Related references

[1.3.155 sharedlibrary](#) on page 1-201.  
[1.3.103 nosharedlibrary](#) on page 1-147.  
[1.3.70 info sharedlibrary](#) on page 1-114.  
[1.3.143 set os](#) on page 1-186.  
[1.3.178 show os](#) on page 1-222.  
[1.3.146 set solib-absolute-prefix, set sysroot](#) on page 1-192.  
[1.3.181 show solib-absolute-prefix, show sysroot](#) on page 1-225.  
[1.3.125 set auto-solib-add](#) on page 1-170.  
[1.3.160 show auto-solib-add](#) on page 1-206.  
[1.3.147 set solib-search-path](#) on page 1-193.  
[1.3.182 show solib-search-path](#) on page 1-226.  
[1.3.19 core, thread](#) on page 1-62.  
[1.3.149 set stop-on-solib-events](#) on page 1-195.  
[1.3.184 show stop-on-solib-events](#) on page 1-228.  
[1.3.20 core apply, thread apply](#) on page 1-63.  
[1.3.76 info threads](#) on page 1-120.  
[1.3.67 info processes](#) on page 1-111.  
[1.3.64 info os-log](#) on page 1-108.  
[1.3.65 info os-modules](#) on page 1-109.  
[1.3.66 info os-version](#) on page 1-110.

## 1.2.7 Files

List of DS-5 Debugger commands that enable you to control the loading and unloading of executable images on to a target and debug information into the debugger.

### **add-symbol-file**

Loads additional debug information into the debugger.

### **append**

Reads data from memory or the result of an expression and appends it to an existing file.

### **cd**

Changes the current working directory.

### **directory**

Defines additional directories to search for source files.

### **discard-symbol-file**

Discards debug information relating to a specific file.

### **dump**

Reads data from memory or the result of an expression and writes it to a file.

### **file, symbol-file**

Loads debug information from an image into the debugger and records the entry point address for future use by the **run** and **start** commands.

### **info files, info target**

Displays information about the loaded image and symbols.

### **info sources**

Displays the names of the source files used in the current image being debugged.

### **load**

Loads an image on to the target and records the entry point address for future use by the **run** and **start** commands.

### **loadfile**

Loads debug information into the debugger, an image on to the target and records the entry point address for future use by the **run** and **start** commands.

### **pwd**

Displays the current working directory.



**reload-symbol-file**

Reloads debug information from an already loaded image into the debugger using the same settings as the original load operation.

**restore**

Reads data from a file and writes it to memory.

**set substitute-path**

Modifies the search paths used by the debugger when it executes any of the commands that look up and display source code.

**show directories**

Displays the list of directories to search for source files.

**show substitute-path**

Displays the search path substitution rules in use by the debugger when searching for source files.

Enter **help** followed by a command name for more information on a specific command.

**Related references**

[1.3.83 load](#) on page 1-128.

[1.3.84 loadfile](#) on page 1-129.

[1.3.38 file, symbol-file](#) on page 1-80.

[1.3.110 reload-symbol-file](#) on page 1-155.

[1.3.1 add-symbol-file](#) on page 1-43.

[1.3.3 append](#) on page 1-45.

[1.3.113 restore](#) on page 1-158.

[1.3.72 info sources](#) on page 1-116.

[1.3.14 cd](#) on page 1-57.

[1.3.108 pwd](#) on page 1-153.

[1.3.24 directory, set directories](#) on page 1-67.

[1.3.167 show directories](#) on page 1-213.

[1.3.150 set substitute-path](#) on page 1-196.

[1.3.185 show substitute-path](#) on page 1-229.

## 1.2.8 Data

List of all the DS-5 Debugger commands that enables you to display source code, expressions, variables, functions, classes, memory, and other data.

**disassemble**

Displays the disassembly for the function surrounding a specific address or the disassembly for a specific address range.

**info address**

Displays the location of a symbol.

**info classes**

Displays C++ class names.

**info functions**

Displays the name and data types for all functions.

**info locals**

Displays all local variables for the current stack frame.

**info members**

Displays the name and data types for all class member variables that are accessible in the function corresponding to the selected stack frame.

**info symbol**

Displays the symbol name at a specific address.

**info variables**

Displays the name and data types for all global and static variables.

**list**  
Displays lines of source code surrounding the current or specified location.

**set listsize**  
Modifies the default number of source lines that the **list** command displays.

**set variable**  
Evaluates an expression and assigns the result to a variable, register or memory.

**show listsize**  
Displays the number of source lines that the **list** command displays.

**whatis**  
Displays the data type of an expression.

**x**  
Displays the content of memory at a specific address.

Enter **help** followed by a command name for more information on a specific command.

### Related references

[1.3.27 disassemble](#) on page 1-70.  
[1.3.123 set, set variable](#) on page 1-168.  
[1.3.216 whatis](#) on page 1-262.  
[1.3.219 x](#) on page 1-265.  
[1.3.47 info address](#) on page 1-91.  
[1.3.52 info classes](#) on page 1-96.  
[1.3.57 info functions](#) on page 1-101.  
[1.3.60 info locals](#) on page 1-104.  
[1.3.61 info members](#) on page 1-105.  
[1.3.58 info handle, info signals](#) on page 1-102.  
[1.3.74 info symbol](#) on page 1-118.  
[1.3.77 info variables](#) on page 1-121.  
[1.3.82 list](#) on page 1-127.  
[1.3.141 set listsize](#) on page 1-185.  
[1.3.176 show listsize](#) on page 1-221.

## 1.2.9 Memory

List of all the DS-5 Debugger commands that controls memory accesses and displays information about specific memory regions.

**append**  
Reads data from memory or the result of an expression and appends it to an existing file.

**assemble**  
Writes assembler instructions to memory.

**delete memory**  
Deletes one or more user-defined memory regions.

**disable memory**  
Disables one or more user-defined memory regions.

**disassemble**  
Displays the disassembly for the function surrounding a specific address or the disassembly for a specific address range.

**dump**  
Reads data from memory or the result of an expression and writes it to a file.

**enable memory**  
Enables one or more user-defined memory regions.

**info memory**  
Displays the attributes for all memory regions.

**info mem-params**  
Displays the memory parameters applicable to an address space.

**memory**  
Defines a memory region and specifies its attributes and size.

**memory auto**  
Resets the memory regions to the default target settings and discards all user-defined regions.

**memory debug-cache**  
Controls the caching by the debugger for all memory regions.

**memory fill**  
Writes a specific pattern of bytes to memory.

**memory set**  
Writes to memory.

**memory set\_typed**  
Writes a list of values to memory.

**restore**  
Reads data from a file and writes it to memory.

**x**  
Displays the content of memory at a specific address.

Enter **help** followed by a command name for more information on a specific command.

### Related references

[1.3.87 memory](#) on page 1-132.

[1.3.3 append](#) on page 1-45.

[1.3.4 assemble](#) on page 1-45.

[1.3.23 delete memory](#) on page 1-66.

[1.3.35 enable memory](#) on page 1-77.

[1.3.26 disable memory](#) on page 1-69.

[1.3.62 info memory](#) on page 1-106.

[1.3.63 info memory-parameters](#) on page 1-106.

[1.3.88 memory auto](#) on page 1-134.

[1.3.32 dump](#) on page 1-74.

[1.3.90 memory fill](#) on page 1-136.

[1.3.91 memory set](#) on page 1-137.

[1.3.27 disassemble](#) on page 1-70.

[1.3.92 memory set\\_typed](#) on page 1-139.

[1.3.89 memory debug-cache](#) on page 1-135.

[1.3.3 append](#) on page 1-45.

[1.3.113 restore](#) on page 1-158.

[1.3.219 x](#) on page 1-265.

## 1.2.10 Cache

List of all the DS-5 Debugger commands that provide information on the available caches.

**cache flush**  
Flushes the caches of the current CPU.

**cache list**  
Lists the caches and related information available for the current core. The output is implementation defined.

**cache print**  
Provides a structured view of the cache data in the current core. The output is implementation defined.

Enter **help** followed by a command name for more information on a specific command.

### Related references

[1.3.12 cache list on page 1-55.](#)

[1.3.13 cache print on page 1-56.](#)

[1.3.11 cache flush on page 1-54.](#)

## 1.2.11 Registers

List of all the DS-5 Debugger commands that provide register information.

`info all-registers`

Displays the name and content of grouped registers for the current stack frame.

`info registers`

Displays the name and content of all application level registers for the current stack frame.

Enter `help` followed by a command name for more information on a specific command.

### Related references

[1.3.48 info all-registers on page 1-92.](#)

[1.3.68 info registers on page 1-112.](#)

## 1.2.12 MMU

List of all the DS-5 Debugger commands that provide information on the Memory Management Unit.

`mmu list tables`

Lists the available translation tables and their associated parameters.

`mmu list translations`

Lists the available translations and their associated parameters.

`mmu list memory-maps`

Lists the available memory maps and their associated parameters.

`mmu print`

Prints the contents of a translation table.

`mmu translate`

Performs translations between virtual and physical addresses.

`mmu memory-map`

Prints the memory map.

`set mmu use-cache-for-phys-reads`

Instructs the debugger to, where possible, ensure that the translation table entries it reads from physical memory are coherent with the contents of data caches.

`show mmu use-cache-for-phys-reads`

Displays the MMU setting that controls the coherency between translation table memory reads and cache data.

Enter `help` followed by a command name for more information on a specific command.

### Related references

[1.3.93 mmu list memory-maps on page 1-139.](#)

[1.3.94 mmu list tables on page 1-140.](#)

[1.3.95 mmu list translations on page 1-140.](#)

[1.3.98 mmu translate on page 1-141.](#)

[1.3.96 mmu memory-map on page 1-140.](#)

[1.3.97 mmu print on page 1-141.](#)

[1.3.142 set mmu use-cache-for-phys-reads on page 1-185.](#)

[1.3.177 show mmu use-cache-for-phys-reads on page 1-221.](#)

## 1.2.13 MMU list

`mmu list` commands in DS-5 Debugger.

`mmu list tables`

Lists the available translation tables and their associated parameters.

`mmu list translations`

Lists the available translations and their associated parameters.

`mmu list memory-maps`

Lists the available memory maps and their associated parameters.

Enter `help` followed by a command name for more information on a specific command.

### Related references

[1.3.93 `mmu list memory-maps` on page 1-139.](#)

[1.3.94 `mmu list tables` on page 1-140.](#)

[1.3.95 `mmu list translations` on page 1-140.](#)

## 1.2.14 Display

List of all the DS-5 Debugger commands that enable you to display specific output on the command-line.

`echo`

Displays only textual strings.

`output`

Displays only the result of an expression.

`print`, `inspect`

Displays the output of an expression (128 character limit) and also records the result in a new debugger variable, `$n`, where *n* is a number.

`set print`

Controls the current debugger print settings.

`show print`

Displays the debugger print settings.

`x`

Displays the content of memory at a specific address.

Enter `help` followed by a command name for more information on a specific command.

### Related references

[1.3.33 `echo` on page 1-75.](#)

[1.3.104 `output` on page 1-148.](#)

[1.3.80 `inspect`, `print` on page 1-124.](#)

[1.3.144 `set print` on page 1-188.](#)

[1.3.179 `show print` on page 1-223.](#)

[1.3.219 `x` on page 1-265.](#)

## 1.2.15 Information

List of all the DS-5 Debugger commands that enables you to display information about breakpoints, watchpoints, running processors, variables, functions, classes, registers, memory regions, stack frames, and other data.

`info address`

Displays the location of a symbol.

`info all-registers`

Displays the name and content of grouped registers for the current stack frame.

`info breakpoints`, `info watchpoints`

Displays information about the status of all breakpoints and watchpoints.

`info breakpoints capabilities`, `info watchpoints capabilities`

Displays a list of parameters that you can use with breakpoint and watchpoint commands for the current connection.

**info capabilities**  
Displays a list of capabilities for the target device that is currently connected to the debugger.

**info classes**  
Displays C++ class names.

**info cores**  
Displays information about the running processors.

**info files, info target**  
Displays information about the loaded image and symbols.

**info flash**  
Displays information about the flash devices on the current target.

**info frame**  
Displays stack frame information at the selected position.

**info functions**  
Displays the name and data types for all functions.

**info inst-sets**  
Displays the available instruction sets.

**info locals**  
Displays all local variables for the current stack frame.

**info members**  
Displays the name and data types for all class member variables that are accessible in the function corresponding to the selected stack frame.

**info memory**  
Displays the attributes for all memory regions.

**info mem-params**  
Displays the memory parameters applicable to an address space.

**info os-log**  
Displays the contents of the *Operating System* (OS) log buffer for connections that support this feature.

**info os-modules**  
Displays a list of loadable kernel modules for connections that support this feature.

**info os-version**  
Displays the version of the *Operating System* (OS) for connections that support this feature.

**info processes**  
Displays information about the user space processes.

**info registers**  
Displays the name and content of all application level registers for the current stack frame.

**info semihosting**  
Displays semihosting information.

**info sharedlibrary**  
Displays the names of the loaded shared libraries, the base address, and whether the debug symbols of the shared libraries are loaded or not.

**info signals, info handle**  
Displays information about the handling of signals or processor exceptions.

**info sources**  
Displays the names of the source files used in the current image being debugged.

**info stack, backtrace, where**  
Displays a numbered list of the calling stack frames including the function names and source line numbers.

**info symbol**  
Displays the symbol name at a specific address.

**info threads**  
Displays information about the available threads.

**info variables**  
Displays the name and data types for all global and static variables.

Enter **help** followed by a command name for more information on a specific command.

## Related references

[1.3.48 info all-registers](#) on page 1-92.  
[1.3.49 info breakpoints, info watchpoints](#) on page 1-93.  
[1.3.58 info handle, info signals](#) on page 1-102.  
[1.3.64 info os-log](#) on page 1-108.  
[1.3.65 info os-modules](#) on page 1-109.  
[1.3.66 info os-version](#) on page 1-110.  
[1.3.67 info processes](#) on page 1-111.  
[1.3.68 info registers](#) on page 1-112.  
[1.3.69 info semihosting](#) on page 1-113.  
[1.3.70 info sharedlibrary](#) on page 1-114.  
[1.3.58 info handle, info signals](#) on page 1-102.  
[1.3.72 info sources](#) on page 1-116.  
[1.3.6 backtrace, info stack, where](#) on page 1-49.  
[1.3.74 info symbol](#) on page 1-118.  
[1.3.76 info threads](#) on page 1-120.  
[1.3.77 info variables](#) on page 1-121.  
[1.3.59 info inst-sets](#) on page 1-103.  
[1.3.51 info capabilities](#) on page 1-95.  
[1.3.52 info classes](#) on page 1-96.  
[1.3.53 info cores](#) on page 1-97.  
[1.3.60 info locals](#) on page 1-104.  
[1.3.61 info members](#) on page 1-105.  
[1.3.62 info memory](#) on page 1-106.  
[1.3.63 info memory-parameters](#) on page 1-106.  
[1.3.54 info files, info target](#) on page 1-98.

## 1.2.16 Log

List of all the DS-5 Debugger commands that enable you to control runtime messages from the debugger.

`log config`

Specifies the type of logging configuration to output runtime messages from the debugger.

`log file`

Specifies an output file to receive runtime messages from the debugger.

Enter `help` followed by a command name for more information on a specific command.

## Related references

[1.3.85 log config](#) on page 1-130.  
[1.3.86 log file](#) on page 1-131.

## 1.2.17 Set

List of all the DS-5 Debugger commands that enable you to control the default debugger settings.

`set`

`set` is an alias for `set variable`.

`set arm`

Controls the behavior of the debugger when selecting the instruction set for disassembly and setting breakpoints.

`set auto-solib-add`

Controls the automatic loading of shared library symbols.

`set backtrace`

Controls the default behavior when using the `info stack` command.

`set blocking-run-control`  
Controls whether run control operations such as stepping and running are blocked until the target stops or released immediately.

`set breakpoint`  
Controls the automatic behavior of breakpoints and watchpoints.

`set case-insensitive-source-matching`  
Controls the case sensitivity of debugger file matching operations.

`set debug-agent`  
Sets an internal configuration parameter for the debug agent.

`set debug-from`  
Specifies the address of the temporary breakpoint for subsequent use by the `start` command.

`set directories`  
Defines additional directories to search for source files.

`set dtssl-options`  
Sets a parameter in the DTSL configuration.

`set dtssl-temporary-directory`  
Specifies the path for the temporary directory to store trace data.

`set elf cache-uninitialized-sections`  
Controls whether the debugger caches uninitialized sections.

`set elf load-segments-at-p_paddr`  
Enables loading to the specified load offset + `p_paddr` when loading segments of ELF images to the target.

`set elf zero-extra-segment-bytes`  
Enables zeroing of bytes from `p_filesz` to `p_memsz` when loading segments of ELF images to the target.

`set endian`  
Specifies the byte order for use by the debugger.

`set escape-strings`  
Controls how special characters in strings are printed on the debugger command-line.

`set escapes-in-filenames`  
Controls the use of special characters in paths.

`set listsize`  
Modifies the default number of source lines that the `list` command displays.

`set mmu use-cache-for-phys-reads`  
Instructs the debugger to, where possible, ensure that the translation table entries it reads from physical memory are coherent with the contents of data caches.

`set os`  
Controls *Operating System* (OS) settings in the debugger. An OS-aware connection must be established before you can use this command.

`set print`  
Controls the current debugger print settings.

`set semihosting`  
Controls the semihosting settings in the debugger.

`set solib-search-path`  
Specifies additional directories to search for shared library symbols.

`set step-mode`  
Controls the default behavior of the `step` and `steps` commands.

`set stop-on-solib-events`  
Controls whether the debugger stops execution when a shared object is loaded or unloaded.

`set substitute-path`  
Modifies the search paths used by the debugger when it executes any of the commands that look up and display source code.

`set sysroot`, `set solib-absolute-prefix`  
Specifies the system root directory to search for shared library symbols.



**set trust-ro-sections-for-opcodes**

Controls whether the debugger can read opcodes from read-only sections of images on the host workstation rather than from the target itself.

**set variable**

Evaluates an expression and assigns the result to a variable, register or memory.

**set wildcard-style**

Specifies the type of wildcard pattern matching you can use for examining the contents of strings.

Enter **help** followed by a command name for more information on a specific command.

### Related references

- [1.3.123 set, set variable on page 1-168.](#)
- [1.3.124 set arm on page 1-169.](#)
- [1.3.125 set auto-solib-add on page 1-170.](#)
- [1.3.126 set backtrace on page 1-171.](#)
- [1.3.127 set blocking-run-control on page 1-172.](#)
- [1.3.128 set breakpoint on page 1-173.](#)
- [1.3.129 set case-insensitive-source-matching on page 1-174.](#)
- [1.3.130 set debug-agent on page 1-175.](#)
- [1.3.131 set debug-from on page 1-176.](#)
- [1.3.24 directory, set directories on page 1-67.](#)
- [1.3.133 set dtls-options on page 1-178.](#)
- [1.3.134 set dtls-temporary-directory on page 1-179.](#)
- [1.3.135 set elf cache-uninitialized-sections on page 1-179.](#)
- [1.3.136 set elf load-segments-at-p\\_paddr on page 1-180.](#)
- [1.3.137 set elf zero-extra-segment-bytes on page 1-180.](#)
- [1.3.138 set endian on page 1-182.](#)
- [1.3.139 set escape-strings on page 1-183.](#)
- [1.3.140 set escapes-in-filenames on page 1-184.](#)
- [1.3.141 set listsize on page 1-185.](#)
- [1.3.143 set os on page 1-186.](#)
- [1.3.144 set print on page 1-188.](#)
- [1.3.145 set semihosting on page 1-190.](#)
- [1.3.146 set solib-absolute-prefix, set sysroot on page 1-192.](#)
- [1.3.147 set solib-search-path on page 1-193.](#)
- [1.3.148 set step-mode on page 1-194.](#)
- [1.3.149 set stop-on-solib-events on page 1-195.](#)
- [1.3.150 set substitute-path on page 1-196.](#)
- [1.3.146 set solib-absolute-prefix, set sysroot on page 1-192.](#)
- [1.3.152 set trust-ro-sections-for-opcodes on page 1-198.](#)
- [1.3.123 set, set variable on page 1-168.](#)
- [1.3.154 set wildcard-style on page 1-200.](#)
- [1.3.142 set mmu use-cache-for-phys-reads on page 1-185.](#)

## 1.2.18 Set elf

**set elf** commands in DS-5 Debugger.

**set elf cache-uninitialized-sections**

Controls whether the debugger caches uninitialized sections.

**set elf load-segments-at-p\_paddr**  
Enables loading to the specified load offset + p\_paddr when loading segments of ELF images to the target.

**set elf zero-extra-segment-bytes**  
Enables zeroing of bytes from p\_filesz to p\_memsz when loading segments of ELF images to the target.

Enter help followed by a command name for more information on a specific command.

### Related references

[1.3.135 set elf cache-uninitialized-sections on page 1-179.](#)  
[1.3.136 set elf load-segments-at-p\\_paddr on page 1-180.](#)  
[1.3.137 set elf zero-extra-segment-bytes on page 1-180.](#)

## 1.2.19 Show

List of all the DS-5 Debugger commands that enable you to view the default debugger settings.

**show**  
Displays the debugger settings.

**show architecture**  
Displays the architecture of the target.

**show arm**  
Displays the instruction set settings in use by the debugger for disassembly and setting breakpoints.

**show auto-solib-add**  
Displays the automatic setting for use when loading shared library symbols.

**show backtrace**  
Displays the behavior settings for use with the **info stack** command.

**show blocking-run-control**  
Displays the setting for blocking run control operations such as stepping and running.

**show breakpoint**  
Displays the breakpoint and watchpoint behavior settings.

**show case-insensitive-source-matching**  
Displays the case sensitivity setting for the debugger file matching operations.

**show debug-agent**  
Displays the value of an internal configuration parameter for the debug agent.

**show debug-from**  
Displays the setting for the expression that is used by the **start** command to set a temporary breakpoint.

**show directories**  
Displays the list of directories to search for source files.

**show dtsl-options**  
Displays the value of a parameter in the DTSL configuration.

**show dtsl-temporary-directory**  
Displays the current path for the temporary directory which stores trace data.

**show elf cache-uninitialized-sections**  
Displays the debugger setting that controls whether uninitialized sections are cached.

**show elf load-segments-at-p\_paddr**  
Displays the debugger setting that controls the location for loading segments of ELF images.

**show elf zero-extra-segment-bytes**  
Displays the debugger setting that controls zeroing of bytes when loading segments of ELF images to the target.

**show endian**  
Displays the byte order setting in use by the debugger.

`show escape-strings`  
Displays the setting for controlling how special characters in strings are printed on the debugger command line.

`show escapes-in-filenames`  
Displays the setting for controlling the use of special characters in paths.

`show listsize`  
Displays the number of source lines that the `list` command displays.

`show mmu use-cache-for-phys-reads`  
Displays the MMU setting that controls the coherency between translation table memory reads and cache data.

`show os`  
Displays the *Operating System* (OS) control settings.

`show print`  
Displays the debugger print settings.

`show semihosting`  
Displays the semihosting settings in the debugger.

`show solib-search-path`  
Displays the search paths in use by the debugger when searching for shared libraries.

`show step-mode`  
Displays the step setting for functions without debug information.

`show stop-on-solib-events`  
Displays the debugger setting that controls whether execution stops when shared library events occur.

`show substitute-path`  
Displays the search path substitution rules in use by the debugger when searching for source files.

`show sysroot`, `show solib-absolute-prefix`  
Displays the system root directory in use by the debugger when searching for shared library symbols.

`show trust-ro-sections-for-opcodes`  
Displays the debugger setting that controls whether the debugger can read opcodes from read-only sections of images on the host workstation rather than from the target itself.

`show version`  
Displays the version number of the debugger.

`show wildcard-style`  
Displays the wildcard style for pattern matching.

Enter `help` followed by a command name for more information on a specific command.

### Related references

[1.3.157 show on page 1-203.](#)  
[1.3.158 show architecture on page 1-204.](#)  
[1.3.159 show arm on page 1-205.](#)  
[1.3.160 show auto-solib-add on page 1-206.](#)  
[1.3.161 show backtrace on page 1-207.](#)  
[1.3.162 show blocking-run-control on page 1-208.](#)  
[1.3.163 show breakpoint on page 1-209.](#)  
[1.3.164 show case-insensitive-source-matching on page 1-210.](#)  
[1.3.165 show debug-agent on page 1-211.](#)  
[1.3.166 show debug-from on page 1-212.](#)  
[1.3.167 show directories on page 1-213.](#)  
[1.3.168 show dtsl-options on page 1-214.](#)  
[1.3.169 show dtsl-temporary-directory on page 1-215.](#)  
[1.3.170 show elf cache-uninitialized-sections on page 1-215.](#)

[1.3.171 show elf load-segments-at-p\\_paddr](#) on page 1-216.  
[1.3.172 show elf zero-extra-segment-bytes](#) on page 1-217.  
[1.3.173 show endian](#) on page 1-218.  
[1.3.174 show escape-strings](#) on page 1-219.  
[1.3.175 show escapes-in-filenames](#) on page 1-220.  
[1.3.176 show listsize](#) on page 1-221.  
[1.3.178 show os](#) on page 1-222.  
[1.3.179 show print](#) on page 1-223.  
[1.3.180 show semihosting](#) on page 1-224.  
[1.3.181 show solib-absolute-prefix, show sysroot](#) on page 1-225.  
[1.3.182 show solib-search-path](#) on page 1-226.  
[1.3.183 show step-mode](#) on page 1-227.  
[1.3.184 show stop-on-solib-events](#) on page 1-228.  
[1.3.185 show substitute-path](#) on page 1-229.  
[1.3.181 show solib-absolute-prefix, show sysroot](#) on page 1-225.  
[1.3.187 show trust-ro-sections-for-opcodes](#) on page 1-231.  
[1.3.188 show version](#) on page 1-232.  
[1.3.189 show wildcard-style](#) on page 1-233.  
[1.3.177 show mmu use-cache-for-phys-reads](#) on page 1-221.

## 1.2.20 Show elf

show elf commands in DS-5 Debugger.

show elf cache-uninitialized-sections

Displays the debugger setting that controls whether uninitialized sections are cached.

show elf load-segments-at-p\_paddr

Displays the debugger setting that controls the location for loading segments of ELF images.

show elf zero-extra-segment-bytes

Displays the debugger setting that controls zeroing of bytes when loading segments of ELF images to the target.

Enter help followed by a command name for more information on a specific command.

### Related references

[1.3.170 show elf cache-uninitialized-sections](#) on page 1-215.  
[1.3.171 show elf load-segments-at-p\\_paddr](#) on page 1-216.  
[1.3.172 show elf zero-extra-segment-bytes](#) on page 1-217.

## 1.2.21 Flash

List of all the DS-5 Debugger commands that controls flash accesses and displays information about specific flash devices.

flash load

Loads sections from an image into one or more flash devices.

info flash

Displays information about the flash devices on the current target.

Enter help followed by a command name for more information on a specific command.

### Related references

[1.3.55 info flash](#) on page 1-99.  
[1.3.40 flash load](#) on page 1-82.

## 1.2.22 Support

List of all the miscellaneous DS-5 Debugger commands.

**define**

Enables you to derive new user-defined commands from existing commands.

**help**

Displays help information for a specific command or a group of commands listed according to specific debugging tasks.

**info capabilities**

Displays a list of capabilities for the target device that is currently connected to the debugger.

**info inst-sets**

Displays the available instruction sets.

**pause**

Pauses the execution of a script for a specified period of time.

**preprocess**

Displays the preprocessed expression, not the evaluated expression.

**quit, exit**

Quits the debugger session.

**set arm**

Controls the behavior of the debugger when selecting the instruction set for disassembly and setting breakpoints.

**set endian**

Specifies the byte order for use by the debugger.

**set semihosting**

Controls the semihosting settings in the debugger.

**shell**

Runs a shell command within the debug session.

**show architecture**

Displays the architecture of the target.

**show arm**

Displays the instruction set settings in use by the debugger for disassembly and setting breakpoints.

**show semihosting**

Displays the semihosting settings in the debugger.

**show version**

Displays the version number of the debugger.

**show endian**

Displays the byte order setting in use by the debugger.

**stdin**

Specifies semihosting input requested by application code.

**unset**

Modifies the current debugger settings.

Enter **help** followed by a command name for more information on a specific command.

### Related references

[1.3.106 preprocess on page 1-150.](#)

[1.3.105 pause on page 1-149.](#)

[1.3.156 shell on page 1-202.](#)

[1.3.37 exit, quit on page 1-79.](#)

[1.3.188 show version on page 1-232.](#)

[1.3.158 show architecture on page 1-204.](#)

[1.3.124 set arm on page 1-169.](#)

[1.3.159 show arm on page 1-205.](#)

[1.3.138 set endian on page 1-182.](#)

- [1.3.173 show endian](#) on page 1-218.
- [1.3.145 set semihosting](#) on page 1-190.
- [1.3.180 show semihosting](#) on page 1-224.
- [1.3.193 stdin](#) on page 1-237.
- [1.3.210 unset](#) on page 1-256.

## 1.3 DS-5 Debugger commands listed in alphabetical order

Displays all the commands in alphabetical order.

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- [1.3.1 add-symbol-file](#) on page 1-43.
- [1.3.2 advance](#) on page 1-44.
- [1.3.3 append](#) on page 1-45.
- [1.3.4 assemble](#) on page 1-45.
- [1.3.5 awatch](#) on page 1-48.
- [1.3.6 backtrace, info stack, where](#) on page 1-49.
- [1.3.7 break](#) on page 1-50.
- [1.3.8 break-script](#) on page 1-52.
- [1.3.9 break-stop-on-cores, break-stop-on-threads](#) on page 1-53.
- [1.3.10 break-stop-on-vmid](#) on page 1-54.
- [1.3.11 cache flush](#) on page 1-54.
- [1.3.12 cache list](#) on page 1-55.
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- [1.3.19 core, thread](#) on page 1-62.
- [1.3.20 core apply, thread apply](#) on page 1-63.
- [1.3.21 define](#) on page 1-64.
- [1.3.22 delete breakpoints](#) on page 1-65.
- [1.3.23 delete memory](#) on page 1-66.
- [1.3.24 directory, set directories](#) on page 1-67.
- [1.3.25 disable breakpoints](#) on page 1-68.
- [1.3.26 disable memory](#) on page 1-69.
- [1.3.27 disassemble](#) on page 1-70.
- [1.3.28 discard-symbol-file](#) on page 1-71.
- [1.3.29 document](#) on page 1-71.
- [1.3.30 down](#) on page 1-72.
- [1.3.31 down-silently](#) on page 1-73.
- [1.3.32 dump](#) on page 1-74.
- [1.3.33 echo](#) on page 1-75.
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- [1.3.35 enable memory](#) on page 1-77.
- [1.3.36 end](#) on page 1-78.
- [1.3.37 exit, quit](#) on page 1-79.
- [1.3.38 file, symbol-file](#) on page 1-80.
- [1.3.39 finish](#) on page 1-81.
- [1.3.40 flash load](#) on page 1-82.
- [1.3.41 frame](#) on page 1-83.
- [1.3.42 handle](#) on page 1-84.
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- [1.3.44 help](#) on page 1-87.
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- *1.3.52 info classes* on page 1-96.
- *1.3.53 info cores* on page 1-97.
- *1.3.54 info files, info target* on page 1-98.
- *1.3.55 info flash* on page 1-99.
- *1.3.56 info frame* on page 1-100.
- *1.3.57 info functions* on page 1-101.
- *1.3.58 info handle, info signals* on page 1-102.
- *1.3.59 info inst-sets* on page 1-103.
- *1.3.60 info locals* on page 1-104.
- *1.3.61 info members* on page 1-105.
- *1.3.62 info memory* on page 1-106.
- *1.3.63 info memory-parameters* on page 1-106.
- *1.3.64 info os-log* on page 1-108.
- *1.3.65 info os-modules* on page 1-109.
- *1.3.66 info os-version* on page 1-110.
- *1.3.67 info processes* on page 1-111.
- *1.3.68 info registers* on page 1-112.
- *1.3.69 info semihosting* on page 1-113.
- *1.3.70 info sharedlibrary* on page 1-114.
- *1.3.58 info handle, info signals* on page 1-102.
- *1.3.72 info sources* on page 1-116.
- *1.3.6 backtrace, info stack, where* on page 1-49.
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- *1.3.49 info breakpoints, info watchpoints* on page 1-93.
- *1.3.50 info breakpoints capabilities, info watchpoints capabilities* on page 1-94.
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- *1.3.83 load* on page 1-128.
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- *1.3.86 log file* on page 1-131.
- *1.3.87 memory* on page 1-132.
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- *1.3.141 set listsize* on page 1-185.
- *1.3.142 set mmu use-cache-for-phys-reads* on page 1-185.
- *1.3.143 set os* on page 1-186.
- *1.3.144 set print* on page 1-188.
- *1.3.145 set semihosting* on page 1-190.
- *1.3.146 set solib-absolute-prefix, set sysroot* on page 1-192.
- *1.3.147 set solib-search-path* on page 1-193.
- *1.3.148 set step-mode* on page 1-194.
- *1.3.149 set stop-on-solib-events* on page 1-195.
- *1.3.150 set substitute-path* on page 1-196.
- *1.3.146 set solib-absolute-prefix, set sysroot* on page 1-192.
- *1.3.152 set trust-ro-sections-for-opcodes* on page 1-198.
- *1.3.123 set, set variable* on page 1-168.
- *1.3.154 set wildcard-style* on page 1-200.
- *1.3.155 sharedlibrary* on page 1-201.
- *1.3.156 shell* on page 1-202.
- *1.3.157 show* on page 1-203.
- *1.3.158 show architecture* on page 1-204.
- *1.3.159 show arm* on page 1-205.
- *1.3.160 show auto-solib-add* on page 1-206.
- *1.3.161 show backtrace* on page 1-207.
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- 1.3.170 *show elf cache-uninitialized-sections* on page 1-215.
- 1.3.171 *show elf load-segments-at-p\_paddr* on page 1-216.
- 1.3.172 *show elf zero-extra-segment-bytes* on page 1-217.
- 1.3.173 *show endian* on page 1-218.
- 1.3.174 *show escape-strings* on page 1-219.
- 1.3.175 *show escapes-in-filenames* on page 1-220.
- 1.3.176 *show listsize* on page 1-221.
- 1.3.177 *show mmu use-cache-for-phys-reads* on page 1-221.
- 1.3.178 *show os* on page 1-222.
- 1.3.179 *show print* on page 1-223.
- 1.3.180 *show semihosting* on page 1-224.
- 1.3.181 *show solib-absolute-prefix, show sysroot* on page 1-225.
- 1.3.182 *show solib-search-path* on page 1-226.
- 1.3.183 *show step-mode* on page 1-227.
- 1.3.184 *show stop-on-solib-events* on page 1-228.
- 1.3.185 *show substitute-path* on page 1-229.
- 1.3.181 *show solib-absolute-prefix, show sysroot* on page 1-225.
- 1.3.187 *show trust-ro-sections-for-opcodes* on page 1-231.
- 1.3.188 *show version* on page 1-232.
- 1.3.189 *show wildcard-style* on page 1-233.
- 1.3.190 *silence* on page 1-234.
- 1.3.191 *source* on page 1-235.
- 1.3.192 *start* on page 1-236.
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- 1.3.81 *interrupt, stop* on page 1-126.
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- 1.3.199 *tbreak* on page 1-243.
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- 1.3.19 *core, thread* on page 1-62.
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- 1.3.210 *unset* on page 1-256.
- 1.3.211 *unsilence* on page 1-257.
- 1.3.212 *up* on page 1-258.
- 1.3.213 *up-silently* on page 1-259.
- 1.3.214 *wait* on page 1-260.
- 1.3.215 *watch* on page 1-261.
- 1.3.216 *whatis* on page 1-262.
- 1.3.6 *backtrace, info stack, where* on page 1-49.
- 1.3.218 *while* on page 1-264.
- 1.3.219 *x* on page 1-265.

### 1.3.1 add-symbol-file

Loads additional debug information into the debugger.

#### Syntax

`add-symbol-file filename [offset] [-s section address]...`

Where:

*filename* Specifies the image, shared library, or *Operating System* (OS) module.

#### Note

Shared library and OS modules depend on connections that support loading these types of files. This option pends the file until the library or OS module is loaded.

*offset* Specifies the offset that is added to all addresses within the image. If *offset* is not specified then the default for:

- An image is zero.
- A shared library is the load address of the library. If the application has not currently loaded the specified library then the request is pended until the library is loaded and the offset can be determined.

*s* For relocatable objects, this specifies the address to which a section was relocated.

*section* Specifies the name of the relocated section.

*address* Specifies the address of the section. This can be either an address or an expression that evaluates to an address.

You can use the `info files` command to display information about the loaded files.

#### Example 1-4 Examples

```
add-symbol-file myFile.axf          # Load symbols at entry point+0x0000
add-symbol-file myLib.so           # Pends symbol file for shared library
add-symbol-file myModule.ko        # Pends symbol file for OS module
add-symbol-file myFile.axf 0x2000  # Load symbols at entry point+0x2000
add-symbol-file relocate.o -s .text 0x1000 -s .data 0x2000
                                   # Load symbols from relocate.o with
                                   # section .text relocated to 0x1000 and
                                   # section .data relocated to 0x2000
```

#### Related references

[1.2.7 Files on page 1-24.](#)

## 1.3.2 advance

Sets a temporary breakpoint and calls the debugger continue command. The temporary breakpoint is subsequently deleted when it is hit.

### Syntax

---

#### Note

---

Control is returned as soon as the target is running. You can use the `wait` command to block the debugger from returning control until either the application completes or a breakpoint is hit.

---

```
advance [-p] [filename:]location | *address
```

Where:

**-p** Specifies whether or not the resolution of an unrecognized breakpoint location results in a pending breakpoint being created.

***filename*** Specifies the file.

***location*** Specifies the location:

***line\_num***

is a line number.

***function***

is a function name.

***label***

is a label name.

***+offset* | *-offset***

Specifies the line offset from the current location.

**\**address*** Specifies the address. This can be either an address or an expression that evaluates to an address.

### Example 1-5 Examples

---

```
advance func1      # Sets a temporary breakpoint at func1 and continues
                   # running the target
advance -p lib.c:20 # Sets a pendable temporary breakpoint at line 20 in lib.c
                   # and continues running the target
```

---

### Related references

[1.2.2 Execution control on page 1-19.](#)

### 1.3.3 **append**

Reads data from memory or the result of an expression and appends it to an existing file.

#### **Syntax**

```
append [format] memory filename start_address {end_address | +size}
```

```
append [format] value filename expression
```

Where:

<i>format</i>	Specifies the output format:
binary	Binary. This is the default.
ihex	Intel Hex-32.
srec	Motorola 32-bit (S-records).
vhx	Byte oriented hexadecimal (Verilog Memory Model).
<i>filename</i>	Specifies the file.
<i>start_address</i>	Specifies the start address for the memory.
<i>end_address</i>	Specifies the inclusive end address for the memory.
<i>+size</i>	Specifies the size of the region.
<i>expression</i>	Specifies an expression that is evaluated and the result is returned.

#### **Example 1-6 Examples**

```
append memory myFile.bin 0x8000 0x8FFF # Append content of memory 0x8000-0x8FFF
# to binary file myFile.bin
append srec value myFile.m32 myArray # Append content of myArray to
# Motorola 32-bit file myFile.m32
```

#### **Related references**

[1.2.7 Files on page 1-24.](#)

[1.2.9 Memory on page 1-26.](#)

[1.2.9 Memory on page 1-26.](#)

[1.1.3 Expressions within DS-5 on page 1-10.](#)

[1.1.4 Built-in functions within DS-5 expressions on page 1-11.](#)

[1.1.8 printf\(\) style format string on page 1-15.](#)

### 1.3.4 **assemble**

Writes assembler instructions to memory.

The debugger performs inline assembly of the instructions between the **assemble** and **end** commands, using the specified instruction set, and then writes them to the specified memory location.

This command is useful for making small changes to your code without recompiling. For larger code changes or to make use of a wider set of assembler directives you must use the standalone assembler tool provided by your compiler toolchain.

---

**Note**

The assemble command does not change the processor state. You must ensure that the processor is in the correct state to execute the new instructions.

---

## Syntax

```
assemble address [InstructionSet]
[Instruction]
...
end
```

Where:

*address*

Specifies the address to write the first instruction to. Subsequent instructions are written to following memory.

*InstructionSet*

Specifies the instruction set to assemble to. This can be:

- ARM
- Thumb
- A32
- T32
- A64.

You can only specify an instruction set that is available for the processor. If you do not specify the instruction set, it defaults to the instruction set state at the specified address.

### Instruction

Assembler instruction to write to memory. You can specify multiple instructions. Each instruction must be on a separate line.

You can also specify supported directives. The supported directives are:

- ARM
- THUMB
- CODE32
- CODE16
- A64
- DCB
- DCD
- DCDU
- DCDO
- DCFD
- DCFDU
- DCFS
- DCFSU
- DCI
- DCQ
- DCQU
- DCW
- DCWU.

#### Note

The syntax for the instructions and directives follow the ARM assembly language syntax.

### end

Specifies the end of the `assemble` command. The list of assembler instructions are written to memory only when you enter `end`.

### Example 1-7 Examples

```
assemble $pc ARM      # Assemble the following ARM instructions
  ADD r1,r2,r3         # Write the A32 add instruction to address $PC
  SUB r2,r3,r4         # Write the A32 sub instruction to address $PC+4
  DMB                 # Write Data Memory Barrier to $PC+8
  THUMB               # Assemble the following Thumb instructions
  MOVS r0,#10         # Write T32 move instruction to $PC+12
end                  # End of the assemble command

assemble 0x00008000 # Assemble the following directives
  DCB 0,1,2,3         # Write four bytes to 0x00008000
  DCD 7,8             # Write two words to 0x00008004 and 0x00008008
end                  # End of the assemble command
```

### Related references

[1.2.9 Memory on page 1-26.](#)

### Related information

[ARM Compiler `armasm` Reference Guide.](#)

[Syntax of source lines in assembly language.](#)

### 1.3.5 awatch

Sets a watchpoint for a data symbol. The debugger stops the target when the memory at the specified address is read or written.

This command records the ID of the watchpoint in a new debugger variable, `$n`, where `n` is a number. You can use this variable, in a script, to delete or modify the watchpoint behavior. If `$n` is the last or second-to-last debugger variable, then you can also access the ID using `$` or `$$` respectively.

Watchpoints are only supported on scalar values.

Some targets do not support watchpoints. Currently you can only set a watchpoint on:

- A hardware target using a debug hardware agent.
- Linux applications using `gdbserver` or `undodb-server`.

The availability of watchpoints depends on the hardware target. In the case of Linux application debug, the availability of watchpoints also depends on the Linux kernel version and configuration.

The address of the instruction that triggers the watchpoint might not be the address shown in the PC register. This is because of pipelining effects.

#### Syntax

```
awatch [-d] [-p] {[filename:]symbol | *address} [vmid vmid]
```

Where:

- d Disables the watchpoint immediately after creation.
- p Specifies whether or not the resolution of an unrecognized watchpoint location results in a pending watchpoint being created.
- filename* Specifies the file.
- symbol* Specifies a global/static data symbol. For arrays or structs you must specify the element or member.
- \*address* Specifies the address. This can be either an address or an expression that evaluates to an address.
- vmid* Specifies the *Virtual Machine ID* (VMID) to apply the breakpoint to. This can be either an integer or an expression that evaluates to an integer.

#### Example 1-8 Examples

```
awatch myVar1          # Set read/write watchpoint on myVar1
awatch *0x80D4         # Set read/write watchpoint on address 0x80D4
```

#### Related references

- [1.3.215 watch on page 1-261.](#)
- [1.3.121 rwatch on page 1-166.](#)
- [1.3.16 clearwatch on page 1-59.](#)
- [1.2.1 Breakpoints and watchpoints on page 1-17.](#)



### 1.3.6 backtrace, info stack, where

Displays a numbered list of the calling stack frames including the function names and source line numbers. You can use `set backtrace` to control the default call stack display settings.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

```
info stack [n | -n] [full]
```

```
backtrace [n | -n] [full]
```

```
where [n | -n] [full]
```

Where:

- n* Specifies *n* frames from the bottom of the call stack.
- n* Specifies *n* frames from the top of the call stack.
- full* Specifies the additional display of local variables.

#### Example 1-9 Examples

---

```
info stack          # Display call stack
backtrace -5        # Display top 5 frames of the call stack
backtrace full      # Display call stack including local variables
where               # Display call stack
```

---

#### Related references

- [1.2.5 Call stack on page 1-22.](#)
- [1.2.15 Information on page 1-29.](#)

### 1.3.7 break

Sets an execution breakpoint at a specific location. You can also specify a conditional breakpoint by using an `if` statement that stops only when the conditional expression evaluates to true.

This command records the ID of the breakpoint in a new debugger variable, `$n`, where `n` is a number. You can use this variable, in a script, to delete or modify the breakpoint behavior. If `$n` is the last or second-to-last debugger variable, then you can also access the ID using `$` or `$$` respectively.

---

#### Note

Breakpoints that are set within a shared object or kernel module become pending when the shared object or kernel module is unloaded.

---

Use `set breakpoint` to control the automatic breakpoint behavior when using this command.

#### Syntax

```
break [-d] [-p] [[filename:] Location | *address] [thread | core number...] [if expression]
```

Where:

- `-d` Disables the breakpoint immediately after creation.
- `-p` Specifies whether or not the resolution of an unrecognized breakpoint location results in a pending breakpoint being created.
- filename* Specifies the file.
- Location* Specifies the location:
  - line\_num* is a line number.
  - function* is a function name.
  - Label* is a label name.
  - +offset | -offset* Specifies the line offset from the current location.
- \*address* Specifies the address. This can be either an address or an expression that evaluates to an address.
- number* Specifies one or more threads or processors to apply the breakpoint to. You can use `$thread` to refer to the current thread. If *number* is not specified then all threads are affected.
- expression* Specifies an expression that is evaluated when the breakpoint is hit.

If no arguments are specified then a breakpoint is set at the current PC.

You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.

#### Example 1-10 Examples

```
break *0x8000          # Set breakpoint at address 0x8000
break *0x8000 thread $thread # Set breakpoint at address 0x8000 on
                           # current thread
break *0x8000 thread 1 3  # Set breakpoint at address 0x8000 on
                           # threads 1 and 3
break main              # Set breakpoint at address of main()
break SVC_Handler       # Set breakpoint at address of label SVC_Handler
break +1                 # Set breakpoint at address of next source line
break my_File.c:main     # Set breakpoint at address of main() in my_File.c
```

```
break my_File.c:10      # Set breakpoint at address of line 10 in my_File.c
break function1 if x>0  # Set conditional breakpoint that stops when x>0
```

---

## Related references

- [1.3.43 hbreak on page 1-85.](#)
- [1.3.199 tbreak on page 1-243.](#)
- [1.3.200 thbreak on page 1-245.](#)
- [1.3.112 resolve on page 1-157.](#)
- [1.3.15 clear on page 1-58.](#)
- [1.2.1 Breakpoints and watchpoints on page 1-17.](#)
- [1.1.3 Expressions within DS-5 on page 1-10.](#)
- [1.1.4 Built-in functions within DS-5 expressions on page 1-11.](#)
- [1.1.8 printf\(\) style format string on page 1-15.](#)

### 1.3.8 break-script

Assigns a script file to a specific breakpoint. The script executes when the breakpoint is triggered.

#### Syntax

```
break-script number [filename]
```

Where:

- number* Specifies the breakpoint number. This is the number assigned by the debugger when it is set. You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.
- filename* Specifies the script file that you want to execute when the specified breakpoint is triggered. If *filename* is not specified then the currently assigned *filename* is removed from the breakpoint.

#### Usage

Be aware of the following when using scripts with breakpoints:

- You must not assign a script to a breakpoint that has sub-breakpoints. If you do, the debugger attempts to execute the script for each sub-breakpoint. If this happens, an error message is displayed.
- Take care with the commands you use in a script that is attached to a breakpoint. For example, if you use the `quit` command in script, the debugger disconnects from the target when the breakpoint is hit.
- If you put the `continue` command at the end of a script, this has the same effect as setting the **Continue Execution** checkbox on the Breakpoint Properties dialog box.

#### Example 1-11 Examples

---

```
break-script 1 myScript.ds      # Run myScript.ds when breakpoint 1 is triggered
```

---

#### Related references

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.9 break-stop-on-cores, break-stop-on-threads

Applies an existing breakpoint to one or more threads or processors.

#### Syntax

```
break-stop-on-threads number [id]...
```

```
break-stop-on-cores number [id]...
```

Where:

- number* Specifies the breakpoint number. This is a unique breakpoint number assigned by the debugger when it is set. You can use `info breakpoints` to display the breakpoint numbers and status.
- id* Specifies one or more threads or processors to apply the breakpoint to. You can use `$thread` or `$core` to refer to the current thread or processor. If *id* is not specified then apply the breakpoint to all threads or processors. You can use `info cores`, or `info threads` to display the *id* numbers.

#### Example 1-12 Examples

---

```
break-stop-on-threads 1 2      # Apply breakpoint 1 to thread 2
break-stop-on-threads 4 9 11   # Apply breakpoint 4 to threads 9 and 11
break-stop-on-cores 4          # Apply breakpoint 4 to all processors
```

---

#### Related references

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.10 break-stop-on-vmid

Applies an existing hardware breakpoint to a *Virtual Machine* (VM).

#### Syntax

```
break-stop-on-vmid number [vmid]
```

Where:

- number* Specifies the hardware breakpoint number. This is a unique breakpoint number assigned by the debugger when it is set. You can use `info breakpoints` to display the breakpoint numbers and status.
- vmid* Specifies the *Virtual Machine ID* (VMID) to apply the breakpoint to. This can be either an integer or an expression that evaluates to an integer. If *vmid* is not specified then the VM effect is removed from the breakpoint.

#### Example 1-13 Examples

---

```
break-stop-on-vmid 1 2           # Apply hardware breakpoint 1 to vmid 2
```

---

#### Related references

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.11 cache flush

Flushes the caches of the current CPU. This might affect the caches of the other CPUs depending on the cache hierarchy. The precise behavior is implementation defined.

#### Note

This command might be slow depending on the size of the caches and the available flush methods.

#### Syntax

```
cache flush
```

#### Example 1-14 Examples

---

```
cache flush           # Flush the caches of the current CPU.
```

---

#### Related references

[1.2.10 Cache on page 1-27.](#)

#### Related information

[About debugging MMUs.](#)

### 1.3.12 cache list

Lists the caches and related information available for the current core. The output is implementation defined.

#### Syntax

cache list

---

#### Note

The availability of the command and the available caches are dependent on the specific device that the debugger is connected to.

---

#### Example 1-15 Examples

---

```
cache list      # Lists the available caches and views. An example output is:
                  L1D:
                  L1 data cache, size=32k, views: [tags, tlb]
                  ...
                  L1I:
                  L1 instruction cache, size=2k, views: [tags, tlb]
                  ...
```

---

#### Related references

[1.2.10 Cache on page 1-27.](#)

### 1.3.13 cache print

Provides a structured view of the cache data in the current core. The output is implementation defined.

#### Syntax

```
cache print cache [view]....
```

Where:

*cache*

Specifies the cache name.

*view*

Specifies the view name for the selected cache. For each cache, views provide access to different sets of data, or data presented in different formats.

---

#### Note

The availability of the command and the available caches are dependent on the specific device that the debugger is connected to.

---

#### Example 1-16 Examples

```
cache print L1D      # Prints L1 data cache. An example output is:
                      tags:
                      ...
                      tlb:
                      ...

cache print L1D tags  # Prints L1 data cache. An example output is:
                      tags:
                      ...
```

#### Related references

[1.2.10 Cache on page 1-27.](#)



### 1.3.14 **cd**

Changes the current working directory.

#### **Syntax**

`cd dir`

Where:

*dir* Specifies the directory.

---

#### **Example 1-17 Examples**

---

```
cd "\usr\source"           # Change the current working directory
```

---

#### **Related references**

[1.2.7 Files on page 1-24.](#)

### 1.3.15 clear

Deletes a breakpoint at a specific location.

#### Syntax

`clear [[filename:]location | *address]`

Where:

*filename* Specifies the file.

*location* Specifies the location:

*line\_num*

is a line number.

*function*

is a function name.

*label*

is a label name.

*+offset* | *-offset*

is a line offset from the current location.

*\*address* Specifies the address. This can be either an address or an expression that evaluates to an address.

If no arguments are specified then the breakpoint at the current PC is deleted.

#### Example 1-18 Examples

```
clear *0x8000      # Clear breakpoint at address 0x8000
clear main         # Clear breakpoint at address of main()
clear SVC_Handler  # Clear breakpoint at address of label SVC_Handler
clear +1           # Clear breakpoint at address of next source line
clear my_File.c:main # Clear breakpoint at address of main() in my_File.c
clear my_File.c:10  # Clear breakpoint at address of line 10 in my_File.c
```

#### Related references

[1.3.7 break on page 1-50.](#)

[1.3.43 hbreak on page 1-85.](#)

[1.3.199 tbreak on page 1-243.](#)

[1.3.200 thbreak on page 1-245.](#)

[1.3.112 resolve on page 1-157.](#)

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.16 clearwatch

Deletes a watchpoint at a specific location.

#### Syntax

```
clearwatch [[filename:]symbol | *address]
```

Where:

*filename* Specifies the file.

*symbol* Specifies a global/static data symbol. For arrays or structs you must specify the element or member.

*\*address* Specifies the address. This can be either an address or an expression that evaluates to an address.

#### Example 1-19 Examples

---

```
clearwatch *0x8000      # Clear watchpoint at address 0x8000
clearwatch my_File.c:myVar # Clear watchpoint at address of myVar in my_File.c
```

---

#### Related references

[1.3.215 watch](#) on page 1-261.

[1.3.121 rwatch](#) on page 1-166.

[1.3.5 awatch](#) on page 1-48.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.17 condition

Sets a break condition for a specific breakpoint or watchpoint. If the value of a specific expression evaluates to true then the debugger stops the target otherwise execution resumes.

#### Syntax

`condition number [expression]`

Where:

- number* Specifies the breakpoint or watchpoint number. This is the number assigned by the debugger when it is set. You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.
- expression* Specifies an expression that is evaluated when the breakpoint or watchpoint is hit. If no *expression* is specified then the breakpoint or watchpoint condition is deleted.

#### Example 1-20 Examples

---

```
condition 1 myVar<5      # Set break condition myVar<5 for breakpoint number 1
```

---

#### Related references

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.18 **continue**

Continues running the target.

---

**Note**

Control is returned as soon as the target is running. You can use the `wait` command to block the debugger from returning control until either the application completes or a breakpoint is hit.

---

#### **Syntax**

`continue [count]`

Where:

*count* Specifies the number of times to ignore the breakpoint or watchpoint at the current location.

#### **Example 1-21 Examples**

---

```
continue      # Continue running target
continue 5    # Continue running target, ignoring current breakpoint 5 times
```

---

#### **Related references**

[1.2.2 Execution control on page 1-19.](#)

### 1.3.19 core, thread

Displays information about the current thread or processor.

It displays:

- The unique *id* number assigned by the debugger.
- The thread or processor state (for example stopped or running).
- The current stack frame, including function names and source line numbers.

#### Syntax

```
thread [id]
```

```
core [id]
```

Where:

*id*

Specifies the unique thread or processor number.

If *id* is not specified, then the current thread or processor is displayed. You can use `info cores`, `info processes`, or `info threads` to display the *id* numbers.

If *id* is specified, then the debugger switches control to that thread or processor before displaying the information. Registers and call stacks are associated with a particular thread or processor. This means that switching context also switches the registers and call stack to those belonging to the current thread or processor.

#### Example 1-22 Examples

---

```
thread 699          # Set current thread to number 699.
core 2              # Set current processor to number 2.
```

---

#### Related references

[1.2.2 Execution control](#) on page 1-19.

[1.2.6 Operating System \(OS\)](#) on page 1-23.

[1.1.3 Expressions within DS-5](#) on page 1-10.

[1.1.4 Built-in functions within DS-5 expressions](#) on page 1-11.

[1.1.8 printf\(\) style format string](#) on page 1-15.

### 1.3.20 core apply, thread apply

Switches control to a specific thread or processor to execute a debugger command and then switches back to the original state.

If an error occurs then the debugger stops processing the command and switches back to the original state.

#### Syntax

```
thread apply {all|id} command
```

```
core apply {all|id} command
```

Where:

*all*

Specifies all threads or all processors.

*id*

Specifies the unique thread or processor number. You can use `info cores`, `info processes`, or `info threads` to display the *id* numbers.

*command*

Specifies the debugger command that you want to execute.

If *all* is specified then the command is executed on each thread or processor successively before switching back.

#### Example 1-23 Examples

```
thread apply all print /x $pc      # Cycle through all threads and print address  
                                   # in PC register (hexadecimal).
```

#### Related references

[1.2.2 Execution control on page 1-19.](#)

[1.2.6 Operating System \(OS\) on page 1-23.](#)

### 1.3.21 define

Enables you to derive new user-defined commands from existing commands.

User-defined commands accept arguments separated by whitespace.

#### Syntax

```
define cmd
...
end
```

Where:

**cmd** Specifies the command name followed by one or more debugger commands. Enter each debugger command on a new line and terminate the **define** command by using the **end** command. You can use arguments by using **\$arg0...\$argn**, or **\$argv** for all arguments.

---

#### Note

---

Existing built in commands cannot be redefined.

---

#### Example 1-24 Examples

```
# Define add-args command to print sum of first 3 arguments
define add-args
    print $arg0+$arg1+$arg2
end

# Define echo-all command to echo all arguments
define echo-all
    echo $argv
end
```

#### Related references

[1.2.4 Scripts on page 1-21.](#)



## 1.3.22 delete breakpoints

Deletes one or more breakpoints or watchpoints.

### Syntax

`delete [breakpoints] number...`

Where:

**number** Specifies the breakpoint or watchpoint number. This is the number assigned by the debugger when it is set. You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.

#### Note

Multiple-statements on a single line of source code are assigned sub-numbers, for example `n.n`. You can specify all multiple-statement breakpoints by specifying `n.0` or individually by specifying `n.n`.

If no *number* is specified then all breakpoints and watchpoints are deleted.

### Example 1-25 Examples

```
delete breakpoints 1      # Delete breakpoint number 1
delete breakpoints 1 2    # Delete breakpoints number 1 and 2
delete breakpoints       # Delete all breakpoints and watchpoints
delete breakpoints $      # Delete breakpoint whose number is in the
                        # most recently created debugger variable
```

### Related references

[1.3.128 set breakpoint](#) on page 1-173.

[1.3.25 disable breakpoints](#) on page 1-68.

[1.3.49 info breakpoints, info watchpoints](#) on page 1-93.

[1.3.51 info capabilities](#) on page 1-95.

[1.3.50 info breakpoints capabilities, info watchpoints capabilities](#) on page 1-94.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.23 delete memory

Deletes one or more user-defined memory regions.

#### Syntax

delete memory *number*...

Where:

*number*

Specifies the region number. This is the number assigned by the debugger when the region is set. You can use `info mem` to display the number and status of all regions.

#### Example 1-26 Examples

---

```
delete memory 1           # Delete region number 1
delete memory 1 2         # Delete regions number 1 and 2
delete memory $           # Delete memory region whose number is in
                           # the most recently created debugger variable
```

---

#### Related references

[1.2.9 Memory](#) on page 1-26.

### 1.3.24 directory, set directories

Defines additional directories to search for source files. If you use this command without an argument then the search directories are reset to the default settings. You can use the `show` command to display the current settings.

#### Syntax

```
directory [path]...
```

```
set directories [path]...
```

Where:

*path* Specifies an additional directory to search for source files. This is appended to the beginning of the list.

Multiple directories can be specified but must be separated with either:

- a space
- a colon (Unix)
- a semi-colon (Windows).

#### Default

The default directories for searching are:

- compilation directory, *\$cdir*
- current working directory, *\$cwd*
- current image directory, *\$idir*.

#### Example 1-27 Examples

```
directory "\usr\source"      # Add directory to search list
directory "\usr" "\My Src"  # Add two directories to search list,
                             # first takes precedence
directory                    # Reset to the default directories
```

#### Related references

[1.2.7 Files on page 1-24.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.25 disable breakpoints

Disables one or more breakpoints or watchpoints.

#### Syntax

`disable [breakpoints] number...`

Where:

*number*

Specifies the breakpoint or watchpoint number. This is the number assigned by the debugger when it is set. You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.

---

#### Note

Multiple-statements on a single line of source code are assigned sub-numbers, for example *n.n*. You can specify all multiple-statement breakpoints by specifying *n.0* or individually by specifying *n.n*.

---

If no *number* is specified then all breakpoints and watchpoints are disabled.

---

#### Note

The breakpoints sub-command is optional.

---

### Example 1-28 Examples

---

```
disable breakpoints 1      # Disable breakpoint number 1
disable breakpoints 1 2    # Disable breakpoints number 1 and 2
disable breakpoints        # Disable all breakpoints and watchpoints
disable breakpoints $      # Disable the breakpoint whose number is in the
                           # most recently created debugger variable
```

---

#### Related references

[1.3.128 set breakpoint](#) on page 1-173.

[1.3.22 delete breakpoints](#) on page 1-65.

[1.3.49 info breakpoints, info watchpoints](#) on page 1-93.

[1.3.51 info capabilities](#) on page 1-95.

[1.3.50 info breakpoints capabilities, info watchpoints capabilities](#) on page 1-94.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.26 **disable memory**

Disables one or more user-defined memory regions.

#### **Syntax**

disable memory *number*...

Where:

*number*

Specifies the region number. This is the number assigned by the debugger when the region is set. You can use `info memory` to display the number and status of all regions.

#### **Example 1-29 Examples**

---

```
disable memory 1           # Disable region number 1
disable memory 1 2         # Disable regions number 1 and 2
disable memory $           # Disable memory region whose number is in
                           # the most recently created debugger variable
```

---

#### **Related references**

[1.2.9 Memory](#) on page 1-26.

### 1.3.27 **disassemble**

Displays the disassembly for the function surrounding a specific address or the disassembly for a specific address range.

#### **Syntax**

```
disassemble [address [address | +size]]
```

Where:

*address*

Specifies an expression that evaluates to an address. Two *address* arguments specify an inclusive address range. If no *address* argument is specified then the debugger displays the disassembly for the function surrounding the program counter for the current frame.

*+size*

Specifies the size of the region.

#### **Example 1-30 Examples**

---

```
disassemble           # Display disassembly for current function
disassemble 0x8140 0x8157 # Display disassembly for address range 0x8140-0x8157
disassemble 0x8140 +0x18  # Display disassembly for address range 0x8140-0x8157
disassemble 0xC0040AC0    # Display disassembly for address range 0xC0040AC0-0xC0040ADC
```

---

#### **Related references**

[1.2.9 Memory](#) on page 1-26.

### 1.3.28 discard-symbol-file

Discards debug information relating to a specific file.

#### Syntax

`discard-symbol-file filename`

Where:

*filename*

Specifies the image, shared library, or Operating System (OS) module.

#### Note

Shared library and OS modules depend on connections that support loading these types of files.

You can use the `info files` command to display information about the loaded files.

#### Example 1-31 Examples

```
discard-symbol-file myFile.axf      # Discard symbols relating to myFile.axf
discard-symbol-file myLib.so       # Discard symbols relating to shared library
discard-symbol-file myModule.ko    # Discard symbols relating to OS module
```

### 1.3.29 document

Enables you to add integrated help for a new user-defined command.

#### Syntax

```
document cmd
```

```
...
```

```
end
```

Where:

*cmd*

Specifies the user-defined command name. Enter the description on one of more lines of text and terminate the `document` command by using the `end` command.

#### Example 1-32 Examples

```
# Documentation for the new user-defined add-args command
document add-args
    This user-defined command prints the sum of the first 3 arguments
end
```

#### Related references

[1.2.4 Scripts on page 1-21.](#)

### 1.3.30 down

Moves and displays the current frame pointer down the call stack towards the bottom frame. It also displays the function name and source line number for the specified frame.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

`down [offset]`

Where:

*offset*

Specifies a frame offset from the current frame pointer in the call stack. If no *offset* is specified then the default is one.

#### Example 1-33 Examples

---

```
down      # Move and display information 1 frame down from current frame pointer
down 2    # Move and display information 2 frames down from current frame pointer
```

---

#### Related references

[1.2.5 Call stack on page 1-22.](#)



### 1.3.31 down-silently

Moves the current frame pointer down the call stack towards the bottom frame.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

down-silently [*offset*]

Where:

*offset*

Specifies a frame offset from the current frame pointer in the call stack. If no *offset* is specified then the default is one.

#### Example 1-34 Examples

---

down-silently	# Move 1 frame down from current frame pointer
down-silently 2	# Move 2 frames down from current frame pointer

---

#### Related references

[1.2.5 Call stack on page 1-22.](#)

### 1.3.32 dump

Reads data from memory or the result of an expression and writes it to a file.

#### Syntax

```
dump [format] memory filename start_address {end_address | +size}
```

```
dump [format] value filename expression
```

Where:

*format*

Specifies the output format:

*binary*

Binary. This is the default.

*elf*

32-bit ARM ELF.

*elf64*

64-bit ARM ELF.

*ihex*

Intel Hex-32.

*srec*

Motorola 32-bit (S-records).

*vhx*

Byte oriented hexadecimal (Verilog Memory Model).

*filename*

Specifies the file.

*start\_address*

Specifies the start address for the memory.

*end\_address*

Specifies the inclusive end address for the memory.

*size*

Specifies the size of the region.

*expression*

Specifies an expression that is evaluated to an address and the data from that address is written to the file.

#### Example 1-35 Examples

```
dump memory myFile.bin 0x8000 0x8FFF      # Write content of memory 0x8000-0x8FFF
                                           # to binary file myFile.bin
dump srec value myFile.m32 &myArray      # Write contents of myArray to
                                           # Motorola 32-bit file myFile.m32
```

#### Related references

[1.2.9 Memory on page 1-26.](#)

### 1.3.33 echo

Displays only textual strings.

Backslashes can be used as follows:

- C escape sequences, for example, "\n" can be used to print a new line
- Leading and trailing spaces are not displayed unless escaped with a backslash
- Quoted strings are printed literally including the quote marks.

#### Syntax

`echo string`

Where:

*string*

Specifies a string of characters.

#### Example 1-36 Examples

---

```
echo "    initializing..." # Display: "    initializing..." (includes quotes)
echo Stage 1\n              # Display: Stage 1 (followed by a new line)
echo \    Init              # Display:    Init (includes leading spaces)
echo 4+4                    # Display: 4+4
```

---

#### Related references

- [1.2.14 Display on page 1-29.](#)
- [1.3.104 output on page 1-148.](#)
- [1.3.80 inspect, print on page 1-124.](#)
- [1.1.3 Expressions within DS-5 on page 1-10.](#)
- [1.1.4 Built-in functions within DS-5 expressions on page 1-11.](#)
- [1.1.8 printf\(\) style format string on page 1-15.](#)

### 1.3.34 enable breakpoints

Enables one or more breakpoints or watchpoints by number.

#### Syntax

`enable [breakpoints] [number...]`

Where:

*number*

Specifies the breakpoint or watchpoint number. This is the number assigned by the debugger when it is set. You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.

---

#### Note

Multiple-statements on a single line of source code are assigned sub-numbers, for example *n.n*. You can specify all multiple-statement breakpoints by specifying *n.0* or individually by specifying *n.n*.

---

If no *number* is specified then all breakpoints and watchpoints are disabled.

---

#### Note

The breakpoints sub-command is optional.

---

#### Example 1-37 Examples

---

```
enable breakpoints 1      # Enable breakpoint number 1
enable breakpoints 1 2    # Enable breakpoints number 1 and 2
enable breakpoints       # Enable all breakpoints and watchpoints
enable breakpoints $      # Enable the breakpoint whose number is in the
                        # most recently created debugger variable
```

---

### 1.3.35 enable memory

Enables one or more user-defined memory regions.

#### Syntax

enable memory *number*...

Where:

*number*

Specifies the region number. This is the number assigned by the debugger when the region is set. You can use `info memory` to display the number and status of all regions.

#### Example 1-38 Examples

---

```
enable memory 1           # Enable region number 1
enable memory 1 2         # Enable regions number 1 and 2
enable memory $           # Enable memory region whose number is in
                           # the most recently created debugger variable
```

---

#### Related references

[1.2.9 Memory](#) on page 1-26.

### 1.3.36 end

Enables you to terminate conditional blocks when using the define, if, and while commands.

#### Example 1-39 Examples

---

```
# Define a while loop containing commands to conditionally execute
# myVar is a variable in the application code
while myVar<10
    step
    wait
    x
    set myVar++
end
```

---

#### Related references

[1.2.4 Scripts on page 1-21.](#)

### 1.3.37 **exit, quit**

Quits the debugger session.

#### **Syntax**

```
quit
```

```
exit
```

#### **Example 1-40 Examples**

---

```
quit                                # Quit debugger session
```

---

#### **Related references**

[1.2.22 Support on page 1-37.](#)

### 1.3.38 file, symbol-file

Loads debug information from an image into the debugger and records the entry point address for future use by the `run` and `start` commands. Subsequent use of the `file` command discards existing information before loading the new debug information. The debug information is loaded when required by the debugger.

If you want to append debug information instead of replacing it, you can use the `add-symbol-file` command.

---

**Note**

This command does not set the PC register.

---

#### Syntax

```
file [filename] [offset] [-s section address]...
```

```
symbol-file [filename] [offset] [-s section address]...
```

Where:

*filename*

Specifies the image. If no *filename* is specified then the debug information is discarded.

*offset*

Specifies the offset that is added to all addresses within the image. If *offset* is not specified then the default for:

- An image is zero.
- A shared library is the load address of the library. If the application has not loaded the specified library then the request is pended until the library is loaded and the offset can be determined.

*s*

For relocatable objects, this specifies the address to which a section was relocated.

*section*

Specifies the name of the relocated section.

*address*

Specifies the address of the section. This can be either an address or an expression that evaluates to an address.

#### Example 1-41 Examples

```
file "myFile.axf"           # Load debug information on demand.
file "images\myFile.axf"   # Load debug information on demand.
file                       # Discard debug information.
file "myFile.axf" -s .text 0x1000 -s .data 0x2000
                           # Load debug information on demand with
                           # section .text relocated to 0x1000 and
                           # section .data relocated to 0x2000.
```

#### Related references

[1.2.7 Files on page 1-24.](#)



### 1.3.39 finish

Continues running the device to the next instruction after the selected stack frame finishes.

#### Syntax

finish [*n*]

Where:

*n*

Specifies the number of stack frames to finish executing. The default is one.

#### Example 1-42 Examples

---

finish	# Continues running until the current stack frame finishes
finish 5	# Continues running until 5 stack frames finish

---

### 1.3.40 flash load

Loads sections from an image into one or more flash devices.

#### Syntax

```
flash load filename [device[:parameter=value]...]
```

Where:

*filename*

Specifies the image.

*device*

Specifies the flash device name. Use this option to restrict the load to the specified device only.

*parameter*

Specifies a parameter or comma separated list of parameters to override.

If no *device* is specified then all devices can be loaded. This is dependent on the sections in the image that correspond to the flash device regions.

You can use `info flash` to display information about the flash devices on the current target.

#### Example 1-43 Examples

---

```
flash load "foo.axf"      # loads the file to flash
flash load "foo.axf" MainFlash:ramAddress=0x20000100,ramSize=0xFF00
                        # Loads the file to a flash device and overrides the parameters
```

---

#### Related references

[1.2.21 Flash on page 1-36.](#)

### 1.3.41 frame

Sets the current frame pointer in the call stack and also displays the function name and source line number for the specified frame.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

`frame [number]`

Where:

*number*

Specifies the frame number. The default is the current frame.

---

#### Example 1-44 Examples

---

```
frame 1      # Move to and display information for stack frame 1
frame        # Display stack frame information at current frame pointer
```

---

#### Related references

[1.2.5 Call stack on page 1-22.](#)

### 1.3.42 handle

Controls the handler settings for one or more signals or exceptions. The default handler settings are dependent on the type of debug activity. For example, by default on a Linux kernel connection, all signals are handled by Linux on the target. You can use `info signals` to display the current settings.

When connected to an application running on a remote target using `gdbserver`, the debugger handles Unix signals but on bare-metal it handles processor exceptions.

#### Syntax

`handle [name]... keyword...`

Where:

*name*

Specifies the signal or processor exception name.

*keyword*

Specifies the following keywords:

`noprint`

Disables the print property so the occurrence of an event is not indicated at all. Using the `noprint` keyword implies the properties of the `nostop` keyword as well.

`nostop`

Disables the stop property so the occurrence of an event does not stop execution.

`print`

Enables the print property. The debugger prints a message and continues execution when the event occurs. When using `gdbserver` the debugger can only print if `stop` is enabled.

`stop`

Enables the stop and print properties. The debugger stops execution and prints a message when the event occurs. Using the `stop` keyword implies the properties of the `print` keyword as well.

If no *name* is specified then all handler settings are modified.

#### Example 1-45 Examples

```
handle SVC stop      # When an SVC exception occurs, stop execution and
                     # print a message.
handle IRQ print     # When an IRQ exception occurs, print a message, but
                     # continue execution.
handle IRQ noprint   # When an IRQ exception occurs, do not print a message.
handle noprint nostop # Ignore all events and do not print a message.
```

#### Related references

[1.2.2 Execution control on page 1-19.](#)

### 1.3.43 hbreak

Sets a hardware execution breakpoint at a specific location. You can also specify a conditional breakpoint by using an `if` statement that stops only when the conditional expression evaluates to true.

This command records the ID of the breakpoint in a new debugger variable, `$n`, where `n` is a number. You can use this variable, in a script, to delete or modify the breakpoint behavior. If `$n` is the last or second-to-last debugger variable, then you can also access the ID using `$` or `$$` respectively.

---

**Note**

The number of hardware breakpoints are usually limited. If you run out of hardware breakpoints then delete or disable one that you are no longer using.

---

Breakpoints that are set within a shared object or kernel module become pending when the shared object or kernel module is unloaded.

#### Syntax

```
hbreak [-d] [-p] [[filename:]location | *address] [thread | core number...]
[vmid vmid] [if expression]
```

Where:

`-d`

Disables the breakpoint immediately after creation.

`-p`

Specifies whether or not the resolution of an unrecognized breakpoint location results in a pending breakpoint being created.

*filename*

Specifies the file.

*location*

Specifies the location:

*line\_num*

is a line number.

*function*

is a function name.

*label*

is a label name.

*+offset* | *-offset*

Specifies the line offset from the current location.

*address*

Specifies the address. This can be either an address or an expression that evaluates to an address.

*number*

Specifies one or more threads or processors to apply the breakpoint to. You can use `$thread` to refer to the current thread. If *number* is not specified then all threads are affected.

*vmid*

Specifies the *Virtual Machine ID* (VMID) to apply the breakpoint to. This can be either an integer or an expression that evaluates to an integer.

*expression*

Specifies an expression that is evaluated when the breakpoint is hit.

If no arguments are specified then a hardware breakpoint is set at the current PC.

#### Example 1-46 Examples

```
hbreak *0x8000 # Set breakpoint at address 0x8000
hbreak *0x8000 thread $thread # Set breakpoint at address 0x8000 on current thread
hbreak *0x8000 thread 1 3 # Set breakpoint at address 0x8000 on threads 1 and 3
```

```
hbreak main           # Set breakpoint at address of main()
hbreak SVC_Handler    # Set breakpoint at address of label SVC_Handler
hbreak +1             # Set breakpoint at address of next source line
hbreak my_File.c:main  # Set breakpoint at address of main() in my_File.c
hbreak my_File.c:8     # Set breakpoint at address of line 8 in my_File.c
hbreak function1 if x>0 # Set conditional breakpoint that stops when x>0
```

---

## Related references

- [1.3.7 break on page 1-50.](#)
- [1.3.199 tbreak on page 1-243.](#)
- [1.3.200 thbreak on page 1-245.](#)
- [1.3.112 resolve on page 1-157.](#)
- [1.3.15 clear on page 1-58.](#)
- [1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.44 help

Displays help information for a specific command or a group of commands listed according to specific debugging tasks.

#### Syntax

`help [command | group]`

Where:

*command*

Specifies an individual command.

*group*

Specifies a group name for specific debugging tasks:

`group_all`

Displays all the commands by group.

`group_breakpoints`

Displays the breakpoint and watchpoint commands.

`group_cache`

Displays the cache commands.

`group_data`

Displays the commands that displays source data.

`group_display`

Displays the output and print settings commands.

`group_files`

Displays the commands that interact with files.

`group_flash`

Displays the flash commands.

`group_info`

Displays the program information commands.

`group_log`

Displays the message logging commands.

`group_memory`

Displays the commands that interact with memory.

`group_os`

Displays the operating system commands.

`group_registers`

Displays the register commands.

`group_running`

Displays the target execution and stepping group.

`group_scripts`

Displays the commands for use in script files.

`group_set`

Displays the set commands for debugger settings.

`group_show`

Displays the show commands for debugger settings.

`group_stack`

Displays the call stack commands.

`group_support`

Displays the supporting commands.

#### Example 1-47 Examples

---

```
help load      # Display help information for load command
help print    # Display help information for print command
```

---

```
help group_breakpoints  # Display group of breakpoint and watchpoint commands
help group_files        # Display group of file commands
```

---



### 1.3.45 if

Enables you to write scripts that conditionally execute debugger commands.

#### Syntax

```
if condition  
...  
else  
...  
end
```

Where:

#### *condition*

Specifies a conditional expression. Follow the if statement with one or more debugger commands that execute when the expression evaluates to true.

#### Note

The `else` statement is optional and the debugger commands that follow it only execute when *condition* evaluates to false.

Enter each debugger command on a new line and terminate the `if` command by using the `end` command.

#### Example 1-48 Examples

```
# Define an if statement containing commands to conditionally execute  
if $pc==0x80000  
    break  
    info stack full  
end
```

#### Related references

[1.2.4 Scripts on page 1-21.](#)

### 1.3.46 ignore

Sets the ignore counter for a breakpoint or watchpoint condition.

#### Syntax

`ignore number count`

Where:

*number*

Specifies the breakpoint or watchpoint number. This is the number assigned by the debugger when it is set.

*count*

Specifies the number of times to ignore the specified breakpoint or watchpoint. The ignore counter is incremented only when the condition evaluates to true.

You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.

#### Example 1-49 Examples

---

```
ignore 2 3      # Ignore breakpoint 2 for 3 hits
ignore $ 3      # Ignore breakpoint, whose number is in the
                 # most recently created debugger variable, for 3 hits
```

---

#### Related references

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.47 info address

Displays the location of a symbol.

#### Syntax

`info address symbol`

Where:

*symbol*

Specifies the symbol.

#### Example 1-50 Examples

---

<code>info address mySymbol</code>	<code># Display location of symbol</code>
------------------------------------	---

---

### 1.3.48 info all-registers

Displays the name and content of grouped registers for the current stack frame.

Unless you specify otherwise, the registers listed by this command are the full set made available by the target, including co-processor and floating-point registers where available. You can use the `info registers` command to display a subset of registers that are most useful when debugging C/C++ applications. When application code calls a function it is common for any existing register values to be saved, so that the registers can be used by the callee function for other purposes. The original register values are then restored when the function returns. When displaying register values the debugger tries to show the value of the actual registers prior to each function call, according to the currently selected stack frame. A consequence of this is that some registers might be shown with undefined values because the debugger is unable to determine the actual value.

#### Syntax

`info all-registers [group]`

Where:

*group*

Specifies a group name for a specific registers. If no *group* is specified then all registers and groups are displayed.

#### Example 1-51 Examples

---

```
info all-registers          # Display info for all registers
info all-registers USR     # Display info for all user mode registers
```

---

#### Related references

[1.2.11 Registers on page 1-28.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.49 info breakpoints, info watchpoints

Displays information about the status of all breakpoints and watchpoints.

---

**Note**

This command sets a default address variable to the location of the last breakpoint or watchpoint listed. Some commands, such as x, use this default value if no address is specified.

---

#### Syntax

```
info breakpoints
```

```
info watchpoints
```

#### Example 1-52 Examples

---

```
info breakpoints      # Display status for all breakpoints and watchpoints
info watchpoints      # Display status for all breakpoints and watchpoints
```

---

#### Related references

[1.3.128 set breakpoint](#) on page 1-173.

[1.3.25 disable breakpoints](#) on page 1-68.

[1.3.22 delete breakpoints](#) on page 1-65.

[1.3.51 info capabilities](#) on page 1-95.

[1.3.50 info breakpoints capabilities, info watchpoints capabilities](#) on page 1-94.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

[1.2.15 Information](#) on page 1-29.

### 1.3.50 info breakpoints capabilities, info watchpoints capabilities

Displays a list of parameters that you can use with breakpoint and watchpoint commands for the current connection.

#### Syntax

```
iinfo breakpoints capabilities
```

```
iinfo watchpoints capabilities
```

#### Example 1-53 Examples

---

```
info breakpoints capabilities # Display list of parameters for current connection
```

---

#### Related references

- [1.3.128 set breakpoint](#) on page 1-173.
- [1.3.25 disable breakpoints](#) on page 1-68.
- [1.3.22 delete breakpoints](#) on page 1-65.
- [1.3.49 info breakpoints, info watchpoints](#) on page 1-93.
- [1.3.51 info capabilities](#) on page 1-95.
- [1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.51 info capabilities

Displays a list of capabilities for the target device that is currently connected to the debugger. For more information, see the documentation for your target.

#### Syntax

`info capabilities`

#### Example 1-54 Examples

---

<code>info capabilities</code>	<code># Display target device capabilities</code>
--------------------------------	---

---

#### Related references

[1.3.128 set breakpoint](#) on page 1-173.

[1.3.25 disable breakpoints](#) on page 1-68.

[1.3.22 delete breakpoints](#) on page 1-65.

[1.3.49 info breakpoints, info watchpoints](#) on page 1-93.

[1.3.50 info breakpoints capabilities, info watchpoints capabilities](#) on page 1-94.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

[1.2.15 Information](#) on page 1-29.

### 1.3.52 info classes

Displays C++ class names.

#### Syntax

```
info classes [expression]
```

Where:

*expression*

Specifies a class name or a wildcard expression. You can use wildcard expressions to enhance your pattern matching. If no *expression* is specified then all classes are displayed.

#### Example 1-55 Examples

---

```
info classes           # Display info for all classes
info classes m*        # Display info for names starting with m
                       # (use when set wildcard-style=glob)
info classes my_class[0-9]+ # Display info for names with my_class followed
                       # by a number (use when set wildcard-style=regex)
```

---

#### Related references

[1.2.15 Information on page 1-29.](#)



### 1.3.53 info cores

Displays information about the running processors. It shows the number (a unique number assigned by the debugger), name, current state, and related stack frame including the function names and source line number.

#### Syntax

iinfo cores

#### Example 1-56 Examples

---

info cores	# Display all processors
------------	--------------------------

---

#### Related references

[1.2.15 Information on page 1-29.](#)

### 1.3.54 info files, info target

Displays information about the loaded image and symbols.

#### Syntax

```
info files
```

```
info target
```

#### Example 1-57 Examples

---

```
info files          # Display information for loaded image and symbols
```

---

#### Related references

[1.2.15 Information on page 1-29.](#)

### 1.3.55 info flash

Displays information about the flash devices on the current target.

#### Syntax

`info flash`

#### Example 1-58 Examples

---

```
info flash          # Display information about the current flash devices.
```

---

#### Related references

[1.2.21 Flash](#) on page 1-36.

### 1.3.56 info frame

Displays stack frame information at the selected position.

- Stack frame address.
- Current PC address.
- Saved PC address.
- Calling frame address.
- Source language.
- Frame arguments and associated addresses.
- Address of the local variables.
- Stack pointer address for the previous frame.
- Saved registers and associated location.

---

#### Note

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

### Syntax

`info frame [number]`

Where:

*number*

Specifies the frame number.

If no arguments are specified, then the stack frame information for the current frame pointer is displayed.

### Example 1-59 Examples

---

<code>info frame 1</code>	<code># Display information for stack frame 1</code>
<code>info frame</code>	<code># Display information for stack frame at current location</code>

---

### Related references

[1.2.5 Call stack on page 1-22.](#)

### 1.3.57 info functions

Displays the name and data types for all functions.

#### Syntax

`info functions [expression]`

Where:

*expression*

Specifies a function name or a wildcard expression. You can use wildcard expressions to enhance your pattern matching.

If no *expression* is specified then all functions are displayed.

#### Example 1-60 Examples

---

```
info functions           # Display info for all functions
info functions m*        # Display info for names starting with m
                          # (use when set wildcard-style=glob)
info functions my_func[0-9]+ # Display info for names with my_func followed
                          # by a number (use when set wildcard-style=regex)
```

---

### 1.3.58 info handle, info signals

Displays information about the handling of signals or processor exceptions.

When connected to an application running on a remote target using `gdbserver`, the debugger handles Unix signals but on bare-metal it handles processor exceptions.

#### Syntax

```
info signals [name]
```

```
info handle [name]
```

Where:

*name*

Specifies the signal name. If no *name* is specified then all handler settings are displayed.

#### Example 1-61 Examples

---

```
info signals          # Display info for all signals
info signals IRQ      # Display info for IRQ signal
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

[1.2.15 Information on page 1-29.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.59 info inst-sets

Displays the available instruction sets.

#### Syntax

info inst-sets

#### Example 1-62 Examples

---

```
info inst-sets          # Display available instruction sets
```

---

#### Related references

[1.2.15 Information on page 1-29.](#)

### 1.3.60 info locals

Displays all local variables for the current stack frame.

#### Syntax

`info locals`

#### Example 1-63 Examples

---

```
info locals           # Display all local variables for the current stack frame
```

---

#### Related references

[1.2.15 Information on page 1-29.](#)



### 1.3.61 info members

Displays the name and data types for all class member variables that are accessible in the function corresponding to the selected stack frame.

#### Syntax

`info members [expression]`

Where:

*expression*

Specifies the name of a class member or a C expression that evaluates to a struct, union, or class variable. If no *expression* is specified, then all members of the current function identified by this pointer are displayed.

---

#### Note

Using high compiler optimization levels such as -O2 with `--debug` can produce a less than satisfactory debug view because the mapping of object code to source code is not always clear. If the compiler optimizes away the this pointer, then using the `info members` command without an expression produces an error.

---

#### Example 1-64 Examples

---

```
info members           # Display members for the current function
info members my_Struct[0-9]+ # Display members for matching struct variables
```

---

#### Related references

[1.2.15 Information on page 1-29.](#)

### 1.3.62 info memory

Displays the attributes for all memory regions.

#### Syntax

`info memory`

#### Example 1-65 Examples

---

```
info memory          # Display attributes for all memory regions
```

---

#### Related references

[1.2.9 Memory on page 1-26.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.63 info memory-parameters

Displays the memory parameters applicable to an address space.

#### Syntax

```
info memory-parameters
```

```
info mem-params
```

When using the debugger to interact with target memory, you can specify the memory address using an expression. The debugger also allows other aspects of the memory operation to be controlled using extra parameters within the expression. Different address spaces support different parameters. You can use the `info memory-parameters` command to discover the parameters applicable to an address space.

The syntax for memory address expression is:

`ADDRESS_SPACE_NAME<param_a=1,param_b=2,...>:address.`

If no `ADDRESS_SPACE_NAME` is specified then it defaults to the current virtual address space.

An example set command with a memory address expression is:

```
set *((int*)P<verify=0>:0x8000)=0x1234.
```

This writes an integer, 0x1234, to a specified physical address, 0x8000, but does not verify the write.

#### Example 1-66 Examples

---

```
info mem-params
Address Space | Parameter | Description
-----
N:            | width    | Specifies the access width used to perform the access, note that
              |          | this independent from the total amount of data read.
              | verify   | Controls whether or not a write operation must verify the value
              |          | written by reading the value back and comparing it to the value written.
-----
NP:           | width    | Specifies the access width used to perform the access, note that
              |          | this independent from the total amount of data read.
              | verify   | Controls whether or not a write operation must verify the value
              |          | written by reading the value back and comparing it to the value written.
-----
S:            | width    | Specifies the access width used to perform the access, note that
              |          | this independent from the total amount of data read.
              | verify   | Controls whether or not a write operation must verify the value
              |          | written by reading the value back and comparing it to the value written.
-----
```

---

---

SP:	width	Specifies the access width used to perform the access, note that this independent from the total amount of data read.
	verify	Controls whether or not a write operation must verify the value written by reading the value back and comparing it to the value written.

---

### Related references

- [1.2.9 Memory](#) on page 1-26.
- [1.2.15 Information](#) on page 1-29.
- [1.3.123 set, set variable](#) on page 1-168.

### Related information

- [About address spaces.](#)
- [About debugging caches.](#)

### 1.3.64 info os-log

Displays the contents of the *Operating System* (OS) log buffer for connections that support this feature. On Linux, this is the contents of the kernel `dmesg` log.

---

**Note**

A Linux kernel connection must be established and the target stopped before you can use this command.

---

#### Syntax

`info os-log`

#### Example 1-67 Examples

---

<code>info os-log</code>	<code># Displays the OS log buffer</code>
--------------------------	---

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.65 info os-modules

Displays a list of loadable kernel modules for connections that support this feature.

---

**Note**

A connection must be established and operating system support must be enabled within the debugger before a loadable module can be detected. You can use the `set os` command to control operating system support in the debugger.

---

#### Syntax

`info os-modules [-s]`

Where:

`-s`

Displays the section information of the modules.

#### Example 1-68 Examples

---

```
info os-modules           # Displays info for loaded OS modules
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.66 info os-version

Displays the version of the *Operating System* (OS) for connections that support this feature.

#### Syntax

iinfo os-version

#### Example 1-69 Examples

---

```
info os-version           # Displays the version of the OS
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.67 info processes

Displays information about the user space processes. It shows the number (a unique number assigned by the debugger), OS ID (pid), OS Parent ID, kind, OS state, current state, and related stack frame including the function names and source line number.

#### Syntax

iinfo processes

#### Example 1-70 Examples

---

info processes	# Display all user space processes
----------------	------------------------------------

---

#### Related references

[1.2.6 Operating System \(OS\)](#) on page 1-23.

[1.2.15 Information](#) on page 1-29.

### 1.3.68 info registers

Displays the name and content of all application level registers for the current stack frame. The registers listed by this command are a subset that are most useful when debugging C/C++ applications. You can use the `info all-registers` command to list the full set of registers.

When application code calls a function it is common for any existing register values to be saved, so that the registers can be used by the callee function for other purposes. The original register values are then restored when the function returns. When displaying register values the debugger tries to show the value of the actual registers prior to each function call, according to the currently selected stack frame. A consequence of this is that some registers might be shown with undefined values because the debugger is unable to determine the actual value.

#### Syntax

`info registers [register]`

Where:

*register*

Specifies the register name. If no *register* is specified then all application level registers are displayed.

#### Example 1-71 Examples

---

<code>info registers</code>	# Display info for all application level registers
<code>info registers pc</code>	# Display info for PC register

---

#### Related references

[1.2.11 Registers on page 1-28.](#)

[1.2.15 Information on page 1-29.](#)



### 1.3.69 info semihosting

Displays semihosting information.

#### Syntax

```
info semihosting [server | clients | all]
```

Where:

**all**

Displays information on the semihosting server listener port, a list of the connected clients, and the heap and stack. This is the default.

**server**

Displays information on the semihosting server listener port.

**clients**

Displays information on each of the semihosting streams `stdin`, `stdout`, `stderr`. This includes a list of the connected clients.

**heap**

Displays the heap information that the debugger used to initialize the heap.

#### Note

This information is only displayed if the debugger performs the initialization.

**stack**

Displays the stack information that the debugger used to initialize the stack.

#### Note

This information is only displayed if the debugger performs the initialization.

#### Example 1-72 Examples

```
info semihosting          # Displays all semihosting information
info semihosting clients  # Display clients info for semihosting streams
```

#### Related references

[1.2.15 Information on page 1-29.](#)

### 1.3.70 info sharedlibrary

Displays the names of the loaded shared libraries, the base address, and whether the debug symbols of the shared libraries are loaded or not.

- You must launch the debugger with `--target_os` command-line option before you can use this feature. In Eclipse, this option is automatically selected when you connect to a target using `gdbserver`.
- This command is only supported for Linux application debug, for example, connections using `gdbserver`. It is not supported for Linux kernel debug, for example, connections using JTAG.

#### Syntax

`info sharedlibrary [/order] [/sort_by] [/group]`

Where:

`/order`

Specifies the sorting order:

`a`

Ascending order. This is the default.

`d`

Descending order.

`/sort_by`

Specifies the sorting order of the shared objects:

`b`

Sort by base addresses. This is the default.

`n`

Sort by library names.

`/group`

Specifies whether to group the debug symbols:

`s`

Group loaded symbols followed by unloaded symbols.

`sn`

Group unloaded symbols followed by loaded symbols.

#### Example 1-73 Examples

```
info sharedlibrary          # Display shared libraries by base address, asc
info sharedlibrary /n      # Display shared libraries by library name, asc
info sharedlibrary /d      # Display shared libraries by base address, desc
info sharedlibrary /n /a /s # Display shared libraries grouped loaded->unloaded
                           # and by library name, asc
```

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.71 info signals, info handle

Displays information about the handling of signals or processor exceptions.

When connected to an application running on a remote target using `gdbserver`, the debugger handles Unix signals but on bare-metal it handles processor exceptions.

#### Syntax

```
info signals [name]
```

```
info handle [name]
```

Where:

*name*

Specifies the signal name. If no *name* is specified then all handler settings are displayed.

#### Example 1-74 Examples

---

```
info signals          # Display info for all signals
info signals IRQ      # Display info for IRQ signal
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

[1.2.15 Information on page 1-29.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.72 info sources

Displays the names of the source files used in the current image being debugged. Where possible the names are resolved to the location on the host system.

#### Syntax

`info sources`

#### Example 1-75 Examples

---

```
info sources                # Display the names of source files
```

---

#### Related references

[1.2.7 Files on page 1-24.](#)

[1.2.15 Information on page 1-29.](#)

### 1.3.73 info stack, backtrace, where

Displays a numbered list of the calling stack frames including the function names and source line numbers. You can use `set backtrace` to control the default call stack display settings.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

```
info stack [n | -n] [full]
```

```
backtrace [n | -n] [full]
```

```
where [n | -n] [full]
```

Where:

- n* Specifies *n* frames from the bottom of the call stack.
- n* Specifies *n* frames from the top of the call stack.
- full* Specifies the additional display of local variables.

#### Example 1-76 Examples

---

```
info stack          # Display call stack
backtrace -5        # Display top 5 frames of the call stack
backtrace full      # Display call stack including local variables
where              # Display call stack
```

---

#### Related references

- [1.2.5 Call stack on page 1-22.](#)
- [1.2.15 Information on page 1-29.](#)

### 1.3.74 info symbol

Displays the symbol name at a specific address.

#### Syntax

`info symbol address`

Where:

*address*

Specifies the address.

#### Example 1-77 Examples

---

<code>info symbol 0x8000</code>	<code># Display symbol name at address 0x8000</code>
---------------------------------	--

---

#### Related references

[1.2.15 Information on page 1-29.](#)

### 1.3.75 info target, info files

Displays information about the loaded image and symbols.

#### Syntax

```
info files
```

```
info target
```

#### Example 1-78 Examples

---

```
info files          # Display information for loaded image and symbols
```

---

#### Related references

[1.2.15 Information on page 1-29.](#)

### 1.3.76 info threads

Displays information about the available threads. It shows the number (a unique number assigned by the debugger), OS ID (pid), OS Parent ID, kind, OS state, current state, and related stack frame including the function names and source line number.

---

**Note**

When kernel debugging this command displays kernel threads only. For user space processes you can use the `info processes` command.

---

#### Syntax

`info threads`

#### Example 1-79 Examples

---

<code>info threads</code>	<code># Display all threads</code>
---------------------------	------------------------------------

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.15 Information on page 1-29.](#)



### 1.3.77 info variables

Displays the name and data types for all global and static variables.

#### Syntax

`info variables [expression]`

Where:

*expression*

Specifies a symbol name or a wildcard expression. You can use wildcard expressions to enhance your pattern matching.

If no *expression* is specified, then all global and static variables are displayed.

#### Example 1-80 Examples

---

```
info variables          # Display info for all variables
info variables num      # Display info for num variable
info variables m*        # Display info for names starting with m
                        # (use when set wildcard-style=glob)
info variables my_var[0-9]+ # Display info for names with my_var followed
                        # by a number (use when set wildcard-style=regex)
```

---

#### Related references

[1.2.15 Information on page 1-29.](#)

### 1.3.78 info watchpoints, info breakpoints

Displays information about the status of all breakpoints and watchpoints.

---

**Note**

This command sets a default address variable to the location of the last breakpoint or watchpoint listed. Some commands, such as x, use this default value if no address is specified.

---

#### Syntax

```
info breakpoints
```

```
info watchpoints
```

#### Example 1-81 Examples

---

```
info breakpoints      # Display status for all breakpoints and watchpoints
info watchpoints      # Display status for all breakpoints and watchpoints
```

---

#### Related references

[1.3.128 set breakpoint](#) on page 1-173.

[1.3.25 disable breakpoints](#) on page 1-68.

[1.3.22 delete breakpoints](#) on page 1-65.

[1.3.51 info capabilities](#) on page 1-95.

[1.3.50 info breakpoints capabilities, info watchpoints capabilities](#) on page 1-94.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

[1.2.15 Information](#) on page 1-29.

### 1.3.79 info watchpoints capabilities, info breakpoints capabilities

Displays a list of parameters that you can use with breakpoint and watchpoint commands for the current connection.

#### Syntax

```
iinfo breakpoints capabilities
```

```
iinfo watchpoints capabilities
```

#### Example 1-82 Examples

---

```
info breakpoints capabilities # Display list of parameters for current connection
```

---

#### Related references

- [1.3.128 set breakpoint](#) on page 1-173.
- [1.3.25 disable breakpoints](#) on page 1-68.
- [1.3.22 delete breakpoints](#) on page 1-65.
- [1.3.49 info breakpoints, info watchpoints](#) on page 1-93.
- [1.3.51 info capabilities](#) on page 1-95.
- [1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.80 inspect, print

Displays the output of an expression (128 character limit) and also records the result in a new debugger variable, `$n`, where `n` is a number. Results from the `print` command can be used successively in expressions using the `$` character. If you do not want the results recorded in a debugger variable, use the `output` command instead.

#### Syntax

```
print [/flag] [expression]
```

```
inspect [/flag] [expression]
```

Where:

*flag*

Specifies the output format:

x	Hexadecimal (casts the value to an unsigned integer prior to printing in hexadecimal)
d	Signed decimal. This is the default.
u	Unsigned decimal
o	Octal
t	Binary
a	Absolute hexadecimal address
c	Character
f	Floating-point
s	Default format from the expression.

*expression*

Specifies an expression that is evaluated and the result is returned. If no *expression* is specified then the last expression is repeated.

#### Note

If your expression accesses memory then a default address variable is set to the location after the last accessed address. Some commands, such as `x`, use this default value if no address is specified.

#### Example 1-83 Examples

```
print (int*)8      # Cast a number as a pointer
print 4+4          # Display result of expression in decimal
print "initializing..." # Display progress information
print /x $PC       # Display address in PC register (hexadecimal)
```

#### Related references

[1.2.14 Display on page 1-29.](#)

[1.3.104 output on page 1-148.](#)

*1.3.33 echo* on page 1-75.

*1.1.3 Expressions within DS-5* on page 1-10.

*1.1.4 Built-in functions within DS-5 expressions* on page 1-11.

*1.1.8 printf() style format string* on page 1-15.

### 1.3.81 interrupt, stop

Interrupts the target and stops the application if it is running.

#### Syntax

```
interrupt
```

```
stop
```

#### Example 1-84 Examples

---

```
interrupt      # Interrupt application.  
stop          # Interrupt application.
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

### 1.3.82 list

Displays lines of source code surrounding the current or specified location. The default listing is 10 lines of source code unless you specify start and finish line numbers. You can use the `set listsize` command to modify the default settings.

Repeated commands display successive source lines in the same direction through the source file.

#### Syntax

`list [[filename:]Location | + | - | +offset | -offset] | [*address]`

Where:

*filename*

Specifies the file.

*Location*

Specifies the location:

*line\_num*

is a line number

*first, last*

are start and finish line numbers

*function*

is a function.

+

Displays the source lines after the current location.

-

Displays the source lines before the current location.

*offset*

Specifies the line offset from the current location.

*\*address*

Specifies the address. This can be either an address or an expression that evaluates to an address.

#### Default

The default directories for searching are:

- compilation directory, `$cdir`
- current working directory, `$cwd`
- current image directory, `$idir`.

You can use the `directory` command to define additional search directories.

#### Example 1-85 Examples

```
list main          # Set current location to main() and display source
list +3            # Increment current location then display source
list -             # Decrement current location then display source
list *0x8120       # Set current location to address 0x8120 and display source
list 35            # Set current location to line 35 and display source
list dhry_1.c:10,23 # Display source lines 10 to 23 in dhry_1.c
list *main         # Set current location to address of main and display source
```

### 1.3.83 load

Loads an image on to the target and records the entry point address for future use by the `run` and `start` commands.

The PC register is not set with this command.

Debug information is not loaded with this command. You can use either the `add-symbol-file`, `file`, or `loadfile` command to load debug information.

#### Syntax

```
load [filename] [offset]
```

Where:

*filename*

Specifies the image. If no *filename* is specified then the executable image specified by the previous command is loaded. You can use `info files` to display information about the current image and symbols.

*offset*

Specifies the offset that is added to all addresses within the image.

#### Example 1-86 Examples

---

```
load "myFile.axf"           # Load image
load "images\myFile.axf"    # Load image
load myFile.axf 0x2000      # Load image with offset 0x2000
```

---

#### Related references

[1.2.7 Files on page 1-24.](#)



### 1.3.84 loadfile

Loads debug information into the debugger, an image on to the target and records the entry point address for future use by the run and start commands.

The debug information is loaded when required by the debugger.

---

**Note**

This command does not set the PC register.

---

#### Syntax

`loadfile [filename] [offset]`

Where:

*filename*

Specifies the image. If no *filename* is specified then the executable image specified by a previous command is loaded. You can use *info files* to display information about the current image and symbols.

*offset*

Specifies the offset that is added to all addresses within the image.

#### Example 1-87 Examples

---

```
loadfile "myFile.axf"      # Load image and debug information when required
loadfile "images\myFile.axf" # Load image and debug information when required
loadfile myFile.axf 0x2000 # Load image with offset 0x2000 and load debug
                           # information when required
```

---

#### Related references

[1.2.7 Files on page 1-24.](#)

### 1.3.85 log config

Specifies the type of logging configuration to output runtime messages from the debugger.

#### Syntax

`log config option`

Where:

*option*

Specifies a predefined logging configuration or a user-defined logging configuration file:

*error*

Output messages using the predefined ERROR level configuration. This only reports errors.

*info*

Output messages using the predefined INFO level configuration. This reports errors and other debugger information. This is the default.

*debug*

Output messages using the predefined DEBUG level configuration. This reports errors and more information than the INFO configuration.

*filename*

Specifies a user-defined logging configuration file to customize the output of messages. The debugger supports log4j configuration files.

You can use this command with the `log file` command to output messages to a file in addition to the console.

#### Example 1-88 Examples

---

```
log config debug           # Display all debug messages
```

---

#### Related references

[1.2.16 Log on page 1-31.](#)

#### Related information

[Log4j in Apache Logging Services.](#)

### 1.3.86 log file

Specifies an output file to receive runtime messages from the debugger.

#### Syntax

```
log file [filename]
```

Where:

*filename*

Specifies the output file. If no *filename* is specified then output messages are sent only to the console.

#### Example 1-89 Examples

---

```
log file myOutput.log          # Output debugger messages to myOutput.log and console
```

---

#### Related references

[1.2.16 Log on page 1-31.](#)

### 1.3.87 memory

Defines a memory region and specifies its attributes and size.

This command records the ID of the memory region in a new debugger variable,  $\$n$ , where  $n$  is a number. You can use this variable, in a script, to delete or modify the status of the memory region. If  $\$n$  is the last or second-to-last debugger variable, then you can also access the ID using  $\$$  or  $\$\$$  respectively.

#### Syntax

`memory start_address {end_address | +size} [attributes]...`

Where:

*start\_address*

Specifies the start address for the region.

*end\_address*

Specifies the inclusive end address for the region. You can use `0x0` as a shortcut to represent the end of the address space.

*+size*

Specifies the size of the region.

*attributes*

Specifies additional attributes:

*access\_mode*

Specifies the access mode for the region:

`na`

no access

`ro`

read-only

`wo`

write-only

`rw`

read/write. This is the default.

*width*

Specifies the access width:

`8`

8-bit

`16`

16-bit

`32`

32-bit

`64`

64-bit.

It is only necessary to specify a specific access width where the memory region is sensitive to this, for example, when accessing some peripherals.

If no *width* is specified then the debugger uses any available access width and generally provides the highest performance.

`bp | nobp`

Controls whether or not software breakpoints can be set in the region. `bp` is the default.

`hbp | nohbp`

Controls whether or not hardware breakpoints can be set in the region. `hbp` is the default.

**cache | nocache**

Controls whether the debugger can cache data read from the memory region. Enabling the caching of memory can improve debugger performance. Memory regions that can be modified by external sources should not be cached by the debugger. For example volatile peripherals.

`nocache` is the default.

**verify | noverify**

Controls whether or not a write operation must verify the value written by reading the value back and comparing it to the value written. The `verify` option also requires the `rw` attribute to be specified so that the verify operation to be performed. ARM recommends that you mark areas of memory containing peripherals as `noverify`, because some peripheral registers are volatile such that reading their value changes their contents as a side-effect.

`verify` is the default.

**Example 1-90 Examples**

---

```
memory 0x1000 0x2FFF cache      # specify RW region 0x1000-0x2FFF (cache)
memory 0x3000 0x7FFF ro 8      # specify 8-bit RO region 0x3000-0x7FFF (nocache)
memory 0x8000 0x0              # specify RW region 0x8000-0xFFFF (nocache)
```

---

**Related references**

[1.2.9 Memory on page 1-26.](#)

### 1.3.88 memory auto

Resets the memory regions to the default target settings and discards all user-defined regions.

#### Syntax

`memory auto`

#### Example 1-91 Examples

---

```
memory auto                # reset default memory regions
```

---

#### Related references

[1.2.9 Memory](#) on page 1-26.

1.3.89 **memory debug-cache**

Controls the caching by the debugger for all memory regions. You can use `info mem` to display the caching attributes.

**Syntax**

`memory debug-cache option`

Where:

*option*

Specifies additional options:

- `off`  
Globally disables debugger caching of memory regions. All memory accesses are performed directly on the target.
- `on`  
Globally enables debugger caching of memory regions. When caching is globally enabled the debugger might cache the results of read operations from memory regions that allow caching. This is the default.
- `invalidate`  
Invalidates all the caches, so that the next subsequent read from memory is performed on the target and not the cache.

**Example 1-92 Examples**

---

<code>memory debug-cache off</code>	<code># Disable caching</code>
<code>memory debug-cache invalidate</code>	<code># Invalidates all caches</code>

---

**Related references**

[1.2.9 Memory](#) on page 1-26.

## 1.3.90 memory fill

Writes a specific pattern of bytes to memory.

### Syntax

```
memory fill [<verify=flag>:]start_address {end_address | +offset} fill_size pattern
```

Where:

**verify**

Qualifies the address with a flag to specify whether the operation must perform a verify action or not. The values for flag are:

**0**

There is no need to verify whether the operation executed correctly.

**1**

The operation must verify whether it executed correctly. This is the default.

**start\_address**

Specifies the start address for the region. This can be either an address or an expression that evaluates to an address.

For example:

```
memory fill EL1N<verify=0>:0x0 0xFFFFFFFF 4 0x12345678
```

If there is only one (anonymous) address space, then use:

```
memory fill <verify=0>:0x0 0xFFFFFFFF 4 0x12345678
```

**end\_address**

Specifies the inclusive end address for the region. This can be either an address or an expression that evaluates to an address.

**+offset**

Specifies the length of the region in bytes.

**fill\_size**

Specifies the size of the fill pattern in bytes.

**pattern**

Specifies an expression that defines the fill pattern. If the pattern does not fit exactly into the specified region, then the remaining bytes are filled with partial bytes from the pattern.

### Example 1-93 Examples

```
memory fill 0x0 0xFFFFFFFF 4 0x12345678 # Fill 0x0 to 0xFFFFFFFF inclusive with int
memory fill main (main+15) 1 (char)0x0 # value 0x12345678 using default access width
# Fill 16 bytes from symbol main with byte
# value 0x0
```

### Related references

[1.2.9 Memory on page 1-26.](#)



### 1.3.91 memory set

Writes to memory.

#### Syntax

`memory set [<verify=flag>:]address width expression`

Where:

#### verify

Qualifies the address with a flag to specify whether the operation must perform a verify action or not. The values for flag are:

**0**

There is no need to verify whether the operation executed correctly.

**1**

The operation must verify whether it executed correctly. This is the default.

#### address

Specifies an address at which to write the first value. The address must be correctly aligned for the type of the specified expression.

For example:

```
memory set EL1N<verify=0>:0x8000 32 0x1234
```

If there is only one (anonymous) address space, then use:

```
memory set <verify=0>:0x8000 32 0x1234
```

#### width

Specifies the access width (bits) to use when writing to memory. If the width is narrower than the value being written then more than one access is used to write the value. For example:

**0**

enables the debugger to determine the access width

**8**

8-bit

**16**

16-bit

**32**

32-bit

**64**

64-bit.

Widths are dependent on the target, address region, and address alignment. Some access sizes might not be supported.

#### expression

Specifies either a single expression or an aggregate of expressions with the same size enclosed in curly braces. If there is more than one expression, then the values are written to memory sequentially with the addresses determined by the width of the type of the values.

#### Note

This command sets a default address variable to the value of the memory address. Some commands, such as `x`, use this default value if no address is specified.

### Example 1-94 Examples

```
memory set 0x8000 0 "Hello" # Writes a string to memory
memory set 0x1000 0 {(char)0x10,(char)0xFF,(char)1,(char)2,(char)3,(char)42}
```

```
# Is equivalent to the following commands:
# set variable *(char*)0x1000 = (char)0x10
# set variable *(char*)0x1001 = (char)0xFF
# set variable *(char*)0x1002 = (char)1
# set variable *(char*)0x1003 = (char)2
# set variable *(char*)0x1004 = (char)3
# set variable *(char*)0x1005 = (char)42
memory set 0x1008 0 0x1234 # Equivalent to set variable *(int*)0x1008 = 0x1234
memory set 0x1008 8 0x1234 # Same effect but forces use of 4 writes of one byte each
```

---

## Related references

[1.2.9 Memory on page 1-26.](#)

### 1.3.92 memory set\_typed

Writes a list of values to memory.

#### Syntax

`memory set_typed address type expressions`

Where:

*address*

Specifies an address at which to write the first value. The address must be correctly aligned for the specified *type*.

*type*

Specifies the data type to which each of the series of expressions is converted and the width of each value in memory. For example, long.

*expressions*

Specifies a space separated list of expressions. If an expression contains spaces it must be enclosed in parentheses. The expressions are evaluated, converted to the specified type, and then written to memory sequentially.

#### Note

This command sets a default address variable to the value of the memory address. Some commands, such as x, use this default value if no address is specified.

#### Example 1-95 Examples

```
memory set_typed 0x8000 (long long) 0x100 0x200
# Is equivalent to the following commands:
# set variable *((long long*)0x8000) = (long long)0x100
# set variable *((long long*)0x8008) = (long long)0x200
```

#### Related references

[1.2.9 Memory on page 1-26.](#)

### 1.3.93 mmu list memory-maps

Lists the available memory maps and their associated parameters.

#### Syntax

`mmu list memory-maps`

#### Example 1-96 Examples

```
mmu list memory-maps
Available memory maps:
  PL1S_S1
    parameters: S_SCTLR, S_TTBCR, S_TTBR0, S_TTBR1
  PL1N_S1
    parameters: N_TTBR1, N_TTBCR, N_SCTLR, N_TTBR0
```

#### Related references

[1.2.12 MMU on page 1-28.](#)

### 1.3.94 mmu list tables

Lists the available translation tables and their associated parameters.

#### Syntax

mmu list tables

#### Example 1-97 Examples

```
mmu list tables
Available translation tables:
  PL1S_S1_TTBRO
    parameters: S_TTBRCR, S_TTBRO, S_SCTLR
  PL1S_S1_TTBRI
    parameters: S_TTBRCR, S_TTBRI, S_SCTLR
  PL1N_S1_TTBRO
    parameters: N_TTBRCR, N_TTBRO, N_SCTLR
  PL1N_S1_TTBRI
    parameters: N_TTBRCR, N_TTBRI, N_SCTLR
```

#### Related references

[1.2.12 MMU on page 1-28.](#)

### 1.3.95 mmu list translations

Lists the available translations and their associated parameters.

#### Syntax

mmu list translations

#### Example 1-98 Examples

```
mmu list translations
Available address translations:
  PL1S_S1
    parameters: S_SCTLR, S_TTBRCR, S_TTBRO, S_TTBRI
  PL1N_S1
    parameters: N_TTBRI, N_TTBRCR, N_SCTLR, N_TTBRO
```

#### Related references

[1.2.12 MMU on page 1-28.](#)

### 1.3.96 mmu memory-map

Prints the memory map.

#### Syntax

mmu memory-map [*memory-map*] [*param1=value1*]...

Where:

*memory-map* Specifies the memory map to print. If you do not specify a memory map, then the command prints the most relevant memory map.

*param1=value1* Specifies a parameter and its value to govern the interpretation of the memory map. If you do not specify a required parameter, then it is determined from the current target state.

## Example 1-99 Examples

mmu memory-map PL1S_S1 S_TTBR1=0x80000404A							
Virtual Range	Physical Range	Type	AP	C	S	X	
0x00000000-0x00007FFF	<unmapped>						
0x00008000-0x00008FFF	0x8DC4B000-0x8DC4BFFF	Normal	RO	True	True	True	True
0x00009000-0x00009FFF	0x8DC4D000-0x8DC4DFFF	Normal	RO	True	True	True	True
0x0000A000-0x0000AFFF	0x8DC69000-0x8DC69FFF	Normal	RO	True	True	True	True
0x0000B000-0x0000BFFF	0x8DC6B000-0x8DC6BFFF	Normal	RO	True	True	True	True
0x0000C000-0x0000CFFF	0x8DE2B000-0x8DE2BFFF	Normal	RO	True	True	True	True
0x0000D000-0x0000DFFF	0x8DC9E000-0x8DC9EFFF	Normal	RO	True	True	True	True
0x0000E000-0x0000EFFF	0x80EB0000-0x80EB0FFF	Normal	RO	True	True	True	True

### Related references

[1.2.12 MMU on page 1-28.](#)

## 1.3.97 mmu print

Prints the contents of a translation table.

Printing translation tables might be slow on some targets because it might involve a full traversal of the translation tables on the target.

### Syntax

```
mmu print [table] [param1=value1]...
```

Where:

**table** Specifies the translation table to print. If you do not specify a table, the command prints all tables for the current translation regime.

**param1=value1** Specifies a parameter and its value to govern the interpretation of the table. If you do not specify a required parameter, then it is determined from the current target state.

## Example 1-100 Examples

mmu print PL1S_S1_TTBR0 SP:0x80F15000				
Input Address	Type	Next Level	Output Address	Properties
+ 0x00000000	TTBR0	SP:0x0080500000		
- 0x00000000	Fault (x704)			
- 0x2C000000	Section		SP:0x002C000000	NS=0, nG=0, S=0
- 0x2C100000	Fault (x1343)			
- 0x80000000	Section		SP:0x0080000000	NS=0, nG=0, S=1
- 0x80100000	Fault (x2047)			
+ 0xFFFFFFFF	TTBR1	SP:0x009082C300		

### Related references

[1.2.12 MMU on page 1-28.](#)

## 1.3.98 mmu translate

Performs translations between virtual and physical addresses.

It translates either:

- From a virtual address to a physical address.
- From a physical address to one or more virtual addresses.

Physical to virtual address translation might be slow on some targets because it might involve a full traversal of the translation tables on the target.

## Syntax

`mmu translate address [translation] [param1=value1]...`

Where:

- address* Specifies the address to translate. If this is a virtual address then a virtual to physical address translation is performed. If this is a physical address then a physical to virtual address translation is performed.
- translation* Specifies the translation to perform.
- param1=value1* Specifies a parameter and its value to govern the interpretation of the table. If you do not specify a required parameter, then it is determined from the current target state.

## Example 1-101 Examples

```
mmu translate 0x00008000 PL1S_S1 S_TTBR1=0x80000404A
SP:0x80F15000

mmu translate SP:0x80F15000
Address SP:0x80F15000 maps to
0x00008000
0x80F15000
```

## Related references

[1.2.12 MMU on page 1-28.](#)

### 1.3.99 newvar

Declares and initializes a new debugger convenience variable.

#### Syntax

```
newvar [global] $name [=initial_value]
```

Where:

#### Syntax

**global** Specifies that the variable has global scope. If global is not specified, then the variable is only accessible within its enclosing lexical scope.

**name** Specifies the name of the new variable. The name must be a valid C identifier but prefixed with \$.

**initial\_value** Specifies the initial value of the variable. If an initial value is not specified, then by default, the variable is of integer type with value 0.

- Debugger scripts and the top-level interactive interpreter are considered separate lexical scopes where non-global convenience variables are not visible to any child or parent debugger script.
- A user-defined command created with define is considered a separate lexical scope and cannot reference non-global convenience variables in surrounding scripts or from the top-level interpreter.
- The if, else, and while commands define new lexical scopes that inherit parent lexical scopes up to the level of a script, top-level interpreter, or user-defined command.
- Any non-global convenience variables, declared within a lexical scope, are destroyed at the end of the lexical scope.

#### Example 1-102 Examples

```
define advance_hw      # This defines a new command that runs
                        # to an address using a hardware breakpoint.
    hbreak $arg0        # Set a hardware breakpoint at the value of the first parameter.
    newvar $bp_num = $  # Save the number of the breakpoint in a new variable.
    continue
    wait
    delete $bp_num      # Delete the hardware breakpoint.
end
advance_hw 0x00008000
```

#### Related references

[1.2.4 Scripts on page 1-21.](#)

### 1.3.100 next

Steps through an application at the source level stopping at the first instruction of each source line but stepping over all function calls. You must compile your code with debug information to use this command successfully.

#### Syntax

`next [count]`

Where:

*count*

Specifies the number of source lines to execute.

#### Note

Execution stops immediately if a breakpoint is reached, even if fewer than *count* source lines are executed.

#### Example 1-103 Examples

<code>next</code>	<code># Execute one source line</code>
<code>next 5</code>	<code># Execute five source lines</code>

#### Related references

- [1.3.194 step on page 1-238.](#)
- [1.3.195 stepi on page 1-239.](#)
- [1.3.196 steps on page 1-240.](#)
- [1.3.101 nexti on page 1-145.](#)
- [1.3.102 nexts on page 1-146.](#)
- [1.2.2 Execution control on page 1-19.](#)



### 1.3.101 nexti

Steps through an application at the instruction level but stepping over all function calls.

#### Syntax

`nexti` [*count*]

Where:

*count*

Specifies the number of instructions to execute.

---

#### Note

Execution stops immediately if a breakpoint is reached, even if fewer than *count* instructions are executed.

---

#### Example 1-104 Examples

---

<code>nexti</code>	# Execute one instruction
<code>nexti 5</code>	# Execute five instructions

---

#### Related references

[1.3.194 step](#) on page 1-238.  
[1.3.195 stepi](#) on page 1-239.  
[1.3.196 steps](#) on page 1-240.  
[1.3.100 next](#) on page 1-144.  
[1.3.102 nexts](#) on page 1-146.  
[1.2.2 Execution control](#) on page 1-19.

### 1.3.102 **nexts**

Steps through an application at the source level stopping at the first instruction of each source statement but stepping over all function calls. You must compile your code with debug information to use this command successfully.

#### **Syntax**

`nexts` [*count*]

Where:

*count*

Specifies the number of source statements to execute.

---

#### **Note**

Execution stops immediately if a breakpoint is reached, even if fewer than *count* source statements are executed.

---

#### **Example 1-105 Examples**

---

<code>nexts</code>	<code># Execute one source statement</code>
<code>nexts 5</code>	<code># Execute five source statements</code>

---

#### **Related references**

[1.3.194 \*step\* on page 1-238.](#)  
[1.3.195 \*stepi\* on page 1-239.](#)  
[1.3.196 \*steps\* on page 1-240.](#)  
[1.3.100 \*next\* on page 1-144.](#)  
[1.3.101 \*nexti\* on page 1-145.](#)  
[1.2.2 \*Execution control\* on page 1-19.](#)

### 1.3.103 nosharedlibrary

Discards all loaded shared library symbols.

---

**Note**

You must launch the debugger with `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

`nosharedlibrary`

---

#### Example 1-106 Examples

---

```
nosharedlibrary          # Discards loaded shared library symbols
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

### 1.3.104 output

Displays only the result of an expression. This is similar to the `print` command but it does not record the results in a debugger variable.

#### Syntax

`output [/flag] expression`

Where:

*flag*

Specifies the output format:

<code>x</code>	Hexadecimal (casts the value to an unsigned integer prior to printing in hexadecimal)
<code>d</code>	Signed decimal. This is the default.
<code>u</code>	Unsigned decimal
<code>o</code>	Octal
<code>t</code>	Binary
<code>a</code>	Absolute hexadecimal address
<code>c</code>	Character
<code>f</code>	Floating-point
<code>s</code>	Default format from the expression.

*expression*

Specifies an expression that is evaluated and the result is returned.

#### Note

If your expression accesses memory then a default address variable is set to the location after the last accessed address. Some commands, such as `x`, use this default value if no address is specified.

#### Example 1-107 Examples

```
output (int*)8      # Cast a number as a pointer
output 4+4          # Display result of expression in decimal
output "initializing..." # Display progress information
output /x $PC       # Display address in PC register (hexadecimal)
```

#### Related references

- [1.2.14 Display on page 1-29.](#)
- [1.3.80 inspect, print on page 1-124.](#)
- [1.3.33 echo on page 1-75.](#)
- [1.1.3 Expressions within DS-5 on page 1-10.](#)
- [1.1.4 Built-in functions within DS-5 expressions on page 1-11.](#)
- [1.1.8 printf\(\) style format string on page 1-15.](#)

### 1.3.105 **pause**

Pauses the execution of a script for a specified period of time.

#### **Syntax**

`pause number[ ms | s ]`

Where:

*number*

Specifies the period of time.

`ms`

Specifies the time in milliseconds. This is the default.

`s`

Specifies the time in seconds.

#### **Example 1-108 Examples**

---

```
pause 1000           # Pause for 1 second
pause 0.5s           # Pause for half a second
```

---

#### **Related references**

[1.2.22 Support on page 1-37.](#)

### 1.3.106 preprocess

Displays the preprocessed expression, not the evaluated expression.

#### Syntax

`preprocess [expression]`

---

#### Note

---

This functionality is dependent on the compiler generating accurate macro debug information.

---

#### Example 1-109 Examples

If your application contained the following code:

```
#define BASE_ADDRESS (0x1000)
#define REG_ADDRESS (BASE_ADDRESS + 0x10)
```

```
int main () {
    return REG_ADDRESS;
}
```

During a debug session, you can display the REG\_ADDRESS by using:

```
>preprocess REG_ADDRESS
((0x1000) + 0x10)
```

This compares with the expression value as output by the print command:

```
>print/x REG_ADDRESS
0x1010
```

#### Related references

[1.2.22 Support on page 1-37.](#)

### 1.3.107 print, inspect

Displays the output of an expression (128 character limit) and also records the result in a new debugger variable, `$n`, where `n` is a number. Results from the `print` command can be used successively in expressions using the `$` character. If you do not want the results recorded in a debugger variable, use the `output` command instead.

#### Syntax

```
print [/flag] [expression]
```

```
inspect [/flag] [expression]
```

Where:

*flag*

Specifies the output format:

x	Hexadecimal (casts the value to an unsigned integer prior to printing in hexadecimal)
d	Signed decimal. This is the default.
u	Unsigned decimal
o	Octal
t	Binary
a	Absolute hexadecimal address
c	Character
f	Floating-point
s	Default format from the expression.

*expression*

Specifies an expression that is evaluated and the result is returned. If no *expression* is specified then the last expression is repeated.

#### Note

If your expression accesses memory then a default address variable is set to the location after the last accessed address. Some commands, such as `x`, use this default value if no address is specified.

#### Example 1-110 Examples

```
print (int*)8          # Cast a number as a pointer
print 4+4              # Display result of expression in decimal
print "initializing..." # Display progress information
print /x $PC           # Display address in PC register (hexadecimal)
```

#### Related references

[1.2.14 Display on page 1-29.](#)

[1.3.104 output on page 1-148.](#)

*1.3.33 echo* on page 1-75.

*1.1.3 Expressions within DS-5* on page 1-10.

*1.1.4 Built-in functions within DS-5 expressions* on page 1-11.

*1.1.8 printf() style format string* on page 1-15.



### 1.3.108 pwd

Displays the current working directory.

#### Syntax

pwd

#### Example 1-111 Examples

---

```
pwd                                # Display current working directory
```

---

#### Related references

[1.2.7 Files on page 1-24.](#)

### 1.3.109 quit, exit

Quits the debugger session.

#### Syntax

```
quit
```

```
exit
```

#### Example 1-112 Examples

---

```
quit                                # Quit debugger session
```

---

#### Related references

[1.2.22 Support on page 1-37.](#)

### 1.3.110 reload-symbol-file

Reloads debug information from an already loaded image into the debugger using the same settings as the original load operation. For example, you can use this command to reload debug information into the debugger after you have rebuilt your image.

---

**Note**

The PC register is not set with this command.

---

#### Syntax

reload-symbol-file [*filename*]

Where:

*filename*

Specifies the image to reload. If is not already loaded then an error is generated.

#### Example 1-113 Examples

---

```
reload-symbol-file "myFile.axf"           # Reload debug information
```

---

#### Related references

[1.2.7 Files on page 1-24.](#)

### 1.3.111 reset

Performs a reset on the target. The exact behavior of the `reset` command is dependent on the debug agent and the target.

For example:

- A debug agent can be configured to reset the target in different ways.
- The position of the switches on the target.
- A `gdbserver` connection can be configured to restart `gdbserver` and run scripts.

For more information, see the documentation for your target or debug agent.

---

**Note**

`reset` does not affect the symbols loaded in the debugger. Registers and memory might contain different values after a reset.

---

#### Syntax

`reset` [*key*]

Where:

*key*

Specifies the reset key. The reset capabilities are target dependent and might not all be enabled. You can use `info capabilities` to display a list of capability settings for the target device that is currently connected to the debugger.

Possible options for the reset key are:

`app`

Application restart.

`system`

General hardware reset that is not specific to a bus or processor.

If no *key* is specified then the first enabled reset capability is performed.

#### Example 1-114 Examples

---

<code>reset</code>	# Performs the first enabled reset capability
<code>reset app</code>	# Performs an application restart
<code>reset system</code>	# Performs a general hardware reset
<code>reset bus</code>	# Performs a bus reset
<code>reset jtag</code>	# Performs a JTAG (nTRST) reset

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

### 1.3.112 **resolve**

Re-evaluates the specified breakpoints or watchpoints and those with addresses that can be resolved are set. Unresolved addresses remain pending.

#### **Syntax**

`resolve [number]...`

Where:

*number*

Specifies the breakpoint or watchpoint number. This is the number assigned by the debugger when it is set. You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.

If no *number* is specified then all breakpoints and watchpoints are re-evaluated.

#### **Example 1-115 Examples**

---

```
resolve 1           # Resolve breakpoint/watchpoint number 1
resolve 1 2         # Resolve breakpoints/watchpoint number 1 and 2
resolve             # Resolve all breakpoints/watchpoints
resolve $           # Resolve the breakpoint/watchpoint whose number is in the
                   # most recently created debugger variable
```

---

#### **Related references**

[1.3.7 break](#) on page 1-50.

[1.3.43 hbreak](#) on page 1-85.

[1.3.199 tbreak](#) on page 1-243.

[1.3.200 thbreak](#) on page 1-245.

[1.3.15 clear](#) on page 1-58.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.113 restore

Reads data from a file and writes it to memory.

#### Syntax

```
restore filename [binary] [offset [start_address [end_address|+size]]]
```

Where:

*filename*

Specifies the file.

*binary*

Specifies binary format. The file format is only required for binary files. All other files are automatically recognized by the debugger. See the `append` command for a list of the file formats supported by the debugger.

*offset*

Specifies an offset that is added to all addresses in the image prior to writing to memory. Some image formats do not contain embedded addresses and in this case the offset is the absolute address where the image is restored.

*start\_address*

Specifies the minimum address that can be written to. Any data prior to this address is not written. If no *start\_address* is given then the default is address zero.

*end\_address*

Specifies the maximum address that can be written to. Any data after this address is not written. If no *end\_address* is given then the default is the end of the address space.

*size*

Specifies the size of the region.

#### Example 1-116 Examples

```
restore myFile.bin binary 0x200      # Restore content of binary file
                                     # myFile.bin starting at 0x200
restore myFile.m32 0x100 0x8000 0x8FFF # Add 0x100 to addresses in Motorola
                                     # 32-bit (S-records) file and restore
                                     # content between 0x8000-0x8FFF
```

#### Related references

[1.2.7 Files on page 1-24.](#)

[1.2.9 Memory on page 1-26.](#)

### 1.3.114 reverse-continue

Continues running the target backwards until a breakpoint or watchpoint is hit.

---

**Note**

Control is returned as soon as the target starts running backwards. You can use the `wait` command to block the debugger from returning control until the application stops, for example at a breakpoint or watchpoint.

---

#### Syntax

`reverse-continue [count]`

Where:

`count`

Specifies the number of times to ignore any breakpoints or watchpoints that are hit.

#### Example 1-117 Examples

---

<code>reverse-continue</code>	<code># Continue running the target backwards</code>
<code>reverse-continue 5</code>	<code># Continue running the target backwards,</code>
	<code># ignoring five breakpoint hits</code>

---

#### Related references

[1.3.115 reverse-next](#) on page 1-160.

[1.3.116 reverse-nexti](#) on page 1-161.

[1.3.117 reverse-step](#) on page 1-162.

[1.3.118 reverse-stepi](#) on page 1-163.

[1.3.119 reverse-step-out](#) on page 1-164.

[1.2.2 Execution control](#) on page 1-19.

### 1.3.115 reverse-next

Rewinds execution to the preceding source line in the current function.

---

**Note**

You must compile your code with debug information to use this command successfully.

---

#### Syntax

`reverse-next [count]`

Where:

`count`

Specifies the number of source lines to rewind. The default is one line.

---

**Note**

Execution stops immediately if a breakpoint is reached, even if fewer than `count` source lines are executed.

---

---

**Note**

Reverse stepping is unaware of inline functions and might not operate correctly in highly optimized code. Use unoptimized code for the best debug experience.

---

#### Example 1-118 Examples

---

<code>reverse-next</code>	<code># Reverse step one source line</code>
<code>reverse-next 5</code>	<code># Reverse step five source lines</code>

---

#### Related references

[1.3.114 reverse-continue](#) on page 1-159.

[1.3.116 reverse-nexti](#) on page 1-161.

[1.3.117 reverse-step](#) on page 1-162.

[1.3.118 reverse-stepi](#) on page 1-163.

[1.3.119 reverse-step-out](#) on page 1-164.

[1.2.2 Execution control](#) on page 1-19.



### 1.3.116 **reverse-nexti**

Rewinds execution at the instruction level, stepping over all function calls.

#### **Syntax**

`reverse-nexti [count]`

Where:

`count`

Specifies the number of instructions to rewind. The default is one instruction.

---

#### **Note**

Execution stops immediately if a breakpoint is reached, even if fewer than `count` instructions are executed.

---

#### **Note**

Reverse stepping is unaware of inline functions and might not operate correctly in highly optimized code. Use unoptimized code for the best debug experience.

#### **Example 1-119 Examples**

---

```
reverse-nexti           # Reverse step one instruction
reverse-nexti 5         # Reverse step five instructions
```

---

#### **Related references**

[1.3.114 \*reverse-continue\* on page 1-159.](#)

[1.3.115 \*reverse-next\* on page 1-160.](#)

[1.3.117 \*reverse-step\* on page 1-162.](#)

[1.3.118 \*reverse-stepi\* on page 1-163.](#)

[1.3.119 \*reverse-step-out\* on page 1-164.](#)

[1.2.2 \*Execution control\* on page 1-19.](#)

### 1.3.117 reverse-step

Steps back through an application a specified number of source lines at a time, stepping into all function calls.

---

**Note**

You must compile your code with debug information to use this command successfully.

---

#### Syntax

`reverse-step [count]`

Where:

`count`

Specifies the number of source lines to rewind. The default is one line.

---

**Note**

Execution stops immediately if a breakpoint is reached, even if fewer than `count` source lines are executed.

---

---

**Note**

Reverse stepping is unaware of inline functions and might not operate correctly in highly optimized code. Use unoptimized code for the best debug experience.

---

#### Example 1-120 Examples

---

<code>reverse-step</code>	<code># Reverse step one source line</code>
<code>reverse-step 5</code>	<code># Reverse step five source lines</code>

---

#### Related references

[1.3.114 reverse-continue](#) on page 1-159.

[1.3.115 reverse-next](#) on page 1-160.

[1.3.116 reverse-nexti](#) on page 1-161.

[1.3.118 reverse-stept](#) on page 1-163.

[1.3.119 reverse-step-out](#) on page 1-164.

[1.2.2 Execution control](#) on page 1-19.

### 1.3.118 reverse-stepi

Steps back through an application a specified number of instructions at a time.

#### Syntax

`reverse-stepi [count]`

Where:

`count`

Specifies the number of instructions to rewind. The default is one instruction.

---

#### Note

---

Execution stops immediately if a breakpoint is reached, even if fewer than `count` instructions are executed.

---

#### Example 1-121 Examples

---

<code>reverse-stepi</code>	<code># Reverse step one instruction</code>
<code>reverse-stepi 5</code>	<code># Reverse step five instructions</code>

---

#### Related references

[1.3.114 reverse-continue](#) on page 1-159.

[1.3.115 reverse-next](#) on page 1-160.

[1.3.116 reverse-nexti](#) on page 1-161.

[1.3.117 reverse-step](#) on page 1-162.

[1.3.119 reverse-step-out](#) on page 1-164.

[1.2.2 Execution control](#) on page 1-19.

### 1.3.119 reverse-step-out

Rewinds execution through the specified number of stack frames.

#### Syntax

`reverse-step-out [count]`

Where:

`count`

Specifies the number of stack frames to rewind. The default is one stack frame.

---

#### Note

Reverse stepping is unaware of inline functions and might not operate correctly in highly optimized code. Use unoptimized code for the best debug experience.

---

#### Example 1-122 Examples

---

<code>reverse-step-out</code>	<code># Rewinds until the current stack frame finishes</code>
<code>reverse-step-out 5</code>	<code># Rewinds until five stack frames finish</code>

---

#### Related references

[1.3.114 reverse-continue](#) on page 1-159.

[1.3.115 reverse-next](#) on page 1-160.

[1.3.116 reverse-nexti](#) on page 1-161.

[1.3.117 reverse-step](#) on page 1-162.

[1.3.118 reverse-steppi](#) on page 1-163.

[1.2.2 Execution control](#) on page 1-19.

### 1.3.120 run

Starts running the target.

#### Bare-metal

This command sets the PC register to the entry point address previously recorded by the `load`, `loadfile`, or `file` command and starts running the target. Subsequent `run` commands also reload the executable image if it follows a previous load operation.

#### Linux application

This command sends a request to the server to restart the application and then start running it.

---

#### Note

Control is returned as soon as the target is running. You can use the `wait` command to block the debugger from returning control until either the application completes or a breakpoint is hit.

---

### Syntax

`run [args]`

Where:

*args*

Specifies the command-line arguments that are passed to the `main()` function in the application using the *argv* parameter. The name of the image is always implicitly passed in `argv[0]` and it is not necessary to pass this as an argument to the `run` command.

#### Example 1-123 Examples

---

<code>run</code>	<code># Start running the device</code>
------------------	---

---

### 1.3.121 rwatch

Sets a watchpoint for a data symbol. The debugger stops the target when the memory at the specified address is read.

This command records the ID of the watchpoint in a new debugger variable, `$n`, where `n` is a number. You can use this variable, in a script, to delete or modify the watchpoint behavior. If `$n` is the last or second-to-last debugger variable, then you can also access the ID using `$` or `$$`, respectively.

Watchpoints are only supported on scalar values.

Some targets do not support watchpoints. Currently you can only set a watchpoint on:

- A hardware target using a debug hardware agent.
- Linux applications using `gdbserver` or `undodb-server`.

The availability of watchpoints depends on the hardware target. In the case of Linux application debug, the availability of watchpoints also depends on the Linux kernel version and configuration.

The address of the instruction that triggers the watchpoint might not be the address shown in the PC register. This is because of pipelining effects.

#### Syntax

```
rwatch [-d] [-p] {[filename:]symbol|*address} [vmid vmid]
```

Where:

`d`

Disables the watchpoint immediately after creation.

`p`

Specifies whether or not the resolution of an unrecognized watchpoint location results in a pending watchpoint being created.

*filename*

Specifies the file.

*symbol*

Specifies a global/static data symbol. For arrays or structs you must specify the element or member.

*address*

Specifies the address. This can be either an address or an expression that evaluates to an address.

*vmid*

Specifies the *Virtual Machine ID* (VMID) to apply the breakpoint to. This can be either an integer or an expression that evaluates to an integer.

#### Example 1-124 Examples

```
rwatch myVar1          # Set read watchpoint on myVar1
rwatch *0x80D4         # Set read watchpoint on address 0x80D4
```

#### Related references

[1.3.215 watch](#) on page 1-261.

[1.3.16 clearwatch](#) on page 1-59.

[1.3.5 awatch](#) on page 1-48.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.122 select-frame

Moves the current frame pointer in the call stack.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

select-frame *number*

Where:

*number*

Specifies the frame number.

#### Example 1-125 Examples

---

select-frame 1	# Move to stack frame 1
----------------	-------------------------

---

#### Related references

[1.2.5 Call stack on page 1-22.](#)

### 1.3.123 set, set variable

Evaluates an expression and assigns the result to a variable, register or memory.

#### Syntax

set [variable] *expression*

Where:

*expression*

Specifies an expression and assigns the result to a variable, register, or memory address.

#### Example 1-126 Examples

---

set variable myVar=10	# Assign 10 to variable myVar
set variable \$PC=0x8000	# Assign address 0x8000 to # PC register
set variable \$CPSR.N=0	# Clear N bit
set variable (*(int*)0x8000)=1	# Assign 1 to address 0x8000
set variable *0x8000=1	# Assign 1 to address 0x8000
set variable strcpy((char*)0x8000,"My String")	# Assign string to address 0x8000
set variable memcpy(void*0x8000,{10,20,30,40},4)	# Assign array to address 0x8000

---

#### Related references

[1.2.17 Set on page 1-31.](#)

[1.2.17 Set on page 1-31.](#)

[1.3.63 info memory-parameters on page 1-106.](#)

#### Related information

[ARM Architecture Reference Manual.](#)



### 1.3.124 set arm

Controls the behavior of the debugger when selecting the instruction set for disassembly and setting breakpoints.

---

**Note**

Available instruction sets depend on the target that the debugger is connected to.

---

#### Syntax

`set arm option`

Where:

*option*

Specifies additional options:

**force-mode**

Controls the default debugger behavior overriding the `fallback-mode` setting.

`a32|arm`

Forces the debugger to use the A32 instruction set.

`a64`

Forces the debugger to use the A64 instruction set.

`t32|thumb`

Forces the debugger to use the T32 instruction set.

`auto`

Forces the debugger to use debug information when available or the `fallback-mode` if this is not available. This is the default.

**fallback-mode**

Controls the default debugger behavior when `force-mode` is set to `auto` and debug information is not available.

`a32|arm`

Forces the debugger to use the A32 instruction set when debug information is not available.

`a64`

Forces the debugger to use the A64 instruction set when debug information is not available.

`t32|thumb`

Forces the debugger to use the T32 instruction set when debug information is not available.

`auto`

Forces the debugger to use the current instruction set of the target. This is the default.

#### Example 1-127 Examples

---

```
set arm force-mode t32      # Force the use of T32
set arm fallback-mode a32  # When force-mode is auto, use A32
                           # if no debug information is available
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

[1.2.22 Support on page 1-37.](#)

### 1.3.125 set auto-solib-add

Controls the automatic loading of shared library symbols.

---

**Note**

You must launch the debugger with the `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

```
set auto-solib-add {off|on}
```

Where:

**off**

No automatic loading. When automatic loading is off you must explicitly load shared library symbols using the `sharedlibrary` command.

**on**

Loads shared library symbols automatically. This is the default.

#### Example 1-128 Examples

---

```
set auto-solib-add off           # No automatic loading of shared library symbols
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.126 set backtrace

Controls the default behavior when using the `info stack` command.

#### Syntax

`set backtrace option`

Where:

*option*

Specifies additional options:

`limit n`

Specifies the maximum limit when displaying the call stack. You can specify zero as the maximum limit to display the entire call stack.

The default call stack limit is 100.

#### Example 1-129 Examples

---

```
set backtrace limit 10      # Limit the call stack display to 10 frames
set backtrace limit 0      # No limit, display the entire call stack
```

---

#### Related references

[1.2.5 Call stack on page 1-22.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.127 set blocking-run-control

Controls whether run control operations such as stepping and running are blocked until the target stops or released immediately.

#### Syntax

```
set blocking-run-control {off|on|script-only}
```

Where:

**off**

Specifies asynchronous, control is returned before the target stops.

**on**

Specifies synchronous, run control operations are blocked until the target stops. This has the same effect as issuing a wait command after each run control operation.

**script-only**

Specifies that run control operations block only when executed as commands from within a script.

This is the default.

#### Example 1-130 Examples

---

```
set blocking-run-control on      # Block run control operations until target stops
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

[1.2.17 Set on page 1-31.](#)

## 1.3.128 set breakpoint

Controls the automatic behavior of breakpoints and watchpoints.

### Syntax

set breakpoint [*option*]

Where:

*option*

Specifies additional options:

auto-hw

Controls the automatic breakpoint selection when using the break command:

off

Disables automatic breakpoint selection.

on

Uses the memory map attributes to decide if hardware or software breakpoints must be used. This is the default.

auto-remove

Controls the automatic removal of breakpoints and watchpoints when disconnecting from the target:

off

Disables automatic removal.

on

Enables automatic removal. This is the default.

————— **Note** —————

If the target is running, the debugger temporarily stops the target before removing breakpoints and watchpoints.

skipmode

Controls whether to skip all breakpoints and watchpoints:

off

Disables skip mode. This is the default.

on

Enables skip mode.

### Example 1-131 Examples

```
set breakpoint auto-hw off      # No automatic breakpoint selection
set breakpoint skipmode on     # Skip all breakpoints and watchpoints
set breakpoint auto-remove off # No automatic removal of breakpoints and watchpoints
```

### Related references

[1.3.25 disable breakpoints on page 1-68.](#)

[1.3.22 delete breakpoints on page 1-65.](#)

[1.3.49 info breakpoints, info watchpoints on page 1-93.](#)

[1.3.51 info capabilities on page 1-95.](#)

[1.3.50 info breakpoints capabilities, info watchpoints capabilities on page 1-94.](#)

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.129 set case-insensitive-source-matching

Controls the case sensitivity of debugger file matching operations.

#### Syntax

```
set case-insensitive-source-matching [off|on]
```

Where:

off

Specifies case sensitive file matching. This is the default.

on

Specifies case insensitive file matching. This is useful if the file paths or filenames in the debug data have a different case to those in the filesystem.

#### Example 1-132 Examples

---

```
# By default the debugger performs case sensitive file matching.
# Assume that the debug data contains the filename main.c.
break -p "C:/example/Main.c":2          # This fails because Main.c does not match
main.c.
WARNING(CMD452-COR167):
! Breakpoint 8 has been pended
! No compilation unit matching "C:/example/Main.c" was found.

set case-insensitive-source-matching on  # case insensitive matching.
break -p "C:/EXAmple/Main.c"           # This file matching operation succeeds.
Breakpoint 9 at S:0x000080A8
    on file main.c, line 2
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.130 set debug-agent

Sets an internal configuration parameter for the debug agent. The available parameters depend on the debug agent, such as DSTREAM or gdbserver.

#### Syntax

```
set debug-agent name value
```

Where:

*name*

Specifies the name of the parameter to set.

*value*

Specifies the value of the parameter. Values are dependent on the parameter being set. An error is reported if the value is not valid.

#### Example 1-133 Examples

---

```
set debug-agent UserOut_P1 1
# Set value of USER OUT pin1 to 1.
# This parameter is available for DSTREAM/RVI connections.
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.131 set debug-from

Specifies the address of the temporary breakpoint for subsequent use by the `start` command. If you do not specify this command then the default value used by the `start` command is the address of the global function `main()`.

#### Syntax

`set debug-from expression`

Where:

*expression*

Specifies an expression that evaluates to an address. The expression is only evaluated when the `start` command is processed, therefore, you can refer to symbols that might not exist yet but might be made available in the future. You can use the debugger variable `$entrypoint` to refer to the entry point for the currently loaded image.

#### Example 1-134 Examples

---

```
set debug-from *0x8000      # Set start-at setting to address 0x8000
set debug-from *$entrypoint # Set start-at setting to address of $entrypoint
set debug-from main+8       # Set start-at setting to address of main+8
set debug-from function1    # Set start-at setting to address of function1
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

[1.2.17 Set on page 1-31.](#)



### 1.3.132 set directories, directory

Defines additional directories to search for source files. If you use this command without an argument then the search directories are reset to the default settings. You can use the `show` command to display the current settings.

#### Syntax

```
directory [path]...
```

```
set directories [path]...
```

Where:

*path* Specifies an additional directory to search for source files. This is appended to the beginning of the list.

Multiple directories can be specified but must be separated with either:

- a space
- a colon (Unix)
- a semi-colon (Windows).

#### Default

The default directories for searching are:

- compilation directory, *\$cdir*
- current working directory, *\$cwd*
- current image directory, *\$idir*.

#### Example 1-135 Examples

```
directory "\usr\source"      # Add directory to search list
directory "\usr" "\My Src"  # Add two directories to search list,
                             # first takes precedence
directory                   # Reset to the default directories
```

#### Related references

[1.2.7 Files on page 1-24.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.133 set dtsl-options

Sets a parameter in the DTSL configuration.

#### Syntax

```
set dtsl-options name value
```

Where:

*name*

Specifies a name of the parameter to set.

*value*

Specifies the value of the parameter. Values are dependent on the parameter being set. An error is reported if the value is not valid.

#### Example 1-136 Examples

---

```
set dtsl-options options.cortexA9.coreTrace.cycleAccurate False  
# Set DTSL configuration cycleAccurate parameter to false
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.134 set dtsl-temporary-directory

Specifies the path for the temporary directory to store trace data.

#### Syntax

```
set dtsl-temporary-directory <path>
```

Where:

<path>

Specifies the location of your temporary directory, for example, C:\my\_temp\_dir.

---

#### Note

This command can only set the path to an existing directory location. You need to create the directory before using this command.

---

To clear the setting and revert to the default system directory, enter `set dtsl-temporary-directory ""`.

You can also use the **DS-5 Preferences** dialog to set trace data temporary directory. To do this:

1. From the DS-5 menu, select **Window > Preferences**.
2. Browse to **DS-5 > Debugger > Trace**.
3. Select the **Use custom directory for temporary trace data files** option.
4. Enter or **Browse** the path to your temporary directory.

#### Example 1-137 Examples

---

```
set dtsl-temporary-directory C:\my_temp_dir      # Set DTSL temporary directory path as C:\my_temp_dir.
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.135 set elf cache-uninitialized-sections

Controls whether the debugger caches uninitialized sections.

After the symbols for an image are loaded, the debugger by default marks regions corresponding to ELF sections as cacheable if:

- The section has `sht_type` that is set to one of:
  - `SHT_PROGBITS`
  - `SHT_INIT_ARRAY`
  - `SHT_FINI_ARRAY`
  - `SHT_PREINIT_ARRAY`
  - `SHT_NOBITS`.
- The `SHF_ALLOC` flag in `sh_flags` is set for the section.

This can result in uninitialized sections, or volatile regions of the address space, for example peripherals, being set to cacheable by default. To overcome this problem, you can use `set elf cache-uninitialized-sections off` to disable the debugger from caching such ELF sections.

#### Syntax

```
set elf cache-uninitialized-sections {off|on}
```

Where:

off

Disables caching of uninitialized sections.

on  
Enables caching of uninitialized sections. This is the default.

#### Example 1-138 Examples

---

```
set elf cache-uninitialized-sections off    # Disable caching of uninitialized
sections
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.136 set elf load-segments-at-p\_paddr

Enables loading to the specified load offset + p\_paddr when loading segments of ELF images to the target.

When loading segments of ELF images to the target, by default, the debugger loads to the specified load offset + p\_vaddr. If you want the debugger to load to the specified load offset + p\_paddr then enable elf load-segments-at-p\_paddr. (as specified in the ELF Program Header for that segment).

---

#### Note

The ELF Program Header for the corresponding segment specifies the p\_vaddr.

---

#### Syntax

```
set elf load-segments-at-p_paddr {off|on}
```

Where:

off

Loads to the specified load offset + p\_vaddr. This is the default.

on

Loads to the specified load offset + p\_paddr.

#### Example 1-139 Examples

---

```
set elf load-segments-at-p_paddr on    # Loads to the specified load offset +
p_paddr
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.137 set elf zero-extra-segment-bytes

Enables zeroing of bytes from p\_filesz to p\_memsz when loading segments of ELF images to the target.

When loading segments of ELF images to the target, by default, the debugger only writes p\_filesz bytes to the target. If p\_filesz is less than p\_memsz, and you want the debugger to pad the region from p\_filesz to p\_memsz with zero then enable elf zero-extra-segment-bytes.

---

#### Note

The ELF Program Header for the corresponding segment specifies the p\_filesz.

---

## Syntax

```
set elf zero-extra-segment-bytes {off|on}
```

Where:

**off**

Disables zeroing. This is the default.

**on**

Enables zeroing the region from `p_filesz` to `top_memsz`.

## Example 1-140 Examples

---

```
set elf zero-extra-segment-bytes on      # Enable zeroing from p_filesz to p_memsz
```

---

## Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.138 set endian

Specifies the byte order for use by the debugger. The endianness of the target is not modified by this command.

#### Syntax

```
set endian {auto|be8|big|little}
```

Where:

**auto**

Uses the same byte order as the image where possible, otherwise it uses the current endianness of the target. This is the default.

**be8**

Specifies Byte Invariant Addressing big-endian mode introduced in architecture ARMv6 (data is big endian and code is little endian).

**big**

Specifies big endian mode.

**little**

Specifies little endian mode.

#### Example 1-141 Examples

---

```
set endian little           # Debug using little endian
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

[1.2.22 Support on page 1-37.](#)

### 1.3.139 set escape-strings

Controls how special characters in strings are printed on the debugger command-line.

#### Syntax

```
set escape-strings off|on
```

Where:

**off**

Specifies that any backslash characters in strings are treated as escape sequences. For example, if the string contains "\t" then this is printed as a tab character.

This is the default.

**on**

Specifies that any backslashes in strings are not treated as escape sequences and are instead output literally. For example, if the string contains "\t" then this is printed as a "\" character followed by a "t" character.

#### Example 1-142 Examples

```
set escape-strings on
output "Say \"hello\"""
"Say \"hello\"""
set escape-strings off
output "Say \"hello\"""
"Say "hello""
```

#### Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.140 set escapes-in-filenames

Controls the use of special characters in paths.

#### Syntax

set escapes-in-filenames off|on

Where:

off

Specifies that a backslash in a path is treated as a directory separator (with the exception that it can be used to escape spaces). For example:

C:\test\ file.c

The first backslash is treated as a separator followed by a t, not an escape sequence representing the tab character. The second backslash escapes the space.

This is the default.

on

Specifies that a backslash is to be treated as part of an escape sequence to indicate that the character following is a special character. For example:

C:\\test\\file.c

The backslash in this example is a directory separator and must be identified as a special character.

#### Example 1-143 Examples

---

```
set escapes-in-filenames on      # Use backslash as an escape character in paths
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)



### 1.3.141 **set listsize**

Modifies the default number of source lines that the `list` command displays.

#### **Syntax**

```
set listsize n
```

Where:

*n*  
Specifies the number of source lines.

#### **Example 1-144 Examples**

---

```
set listsize 20                # Set listing size for list command
```

---

#### **Related references**

[1.2.17 Set on page 1-31.](#)

### 1.3.142 **set mmu use-cache-for-phys-reads**

Instructs the debugger to, where possible, ensure that the translation table entries it reads from physical memory are coherent with the contents of data caches.

#### **Syntax**

```
set mmu use-cache-for-phys-reads {off|on}
```

Where:

`off`  
Does not ensure coherency between physical memory reads and data caches. This is the default.

`on`  
Ensures coherency between physical memory reads and data caches.

#### **Example 1-145 Examples**

---

```
set mmu use-cache-for-phys-reads on    # Ensure coherent physical memory reads
```

---

#### **Related references**

[1.2.12 MMU on page 1-28.](#)

[1.2.17 Set on page 1-31.](#)

#### **Related information**

[About debugging MMUs.](#)

### 1.3.143 set os

Controls *Operating System* (OS) settings in the debugger. An OS-aware connection must be established before you can use this command.

#### Syntax

set os *option*

Where:

*option*

Specifies additional options:

enabled

auto

Automatically stops the target and enables OS support when an OS image is loaded into the debugger. For example, Linux kernel images are detected by reading the members for the structure returned by the expression `init_nsproxy.uts_ns->name`. Unloading the image disables OS support.

This is the default for Linux kernel connections.

deferred

Automatically enables OS support when an OS image is loaded into the debugger, but only when the target next stops. Unloading the image disables OS support.

This is the default for *Real-Time Operating System* (RTOS) aware connections.

off

Disables OS support.

on

Enables OS support. Use this option when the OS image is already loaded into the debugger and the target is stopped.

kernel-stack-size *bytes*

Specifies the number of bytes to use for the stack size.

log-capture

off

Disables OS log capture and printing of Linux kernel `dmesg` logs to the console. This is the default.

on

Enables OS log capture and printing to the console.

---

#### Note

This option automatically checks the connection state and, if required, stops the target before changing this setting.

---

read-all-threads-on-stop

off

Disables OS reading of threads when the target is stopped. This is the default.

on

Enables OS reading of threads when the target is stopped.

### Example 1-146 Examples

---

set os log-capture on	# Enable OS log capture and printing to the console
set os enabled off	# Disable OS support in the debugger

---

### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.144 set print

Controls the current debugger print settings.

#### Syntax

set print *option*

Where:

*option*

Specifies additional options:

library-not-found-warnings

Controls the printing of "unable to find library..." messages.

off

Disables these messages. This is the default.

on

Enables these messages.

full-source-path

Controls the printing of source file names in messages.

off

Disables printing the full path. This is the default.

on

Enables printing the full path.

stop-info

Controls the printing of event messages when the target stops.

off

Disables printing of event messages. This setting takes precedence over the silence and unsilence commands.

on

Enables printing of event messages. This is the default.

current-vmid

Controls the printing of current VMID messages when the target stops.

off

Disables printing of VMID messages. This is the default.

on

Enables printing of VMID messages.

double-format *format*

Controls the formatting of double precision floating-point values. *format* is a printf() style format string. The default is "%.16g".

float-format *format*

Controls the formatting of single precision floating-point values. *format* is a printf() style format string. The default is "%.6g".

#### Example 1-147 Examples

```
set print library-not-found-warnings off # Disable unfound library messages
set print full-source-path on           # Display full source path in messages
set print double-format %+g             # Print decimal scientific notation with sign
set print float-format %08.4e           # Print decimal scientific notation, zero-pad
                                         # min 8 characters, 4 digit precision
```

## **Related references**

- 1.2.14 Display on page 1-29.*
- 1.2.17 Set on page 1-31.*
- 1.1.3 Expressions within DS-5 on page 1-10.*
- 1.1.4 Built-in functions within DS-5 expressions on page 1-11.*
- 1.1.8 printf() style format string on page 1-15.*

### 1.3.145 set semihosting

Controls the semihosting settings in the debugger. Semihosting is used to communicate input/output requests from application code to the host workstation running the debugger.

---

**Note**

These settings only apply if the target supports semihosting and they cannot be changed while the target is running.

---

#### Syntax

`set semihosting option`

Where:

*option*

Specifies additional options:

*args arguments*

Specifies the command-line arguments that are passed to the `main()` function in the application using the `argv` parameter. The name of the image is always implicitly passed in `argv[0]` and it is not necessary to pass this as an argument.

*file-base directory*

Specifies the base directory where the files that the application opens are relative to.

*stderr "stderr"|filename*

Specifies either console streams or a file to write `stderr` for semihosting operations.

*stdin "stdin"|filename*

Specifies either console streams or a file to read `stdin` for semihosting operations.

*stdout "stdout"|filename*

Specifies either console streams or a file to write `stdout` for semihosting operations.

*top-of-memory address*

Specifies the top of memory.

*stack\_heap\_options*

Specifies finer controls to manually configure the base address and limits for the stack and heap. If you use *stack\_heap\_options*, then these settings take precedence over the top-of-memory and all of the following options must be specified:

*stack-base address*

The base address of the stack.

*stack-limit address*

The end address of the stack.

*heap-base address*

The base address of the heap.

*heap-limit address*

The end address of the heap.

*enabled*

*auto*

Automatically enables semihosting operations if appropriate when an image is loaded. This is the default.

*off*

Disables all semihosting operations.

on

Enables all semihosting operations.

You might have to configure semihosting addresses before you enable semihosting. For example:

```
set semihosting top-of-memory address
```

```
set semihosting enabled on
```

vector *address*

Specifies a breakpoint address for semihosting support. If it is not set, the debugger uses vector catch (if supported) or 0x8.

#### Example 1-148 Examples

---

```
set semihosting args 500           # Set 500 as command-line argument
set semihosting stdout output.log  # Write stdout to output.log
set semihosting enabled on        # Enable semihosting operations
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

[1.2.22 Support on page 1-37.](#)

### 1.3.146 set solib-absolute-prefix, set sysroot

Specifies the system root directory to search for shared library symbols.

The debugger uses this directory to search for a copy of the debug versions of target shared libraries. The system root on the host workstation must contain an exact representation of the libraries on the target root filesystem.

---

**Note**

You must launch the debugger with the `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

```
set sysroot path
```

```
set solib-absolute-prefix path
```

Where:

*path*

Specifies the system root directory.

#### Example 1-149 Examples

---

```
set sysroot "\mySystem"           # Set system root directory "\mySystem"
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.17 Set on page 1-31.](#)

[1.2.17 Set on page 1-31.](#)



### 1.3.147 set solib-search-path

Specifies additional directories to search for shared library symbols. If you use this command without an argument then any additional search directories, previously added using this command, are removed. You can use `show solib-search-path` to display the current settings.

---

**Note**

You must launch the debugger with `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

`set solib-search-path [path]...`

Where:

*path*

Specifies an additional directory to search for shared libraries. The debugger uses the system root directory first, then it searches the additional directories specified with this command. You can use `set sysroot` to specify the system root directory.

Multiple directories can be specified but must be separated with either:

- a colon (Unix)
- a semi-colon (Windows).

#### Example 1-150 Examples

---

```
set solib-search-path "\usr\lib"      # Specify search directory
set solib-search-path "/lib":"/My Lib" # Specify two search directories(Unix)
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.148 set step-mode

Controls the default behavior of the `step` and `steps` commands.

#### Syntax

```
set step-mode {step-over|stop|step-until-source}
```

Where:

**step-over**

If the instruction is a function call then the debugger performs a step-over. Otherwise, it stops. This is the default.

**stop**

The debugger stops when execution reaches an address with no source.

**step-until-source**

The debugger performs steps until it reaches source. To speed up the execution, the debugger might use abstract interpretation and break or run until the line of source is reached.

#### Example 1-151 Examples

---

```
set step-mode step-over      # Step over a function call and stop.  
                             # Otherwise stop
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.149 set stop-on-solib-events

Controls whether the debugger stops execution when a shared object is loaded or unloaded.

---

**Note**

You must launch the debugger with the `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

```
set stop-on-solib-events {off|on}
```

Where:

`off`

Ignore event. This is the default.

`on`

Stop execution. Use this option only when you want the debugger to stop execution. For example, you might want to set a breakpoint in a shared library prior to use or perhaps you might want to check the initialization of global variables.

#### Example 1-152 Examples

---

```
set stop-on-solib-events on           # Stop execution when event occurs
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.150 set substitute-path

Modifies the search paths used by the debugger when it executes any of the commands that look up and display source code. This command is useful when the source files have moved from the original location used during compilation.

Subsequent use of the `set substitute-path` command appends rules to the current list.

#### Syntax

```
set substitute-path path1 path2
```

Where:

*path1*

Specifies the existing search path.

*path2*

Specifies the replacement search path.

#### Example 1-153 Examples

---

```
set substitute-path "\src" "\My Src"      # Substitute "\src" with "\My Src"
```

---

#### Related references

[1.2.7 Files on page 1-24.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.151 set sysroot, set solib-absolute-prefix

Specifies the system root directory to search for shared library symbols.

The debugger uses this directory to search for a copy of the debug versions of target shared libraries. The system root on the host workstation must contain an exact representation of the libraries on the target root filesystem.

---

**Note**

You must launch the debugger with the `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

```
set sysroot path
```

```
set solib-absolute-prefix path
```

Where:

*path*

Specifies the system root directory.

#### Example 1-154 Examples

---

```
set sysroot "\mySystem"           # Set system root directory "\mySystem"
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.17 Set on page 1-31.](#)

[1.2.17 Set on page 1-31.](#)

### 1.3.152 set trust-ro-sections-for-opcodes

Controls whether the debugger can read opcodes from read-only sections of images on the host workstation rather than from the target itself.

#### Syntax

```
set trust-ro-sections-for-opcodes {off|on}
```

Where:

**off**

Disables this behavior. Use this option to trace self-modifying code or when the code on the target is modified before being loaded to the target.

---

#### Note

The Linux kernel often contains self-modifying code.

---

**on**

Enables reading opcodes from read-only sections of images on the host machine. Reading opcodes from the host workstation is usually faster than reading them from the target. This is the default.

#### Example 1-155 Examples

---

```
set trust-ro-sections-for-opcodes on      # Enable reading opcodes from host
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)

### 1.3.153 set variable, set

Evaluates an expression and assigns the result to a variable, register or memory.

#### Syntax

set [variable] *expression*

Where:

*expression*

Specifies an expression and assigns the result to a variable, register, or memory address.

#### Example 1-156 Examples

---

set variable myVar=10	# Assign 10 to variable myVar
set variable \$PC=0x8000	# Assign address 0x8000 to # PC register
set variable \$CPSR.N=0	# Clear N bit
set variable (*(int*)0x8000)=1	# Assign 1 to address 0x8000
set variable *0x8000=1	# Assign 1 to address 0x8000
set variable strcpy((char*)0x8000,"My String")	# Assign string to address 0x8000
set variable memcpy(void*0x8000,{10,20,30,40},4)	# Assign array to address 0x8000

---

#### Related references

[1.2.17 Set on page 1-31.](#)

[1.2.17 Set on page 1-31.](#)

[1.3.63 info memory-parameters on page 1-106.](#)

#### Related information

[ARM Architecture Reference Manual.](#)

### 1.3.154 set wildcard-style

Specifies the type of wildcard pattern matching you can use for examining the contents of strings.

#### Syntax

```
set wildcard-style glob|regex
```

Where:

**glob**

Specifies a simpler style of pattern matching using glob expressions to refine your search. For example, you can use `m*` to search for strings starting with `m`.

This is the default.

**regex**

Specifies a more complex style of pattern matching using regular expressions to refine your search. For example, you can use `my_lib[0-9]+` to search for strings starting with `my_lib` followed by an integer.

#### Example 1-157 Examples

---

```
set wildcard-style regex           # Use regular expression pattern matching
```

---

#### Related references

[1.2.17 Set on page 1-31.](#)



### 1.3.155 sharedlibrary

Loads symbols from shared libraries. It can only load symbols for shared libraries that are already loaded by the application.

---

**Note**

You must launch the debugger with `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

`sharedlibrary [expression]`

Where:

*expression*

Specifies a library path or a wildcard expression. You can use wildcard expressions to enhance your pattern matching.

If no *expression* is specified then the symbols from all shared libraries are loaded.

#### Example 1-158 Examples

---

```
sharedlibrary          # Load symbols from all shared libraries.
sharedlibrary m*       # Load symbols matching path starting with m
                      # (use when set wildcard-style=glob).
sharedlibrary .*my_lib[0-9]+ # Load symbols matching path that ends with my_lib
                      # followed by a number(use when set wildcard-style=regex).
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

### 1.3.156 shell

Runs a shell command within the debug session. The command is launched in the working directory. You can use `pwd` to display the working directory.

#### Syntax

`shell cmd`

Where:

`cmd`

Specifies the command and associated arguments.

#### Example 1-159 Examples

---

<code>shell dir</code>	# On Windows, list files in directory.
<code>shell cat my_script.ds</code>	# On Linux, list contents of my_script.ds file.

---

#### Related references

[1.2.22 Support on page 1-37.](#)

### 1.3.157 show

Displays the debugger settings.

#### Syntax

show

#### Example 1-160 Examples

---

```
show                                # Display debugger settings.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.158 show architecture

Displays the architecture of the target.

#### Syntax

```
show architecture
```

#### Example 1-161 Examples

---

```
show architecture          # Display target architecture.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

[1.2.22 Support on page 1-37.](#)

### 1.3.159 show arm

Displays the instruction set settings in use by the debugger for disassembly and setting breakpoints.

#### Syntax

`show arm option`

Where:

*option*

Specifies additional options:

`force-mode`

Display the current force-mode behavior.

`fallback-mode`

Display the current fallback-mode behavior.

#### Example 1-162 Examples

---

<code>show arm</code>	<code># Display the instruction set settings.</code>
<code>show arm force-mode</code>	<code># Display the force-mode setting.</code>

---

#### Related references

[1.2.19 Show on page 1-34.](#)

[1.2.22 Support on page 1-37.](#)

### 1.3.160 show auto-solib-add

Displays the automatic setting for use when loading shared library symbols. You can use the `set auto-solib-add` command to modify this setting.

---

**Note**

---

You must launch the debugger with the `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

`show auto-solib-add`

---

#### Example 1-163 Examples

---

```
show auto-solib-add      # Display automatic setting for loading
                        # shared library symbols.
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.19 Show on page 1-34.](#)

### 1.3.161 show backtrace

Displays the behavior settings for use with the `info stack` command. You can use the `set backtrace` commands to modify these settings.

#### Syntax

`show backtrace option`

Where:

*option*

Specifies additional options:

`limit`

Displays the limit when listing the call stack.

#### Example 1-164 Examples

---

```
show backtrace limit           # Display current call stack limit.
```

---

#### Related references

[1.2.5 Call stack on page 1-22.](#)

[1.2.19 Show on page 1-34.](#)

### 1.3.162 show blocking-run-control

Displays the setting for blocking run control operations such as stepping and running. You can use the `set blocking-run-control` command to modify this setting.

#### Syntax

```
show blocking-run-control
```

#### Example 1-165 Examples

---

```
show blocking-run-control      # Display run control setting.
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

[1.2.19 Show on page 1-34.](#)



### 1.3.163 show breakpoint

Displays the breakpoint and watchpoint behavior settings. You can use the `set breakpoint` commands to modify these settings.

#### Syntax

`show breakpoint option`

Where:

*option*

Specifies additional options:

`auto-hw`

Displays the automatic breakpoint selection setting. This sets the type of breakpoint to use for the `break` command.

`skipmode`

Displays the breakpoint and watchpoint skipmode setting.

#### Example 1-166 Examples

---

```
show breakpoint auto-hw      # Display automatic breakpoint selection setting.
show breakpoint skipmode    # Display breakpoint and watchpoint skipmode setting.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.164 show case-insensitive-source-matching

Displays the case sensitivity setting for the debugger file matching operations. You can use the `set case-insensitive-source-matching` command to modify this setting.

#### Syntax

```
show case-insensitive-source-matching
```

#### Example 1-167 Examples

---

```
show case-insensitive-source-matching      # Display case sensitivity setting.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.165 show debug-agent

Displays the value of an internal configuration parameter for the debug agent. You can use the set debug-agent command to modify this setting. The available parameters depend on the debug agent, such as DSTREAM or gdbserver.

#### Syntax

```
show debug-agent [name]
```

Where:

*name*

Specifies the parameter to display.

#### Example 1-168 Examples

---

```
show debug-agent      # Display all debug agent configuration parameters.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.166 **show debug-from**

Displays the setting for the expression that is used by the `start` command to set a temporary breakpoint. You can use the `set debug-from` command to modify this setting.

#### **Syntax**

`show debug-from`

#### **Example 1-169 Examples**

---

```
show debug-from          # Display expression used by start command.
```

---

#### **Related references**

[1.2.2 Execution control on page 1-19.](#)

[1.2.19 Show on page 1-34.](#)

### 1.3.167 show directories

Displays the list of directories to search for source files. You can use the `directory` command to modify this list.

#### Syntax

show directories

#### Example 1-170 Examples

---

```
show directories          # Display list of search paths.
```

---

#### Related references

[1.2.7 Files](#) on page 1-24.

[1.2.19 Show](#) on page 1-34.

### 1.3.168 show dtls-options

Displays the value of a parameter in the DTSL configuration. You can use the `set dtls-options` command to modify this setting.

#### Syntax

```
show dtls-options [name]
```

Where:

*name*

Specifies the parameter to display.

#### Example 1-171 Examples

---

```
show dtls-options      # Display all DTSL configuration parameters.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.169 **show dtstl-temporary-directory**

Displays the current path for the temporary directory which stores trace data. You can modify the temporary directory path using the `set dtstl-temporary-directory` command.

#### **Syntax**

```
show dtstl-temporary-directory
```

#### **Example 1-172 Examples**

---

```
show dtstl-temporary-directory      # Shows the current trace data temporary directory path.
```

---

#### **Related references**

[1.2.19 Show on page 1-34.](#)

### 1.3.170 **show elf cache-uninitialized-sections**

Displays the debugger setting that controls whether uninitialized sections are cached.

#### **Syntax**

```
show elf cache-uninitialized-sections
```

#### **Example 1-173 Examples**

---

```
show elf cache-uninitialized-sections      # Display whether uninitialized sections  
are cached
```

---

#### **Related references**

[1.2.19 Show on page 1-34.](#)

### 1.3.171 show elf load-segments-at-p\_paddr

Displays the debugger setting that controls the location for loading segments of ELF images.

#### Syntax

```
show elf load-segments-at-p_paddr
```

#### Example 1-174 Examples

---

```
show elf load-segments-at-p_paddr    # Displays whether the load location is  
                                     # the specified load offset + p_paddr.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)



### 1.3.172 show elf zero-extra-segment-bytes

Displays the debugger setting that controls zeroing of bytes when loading segments of ELF images to the target.

#### Syntax

```
show elf zero-extra-segment-bytes
```

#### Example 1-175 Examples

---

```
set elf zero-extra-segment-bytes      # Display whether the debugger writes zeros  
                                       # if p_filesz is smaller than p_memsz.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.173 show endian

Displays the byte order setting in use by the debugger. You can use the `set endian` command to modify this setting.

#### Syntax

```
show endian
```

#### Example 1-176 Examples

---

```
show endian           # Display byte order setting.
```

---

#### Related references

[1.2.19 Show](#) on page 1-34.

[1.2.22 Support](#) on page 1-37.

### 1.3.174 show escape-strings

Displays the setting for controlling how special characters in strings are printed on the debugger command line. You can use the `set escape-strings` command to modify this setting.

#### Syntax

```
show escape-strings
```

#### Example 1-177 Examples

---

```
show escape-strings      # Display setting for controlling how
                        # special characters in strings are printed.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.175 show escapes-in-filenames

Displays the setting for controlling the use of special characters in paths. You can use the `set escapes-in-filenames` command to modify this setting.

#### Syntax

```
show escapes-in-filenames
```

#### Example 1-178 Examples

---

```
show escapes-in-filenames      # Display setting for controlling the use of  
                               # special characters in paths.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.176 show listsize

Displays the number of source lines that the list command displays. You can use the set listsize command to modify the display size.

#### Syntax

```
show listsize
```

#### Example 1-179 Examples

---

```
show listsize          # Display listing size for list command.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.177 show mmu use-cache-for-phys-reads

Displays the MMU setting that controls the coherency between translation table memory reads and cache data.

#### Syntax

```
show mmu use-cache-for-phys-reads
```

#### Example 1-180 Examples

---

```
show mmu use-cache-for-phys-reads  # Displays the MMU coherency setting.
```

---

#### Related references

[1.2.12 MMU on page 1-28.](#)

[1.2.19 Show on page 1-34.](#)

#### Related information

[About debugging MMUs.](#)

### 1.3.178 show os

Displays the *Operating System* (OS) control settings. You can use the `set os` command to modify these settings.

---

**Note**

An OS aware connection must be established before you can use this command.

---

#### Syntax

`show os option`

Where:

*option*

Specifies additional options:

`enabled`

Displays the setting for controlling OS support.

`kernel-stack-size`

Displays the stack size of the kernel.

`log-capture`

Displays the setting for controlling the capturing and printing of OS logging messages.

`read-all-threads-on-stop`

Displays the setting for the reading of threads when the target is stopped.

#### Example 1-181 Examples

---

```
show os log-capture      # Display setting for controlling os log capture.  
show os enabled         # Display OS enabled setting.
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.19 Show on page 1-34.](#)

## 1.3.179 show print

Displays the debugger print settings. You can use the `set print` commands to modify these settings.

### Syntax

`show print option`

Where:

*option*

Specifies additional options:

`library-not-found-warnings`

Displays the print settings for "unable to find library..." messages.

`full-source-path`

Displays the print settings for source paths in messages.

`stop-info`

Displays the print settings for event messages when the target stops.

`current-vmid`

Displays the print settings for VMID messages when the target stops.

`double-format`

Displays the print settings that controls the `printf()` style formatting of double values.

`float-format`

Displays the print settings that controls the `printf()` style formatting of floating-point values.

### Example 1-182 Examples

---

```
show print library-not-found-warnings # Display print settings for unfound
                                     # library messages.
show print full-source-path          # Display print settings for
                                     # source paths in messages.
```

---

### Related references

[1.2.14 Display on page 1-29.](#)

[1.2.19 Show on page 1-34.](#)

[1.1.3 Expressions within DS-5 on page 1-10.](#)

[1.1.4 Built-in functions within DS-5 expressions on page 1-11.](#)

[1.1.8 printf\(\) style format string on page 1-15.](#)

### 1.3.180 show semihosting

Displays the semihosting settings in the debugger. You can use the `set semihosting` commands to modify these settings.

#### Syntax

`show semihosting option`

Where:

*option*

Specifies additional options:

`args`

Displays the command-line arguments that are passed to the `main()` function in the application.

`enabled`

Displays the semihosting enabled setting.

`file-base`

Displays the setting for the `file-base` directory.

`stdin`

Displays the `stdin` settings.

`stdout`

Displays the `stdout` settings.

`stderr`

Displays the `stderr` settings.

`top-of-memory`

Displays the address for the top of memory.

`stack-base`

Displays the address for the stack base.

`stack-limit`

Displays the address for the stack limit.

`heap-base`

Displays the address for the heap base.

`heap-limit`

Displays the address for the heap limit.

`vector`

When using a semihosting breakpoint, the address is displayed otherwise a message is displayed indicating that a vector is in use.

#### Example 1-183 Examples

---

```
show semihosting args           # Display command-line arguments.
show semihosting enabled       # Display semihosting enabled setting.
show semihosting top-of-memory # Display the top of memory address.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

[1.2.22 Support on page 1-37.](#)



### 1.3.181 show solib-absolute-prefix, show sysroot

Displays the system root directory in use by the debugger when searching for shared library symbols. You can use the `set sysroot` command to specify a system root directory on the host workstation.

The debugger uses this directory to search for a copy of the debug versions of target shared libraries. The system root on the host workstation must contain an exact representation of the libraries on the target root filesystem.

---

**Note**

You must launch the debugger with `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

```
show sysroot
```

```
show solib-absolute-prefix
```

---

#### Example 1-184 Examples

---

```
show sysroot           # Display system root directory.
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.19 Show on page 1-34.](#)

[1.2.19 Show on page 1-34.](#)

### 1.3.182 show solib-search-path

Displays the search paths in use by the debugger when searching for shared libraries. You can use the `set sysroot` command to specify a system root directory on the host workstation and you can also use the `set solib-search-path` command to specify additional directories.

---

#### Note

You must launch the debugger with `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

`show solib-search-path`

#### Example 1-185 Examples

---

```
show solib-search-path           # Display search path for shared libraries.
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.19 Show on page 1-34.](#)

### 1.3.183 show step-mode

Displays the step setting for functions without debug information. You can use the `set step-mode` command to modify this setting.

#### Syntax

```
show step-mode
```

#### Example 1-186 Examples

---

```
show step-mode          # Display step setting (function without debug).
```

---

#### Related references

[1.2.2 Execution control](#) on page 1-19.

[1.2.19 Show](#) on page 1-34.

### 1.3.184 show stop-on-solib-events

Displays the debugger setting that controls whether execution stops when shared library events occur. You can use the `set stop-on-solib-events` command to modify this setting.

---

#### Note

You must launch the debugger with `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

`show stop-on-solib-events`

---

#### Example 1-187 Examples

---

```
show stop-on-solib-events    # Display stop setting for shared library events.
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.19 Show on page 1-34.](#)

### 1.3.185 **show substitute-path**

Displays the search path substitution rules in use by the debugger when searching for source files. You can use the `set substitute-path` command to modify these substitution rules.

#### **Syntax**

`show substitute-path`

#### **Example 1-188 Examples**

---

```
show substitute-path      # Display all substitution rules.
```

---

#### **Related references**

[1.2.7 Files](#) on page 1-24.

[1.2.19 Show](#) on page 1-34.

### 1.3.186 show sysroot, show solib-absolute-prefix

Displays the system root directory in use by the debugger when searching for shared library symbols. You can use the `set sysroot` command to specify a system root directory on the host workstation.

The debugger uses this directory to search for a copy of the debug versions of target shared libraries. The system root on the host workstation must contain an exact representation of the libraries on the target root filesystem.

---

**Note**

You must launch the debugger with `--target_os` command-line option before you can use this feature. In Eclipse this option is automatically selected when you connect to a target using `gdbserver`.

---

#### Syntax

```
show sysroot
```

```
show solib-absolute-prefix
```

---

#### Example 1-189 Examples

---

```
show sysroot           # Display system root directory.
```

---

#### Related references

[1.2.6 Operating System \(OS\) on page 1-23.](#)

[1.2.19 Show on page 1-34.](#)

[1.2.19 Show on page 1-34.](#)

### 1.3.187 **show trust-ro-sections-for-opcodes**

Displays the debugger setting that controls whether the debugger can read opcodes from read-only sections of images on the host workstation rather than from the target itself.

#### **Syntax**

`show trust-ro-sections-for-opcodes`

#### **Example 1-190 Examples**

---

```
show trust-ro-sections-for-opcodes    # Display trust-ro-sections-for-opcodes setting.
```

---

#### **Related references**

[1.2.19 Show on page 1-34.](#)

### 1.3.188 show version

Displays the version number of the debugger.

#### Syntax

```
show version
```

#### Example 1-191 Examples

---

```
show version                # Display debugger version number.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

[1.2.22 Support on page 1-37.](#)



### 1.3.189 show wildcard-style

Displays the wildcard style for pattern matching. You can use the `set wildcard-style` command to modify this setting.

#### Syntax

```
show wildcard-style
```

#### Example 1-192 Examples

---

```
show wildcard-style           # Display wildcard style.
```

---

#### Related references

[1.2.19 Show on page 1-34.](#)

### 1.3.190 **silence**

Disables the printing of stop messages for a specific breakpoint.

#### **Syntax**

`silence [number]`

Where:

*number*

Specifies the breakpoint number. This is the number assigned by the debugger when it is set. You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.

If no *number* is specified then all stop messages are disabled.

#### **Example 1-193 Examples**

---

```
silence 2    # Disable printing of stop messages for breakpoint 2.
silence $    # This applies to the breakpoint whose number is in
              # the most recently created debugger variable.
```

---

#### **Related references**

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.191 source

Loads and runs a script file to control and debug your target.

The following types of script are available:

DS-5

DS-5 Debugger commands.

CMM

CMM is a scripting language supported by some third-party debuggers. DS-5 supports a small subset of CMM-style commands, sufficient for running small target initialization scripts.

Jython

Jython is a Java implementation of the Python scripting language. It provides extensive support for data types, conditional execution, loops, and organization of code into functions, classes, and modules, as well as access to the standard Jython libraries. Jython is an ideal choice for larger or more complex scripts.

#### Syntax

```
source [/v] filename [args]
```

Where:

*v*

specifies verbose output. Script commands are interleaved with the debugger output.

*filename*

specifies the script file. Use these file extensions to identify the script type:

*.ds*

for DS-5 scripts.

*.cmm*, *.t32*

for CMM scripts.

*.py*

for Jython scripts.

*args*

specifies the number of arguments (zero or more) to pass to the script (only supported for Jython scripts).

#### Example 1-194 Examples

```
source myScripts\myFile.ds      # Run DS-5 Debugger commands from myFile.ds.
source myScripts\myFile.cmm    # Run CMM-style commands from myFile.cmm.
source myScripts\myFile.t32    # Run CMM-style commands from myFile.t32.
source /v myFile.ds            # Run DS-5 Debugger commands from myFile.ds and
                               # display commands interleaved with debugger output.
source myScripts\myFile.py     # Run a Jython script from file myFile.py.
```

#### Related references

[1.2.4 Scripts on page 1-21.](#)

### 1.3.192 start

Sets a temporary breakpoint, calls the debugger run command, and then deletes the temporary breakpoint when it is hit. By default, the temporary breakpoint is set at the address of the global function `main()`.

You can use the `set debug-from` command to change the breakpoint location. If the breakpoint location cannot be found then the breakpoint is set at the image entry point.

This command records the ID of the breakpoint in a new debugger variable, `$n`, where `n` is a number. If `$n` is the last or second-to-last debugger variable, then you can also access the ID using `$` or `$$`, respectively.

---

**Note**

Control is returned as soon as the target is running. You can use the `wait` command to block the debugger from returning control until either the application completes or a breakpoint is hit.

---

#### Syntax

`start [args]`

Where:

*args*

Specifies the command-line arguments that are passed to the `main()` function in the application using the `argv` parameter. The name of the image is always implicitly passed in `argv[0]` and it is not necessary to pass this as an argument.

#### Example 1-195 Examples

---

```
start                                # Start running the target to the  
                                    # temporary breakpoint.
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

### 1.3.193 **stdin**

Specifies semihosting input requested by application code.

---

**Note**

This command is not required if you launch the debugger within Eclipse or if you use a telnet session to interact directly with the application.

---

#### **Syntax**

`stdin [input]`

Where:

*input*

Specifies semihosting input requested by application code. This must be terminated by `\n` to tell the debugger that the input is complete.

You can use this command before the input is required by the application code. All input is buffered by the debugger until requested and then discarded when the semihosting operation finishes.

#### **Example 1-196 Examples**

---

```
stdin 10000\n          # Pass the number 10000 to the application.
```

---

#### **Related references**

[1.2.22 Support on page 1-37.](#)

1.3.194 **step**

Steps through an application at the source level stopping on the first instruction of each source line including stepping into all function calls. You must compile your code with debug information to use this command successfully.

You can modify the behavior of this command with the `set step-mode` command.

**Syntax**

`step [count]`

Where:

*count*

Specifies the number of source lines to execute.

**Note**

Execution stops immediately if a breakpoint is reached, even if fewer than *count* source lines are executed.

**Example 1-197 Examples**

<code>step</code>	<code># Execute one source line.</code>
<code>step 5</code>	<code># Execute five source lines.</code>

**Related references**

- [1.3.195 \*stepi\* on page 1-239.](#)
- [1.3.196 \*steps\* on page 1-240.](#)
- [1.3.100 \*next\* on page 1-144.](#)
- [1.3.101 \*nexti\* on page 1-145.](#)
- [1.3.102 \*nexts\* on page 1-146.](#)
- [1.2.2 \*Execution control\* on page 1-19.](#)

### 1.3.195 **stepi**

Steps through an application at the instruction level including stepping into all function calls.

#### **Syntax**

`stepi` [*count*]

Where:

*count*

Specifies the number of instructions to execute.

---

#### **Note**

Execution stops immediately if a breakpoint is reached, even if fewer than *count* instructions are executed.

---

#### **Example 1-198 Examples**

---

<code>stepi</code>	# Execute one instruction.
<code>stepi 5</code>	# Execute five instructions.

---

#### **Related references**

[1.3.194 \*step\* on page 1-238.](#)  
[1.3.196 \*steps\* on page 1-240.](#)  
[1.3.100 \*next\* on page 1-144.](#)  
[1.3.101 \*nexti\* on page 1-145.](#)  
[1.3.102 \*nexts\* on page 1-146.](#)  
[1.2.2 \*Execution control\* on page 1-19.](#)

1.3.196 steps

Steps through an application at the source level stopping on the first instruction of each source statement (for example, statements in a `for()` loop) including stepping into all function calls. You must compile your code with debug information to use this command successfully.

Syntax

You can modify the behavior of this command with the `set step-mode` command.

`steps_ [count]`

Where:

*count*

Specifies the number of source statements to execute.

Note

Execution stops immediately if a breakpoint is reached, even if fewer than *count* source statements are executed.

Example 1-199 Examples

<code>steps</code>	<code># Execute one source statement.</code>
<code>steps 5</code>	<code># Execute five source statements.</code>

Related references

- [1.3.194 step](#) on page 1-238.
- [1.3.195 stepi](#) on page 1-239.
- [1.3.100 next](#) on page 1-144.
- [1.3.101 nexti](#) on page 1-145.
- [1.3.102 nexts](#) on page 1-146.
- [1.2.2 Execution control](#) on page 1-19.



### 1.3.197 stop, interrupt

Interrupts the target and stops the application if it is running.

#### Syntax

```
interrupt
```

```
stop
```

#### Example 1-200 Examples

---

```
interrupt      # Interrupt application.  
stop          # Interrupt application.
```

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

### 1.3.198 symbol-file, file

Loads debug information from an image into the debugger and records the entry point address for future use by the `run` and `start` commands. Subsequent use of the `file` command discards existing information before loading the new debug information. The debug information is loaded when required by the debugger.

If you want to append debug information instead of replacing it, you can use the `add-symbol-file` command.

---

**Note**

This command does not set the PC register.

---

#### Syntax

```
file [filename] [offset] [-s section address]...
```

```
symbol-file [filename] [offset] [-s section address]...
```

Where:

*filename*

Specifies the image. If no *filename* is specified then the debug information is discarded.

*offset*

Specifies the offset that is added to all addresses within the image. If *offset* is not specified then the default for:

- An image is zero.
- A shared library is the load address of the library. If the application has not loaded the specified library then the request is pended until the library is loaded and the offset can be determined.

*s*

For relocatable objects, this specifies the address to which a section was relocated.

*section*

Specifies the name of the relocated section.

*address*

Specifies the address of the section. This can be either an address or an expression that evaluates to an address.

#### Example 1-201 Examples

```
file "myFile.axf"           # Load debug information on demand.
file "images\myFile.axf"   # Load debug information on demand.
file                       # Discard debug information.
file "myFile.axf" -s .text 0x1000 -s .data 0x2000
                           # Load debug information on demand with
                           # section .text relocated to 0x1000 and
                           # section .data relocated to 0x2000.
```

#### Related references

[1.2.7 Files on page 1-24.](#)

### 1.3.199 tbreak

Sets an execution breakpoint at a specific location and deletes the breakpoint when it is hit. You can also specify a conditional breakpoint by using an `if` statement that stops only when the conditional expression evaluates to `true`.

This command records the ID of the breakpoint in a new debugger variable, `$n`, where `n` is a number. You can use this variable, in a script, to delete or modify the breakpoint behavior. If `$n` is the last or second-to-last debugger variable, then you can also access the ID using `$` or `$$`, respectively.

---

**Note**

Breakpoints that are set within a shared object or kernel module become pending when the shared object or kernel module is unloaded.

---

Use `set breakpoint` to control the automatic breakpoint behavior when using this command.

#### Syntax

```
tbreak [-d] [-p] [[filename:]Location]*address [thread|core number...] [if
expression]
```

Where:

`d`

disables the breakpoint immediately after creation.

`p`

specifies whether or not the resolution of an unrecognized breakpoint location results in a pending breakpoint being created.

`filename`

specifies the file.

`Location`

specifies the location:

`line_num`

is a line number.

`function`

is a function name.

`Label`

is a label name.

`+offset/-offset`

specifies the line offset from the current location.

`address`

specifies the address. This can be either an address or an expression that evaluates to an address.

`number`

specifies one or more threads or processors to apply the breakpoint to. You can use `$thread` to refer to the current thread. If `number` is not specified then all threads are affected.

`expression`

specifies an expression that is evaluated when the breakpoint is hit.

If no arguments are specified then a breakpoint is set at the PC.

#### Example 1-202 Examples

```
tbreak *0x8000          # Set breakpoint at address 0x8000.
tbreak *0x8000 thread $thread # Set breakpoint at address 0x8000 on
                             # current thread.
tbreak *0x8000 thread 1 3  # Set breakpoint at address 0x8000 on
                             # threads 1 and 3.
tbreak main              # Set breakpoint at address of main().
tbreak SVC_Handler       # Set breakpoint at address of label SVC_Handler.
```

```
tbreak +1          # Set breakpoint at address of next source line.  
tbreak my_File.c:main  # Set breakpoint at address of main() in my_File.c.  
tbreak my_File.c:8    # Set breakpoint at address of line 8 in my_File.c.  
tbreak function1 if x>0  # Set conditional breakpoint that stops when x>0.
```

---

## Related references

- [1.3.7 break on page 1-50.](#)
- [1.3.43 hbreak on page 1-85.](#)
- [1.3.200 thbreak on page 1-245.](#)
- [1.3.112 resolve on page 1-157.](#)
- [1.3.15 clear on page 1-58.](#)
- [1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.200 thbreak

Sets a hardware execution breakpoint at a specific location and deletes the breakpoint when it is hit. You can also specify a conditional breakpoint by using an `if` statement that stops only when the conditional expression evaluates to `true`.

This command records the ID of the breakpoint in a new debugger variable, `$n`, where `n` is a number. You can use this variable, in a script, to delete or modify the breakpoint behavior. If `$n` is the last or second-to-last debugger variable, then you can also access the ID using `$` or `$$`, respectively.

- The number of hardware breakpoints are usually limited. If you run out of hardware breakpoints then delete or disable one that you are no longer using.
- Breakpoints that are set within a shared object or kernel module become pending when the shared object or kernel module is unloaded.

#### Syntax

```
thbreak [-d] [-p] [[filename:]location]*address [thread|core number...] [vmid vmid]
[if expression]
```

Where:

`d`

disables the breakpoint immediately after creation.

`p`

specifies whether or not the resolution of an unrecognized breakpoint location results in a pending breakpoint being created.

*filename*

specifies the file.

*location*

specifies the location:

*line\_num*

is a line number.

*function*

is a function name.

*label*

is a label name.

*+offset/-offset*

specifies the line offset from the current location.

*number*

specifies one or more threads or processors to apply the breakpoint to. You can use `$thread` to refer to the current thread. If *number* is not specified then all threads are affected.

*address*

specifies the address. This can be either an address or an expression that evaluates to an address.

*vmid*

specifies the *Virtual Machine ID* (VMID) to apply the breakpoint to. This can be either an integer or an expression that evaluates to an integer.

*expression*

specifies an expression that is evaluated when the breakpoint is hit.

If no arguments are specified then a hardware breakpoint is set at the next instruction.

#### Example 1-203 Examples

```
thbreak *0x8000          # Set breakpoint at address 0x8000.
thbreak *0x8000 thread $thread # Set breakpoint at address 0x8000 on
                                # current thread.
thbreak *0x8000 thread 1 3    # Set breakpoint at address 0x8000 on
                                # threads 1 and 3.
thbreak main                 # Set breakpoint at address of main().
```

<code>thbreak SVC_Handler</code>	# Set breakpoint at address of label SVC_Handler.
<code>thbreak +1</code>	# Set breakpoint at address of next source line.
<code>thbreak my_File.c:main</code>	# Set breakpoint at address of main(), my_File.c.
<code>thbreak my_File.c:8</code>	# Set breakpoint at address of line 8, my_File.c.
<code>thbreak function1 if x&gt;0</code>	# Set conditional breakpoint that stops when x>0.

---

## Related references

[1.3.7 break](#) on page 1-50.

[1.3.43 hbreak](#) on page 1-85.

[1.3.199 tbreak](#) on page 1-243.

[1.3.112 resolve](#) on page 1-157.

[1.3.15 clear](#) on page 1-58.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.201 thread, core

Displays information about the current thread or processor.

It displays:

- The unique *id* number assigned by the debugger.
- The thread or processor state (for example stopped or running).
- The current stack frame, including function names and source line numbers.

#### Syntax

```
thread [id]
```

```
core [id]
```

Where:

*id*

Specifies the unique thread or processor number.

If *id* is not specified, then the current thread or processor is displayed. You can use `info cores`, `info processes`, or `info threads` to display the *id* numbers.

If *id* is specified, then the debugger switches control to that thread or processor before displaying the information. Registers and call stacks are associated with a particular thread or processor. This means that switching context also switches the registers and call stack to those belonging to the current thread or processor.

#### Example 1-204 Examples

---

```
thread 699          # Set current thread to number 699.
core 2              # Set current processor to number 2.
```

---

#### Related references

[1.2.2 Execution control](#) on page 1-19.

[1.2.6 Operating System \(OS\)](#) on page 1-23.

[1.1.3 Expressions within DS-5](#) on page 1-10.

[1.1.4 Built-in functions within DS-5 expressions](#) on page 1-11.

[1.1.8 printf\(\) style format string](#) on page 1-15.

### 1.3.202 thread apply, core apply

Switches control to a specific thread or processor to execute a debugger command and then switches back to the original state.

If an error occurs then the debugger stops processing the command and switches back to the original state.

#### Syntax

```
thread apply {all|id} command
```

```
core apply {all|id} command
```

Where:

*all*

Specifies all threads or all processors.

*id*

Specifies the unique thread or processor number. You can use `info cores`, `info processes`, or `info threads` to display the *id* numbers.

*command*

Specifies the debugger command that you want to execute.

If *all* is specified then the command is executed on each thread or processor successively before switching back.

#### Example 1-205 Examples

```
thread apply all print /x $pc      # Cycle through all threads and print address  
                                   # in PC register (hexadecimal).
```

#### Related references

[1.2.2 Execution control on page 1-19.](#)

[1.2.6 Operating System \(OS\) on page 1-23.](#)



### 1.3.203 trace clear

Clears the trace on the specified trace capture device. If no device is specified, clears the trace on all connected trace capture devices.

---

**Note**

Trace capture devices do not support clearing while capture is active.

---

#### Syntax

```
trace clear [trace_capture_device]
```

Where:

*trace\_capture\_device* Specifies the trace capture device.

If no *trace\_capture\_device* is specified, then all trace capture devices are cleared.

---

#### Example 1-206 Examples

---

```
trace clear          # Stops all connected trace capture devices.  
trace clear ETB      # Stops trace capture device named ETB.
```

---

#### Related references

[1.2.3 Tracing on page 1-21.](#)

### 1.3.204 trace dump

Dumps trace data to a directory, along with target trace configuration metadata.

#### Syntax

```
trace dump output_path [-option] [trace_capture_device|trace_source]...
```

Where:

<i>output_path</i>	Specifies the destination of the trace dump. It creates a directory named <i>output_path</i> . It creates the metadata and trace data within this directory. It generates an error if this directory already exists.
<i>option</i>	<p><b>raw</b> Dumps raw data. Raw data is the captured trace data with trace device specific formatting. The raw option only applies to trace capture devices.</p> <p><b>no_metadata</b> Suppresses the metadata.</p> <p><b>no_tracedata</b> Suppresses the trace data.</p> <p><b>split_file_size=&lt;value&gt;</b> Specifies the maximum file size (in bytes) of the trace data files generated by the <code>trace dump</code> command. If the size of the file exceeds this amount, a new trace data file is generated. Specify -1 to keep trace data in a single file. Default value is 1073741824. Minimum value is 65536.</p>
<i>trace_capture_device</i>	Specifies the trace capture device.
<i>trace_source</i>	Specifies a trace source.

- If no *trace\_capture\_device* or *trace\_source* is specified, then all trace capture device buffers are dumped.
- If a trace capture device is specified and a trace source from that device is also specified then the trace data for that source will be dumped twice. Once within the complete buffer for the device and again as a dump of just the specified trace source.

#### Example 1-207 Examples

```
trace dump TraceDump
# Creates a directory named TraceDump.
# Dumps the buffers of all active trace capture devices into TraceDump,
# along with the metadata describing them.

trace dump TraceDump ETB
# ETB is the name of a trace capture device.
# Dumps the contents of the ETB buffer to TraceDump.

trace dump TraceDump DSTREAM -raw
# DSTREAM is the name of a trace capture device.
# Dumps the contents of the DSTREAM buffer to TraceDump in raw format.

trace dump TraceDump PTM_1
# PTM_1 is the name of a trace source.
# Extracts the trace data for PTM_1 from the trace device buffer
# and dumps it to TraceDump.

trace dump TraceDump ETB -no_metadata
# Dumps the contents of the ETB buffer to TraceDump, but does not write the metadata.

trace dump TraceDump ETB -no_tracedata
# Writes the metadata for ETB in TraceDump, but does not write the trace data.

trace dump TraceDump ETB -no_tracedata -no_metadata
# Creates an empty directory named TraceDump.
```

## Related references

[1.2.3 Tracing on page 1-21.](#)

### 1.3.205 trace info

Displays details about trace capture devices and trace sources.

#### Syntax

```
trace info [-option] [trace_capture_device|trace_source]
```

Where:

*trace\_capture\_device* specifies the trace capture device.

*trace\_source* specifies the trace capture source.

If no *trace\_capture\_device* or *trace\_source* is specified, then all trace capture devices and sources are displayed.

*option* specifies how information is displayed:  
**showdisabled**  
displays disabled devices and sources.

#### Example 1-208 Examples

```
trace info
# Display all the enabled trace capture devices and trace sources.

trace info -showdisabled
# Display all trace capture devices and trace sources including disabled ones.

trace info ETB
# Display the trace capture device or trace source named ETB.
```

#### Related references

[1.2.3 Tracing on page 1-21.](#)

[1.3.169 show dtst-temporary-directory on page 1-215.](#)

[1.3.134 set dtst-temporary-directory on page 1-179.](#)

### 1.3.206 trace list

Lists the trace capture devices and trace sources.

#### Syntax

```
trace list
```

#### Example 1-209 Examples

```
trace list          # List all of the trace capture devices and trace sources
```

#### Related references

[1.2.3 Tracing on page 1-21.](#)

### 1.3.207 trace report

Produces a trace report for the currently selected core.

#### Syntax

```
trace report [option = value]...
```

Where:

*option* Specifies the name of a trace report option to set.  
*value* Specifies the new value of the option.

The option names are not case sensitive. The options are:

**OUTPUT\_PATH**

Specifies the directory to save the trace report files in. The default value is the current working directory.

**FILE**

Specifies the base file name of the trace report. If trace report generates multiple files, then each file will have a zero-padded number inserted before the file name extension. The default value is `Trace_Report.txt`.

**SPLIT\_FILE\_SIZE**

Specifies the maximum file size, in bytes, that trace report generates. If the file size is larger than `SPLIT_FILE_SIZE`, trace report generates a new report file. Specifying `-1` indicates that there is no maximum file size, so the trace report is not split into separate files. The default value is `1073741824`.

**START**

Specifies the position in the trace buffer to start decoding trace from. The default value is 0, which starts the decoding from the beginning of the buffer.

**END**

Specifies the position in the trace buffer to stop decoding trace. Specifying `-1` indicates that the trace report should decode to the end of the buffer. The default value is `-1`.

**FORMAT**

Specifies the format of the report. Valid values are CSV (Comma Separated Values) and TSV (Tab Separated Values). The default value is TSV. Format values are not case sensitive.

**SOURCE**

Specifies the trace source to report. Execute the trace list command to view the list of available trace sources. The default is to dump the trace source associated with the current core.

**CORE**

Specifies the core to report. Execute the `info cores` command to view the list of cores available. This option is analogous to the `SOURCE` option, except that the source for the given core will be discovered automatically. You can specify either a `SOURCE` or `CORE` but not both.

**CONFIG**

Specifies a configuration file. This is used to specify decoding details for STM and ITM trace sources. The default configuration is to decode all Ports, Masters, and Channels as binary data. This file is created by exporting it from the Event Viewer Settings dialog.

**COLUMNS**

Specifies a comma separated list of columns to include in the report. The column names are not case sensitive.

Valid values for instruction trace sources are:

**RECORD\_TYPE**

The type of the record.

**INDEX**

The index of the instruction. Canceled instructions do not have an index.

**ADDRESS**

The address of the instruction.

**OPCODE**

The opcode of the instruction, in hexadecimal, with no prefix.

**OPCODE\_WITH\_PREFIX**

The opcode of the instruction, in hexadecimal, with a `0x` prefix.

**CYCLES**

The cycle count of the instruction.

**DETAIL**

For instruction records, this gives the disassembly of the instruction. For other record types, this gives various information.

**FUNCTION**

The function of the instruction.

**BRANCH**

This is true if the instruction is a branch. Otherwise, this is false.

For instruction trace sources, the default is ADDRESS, OPCODE, DETAIL.

Valid values for STM trace sources are:

**MASTER**

The master number can be 0 to 128.

**CHANNEL**

The channel number can be 0 to 65535.

**TIMESTAMP**

An approximate timestamp for each record, if available.

**SIZE**

Size of the row in bytes.

**DATA**

The row data.

For STM trace sources, the default is MASTER, CHANNEL, DATA.

Valid values for ITM trace sources are:

**PORT**

The port number can be 0 to 255.

**TIMESTAMP**

An approximate timestamp for each record, if available.

**SIZE**

Size of the row in bytes.

**DATA**

The row data.

For ITM trace sources, the default is PORT, DATA.

**HEADERS**

Specifies whether to include the column headers in the report. The default value is false. To include headers, specify true.

**Example 1-210 Examples**

```
trace report
# Produces a default trace report named "Trace_Report.txt" in the current working
# directory.
# Instruction trace for the current core is reported.

trace report FILE=MyReport.csv OUTPUT_PATH=C:/files/trace_reports FORMAT=CSV
# Produces a comma separated value trace report named "MyReport.csv"
# in C:/files/trace_reports.

trace report COLUMNS=RECORD_TYPE,INDEX,ADDRESS,OPCODE_WITH_PREFIX,DETAIL HEADERS=true
# Produces a trace report with alternate columns.
# The first line of the report will contain the column names.

trace report SOURCE=ITM COLUMNS=PORT,SIZE,DATA HEADERS=true
# Produces an ITM trace report with alternate columns.
# The first line of the report will contain the column names.
```

## Related references

[1.2.3 Tracing on page 1-21.](#)

### 1.3.208 **trace start**

Starts the trace capture on the specified trace capture device. If no device is specified, starts trace capture on all connected trace capture devices.

#### Syntax

```
trace start [trace_capture_device]
```

Where:

*trace\_capture\_device* Specifies the trace capture device.

If no *trace\_capture\_device* is specified, then all trace capture devices are started.

#### Example 1-211 Examples

---

```
trace start          # starts all connected trace capture devices
trace start ETB      # starts trace capture device named ETB
```

---

## Related references

[1.2.3 Tracing on page 1-21.](#)

### 1.3.209 **trace stop**

Stops the trace capture on the specified trace capture device. If no device is specified, stops trace capture on all connected trace capture devices.

#### Syntax

```
trace stop [trace_capture_device]
```

Where:

*trace\_capture\_device* Specifies the trace capture device.

If no *trace\_capture\_device* is specified, then all trace capture devices are stopped.

#### Example 1-212 Examples

---

```
trace stop          # stops all connected trace capture devices
trace stop ETB      # stops trace capture device named ETB
```

---

## Related references

[1.2.3 Tracing on page 1-21.](#)

### 1.3.210 **unset**

Modifies the current debugger settings.

#### **Syntax**

`unset option`

Where:

`option`

Specifies additional options:

`substitute-path [path]`

Deletes all the substituted source paths. If *path* is specified then only the substitution for *path* is deleted.

`semihosting heap-base`

Deletes the base address of the heap.

`semihosting heap-limit`

Deletes the end address of the heap.

`semihosting stack-base`

Deletes the base address of the stack.

`semihosting stack-limit`

Deletes the end address of the stack.

`semihosting top-of-memory`

Deletes the top of memory.

#### **Example 1-213 Examples**

---

```
unset substitute-path          # Delete all substitution paths
```

---

#### **Related references**

[1.2.22 Support on page 1-37.](#)



### 1.3.211 **unsilence**

Enables the printing of stop messages for a specific breakpoint.

#### **Syntax**

`unsilence [number]`

Where:

*number*

Specifies the breakpoint number. This is the number assigned by the debugger when it is set. You can use `info breakpoints` to display the number and status of all breakpoints and watchpoints.

If no *number* is specified then all stop messages are enabled.

#### **Example 1-214 Examples**

---

```
unsilence 2    # Enable printing of stop messages for breakpoint 2
unsilence $    # This applies to the breakpoint whose number is in
               # the most recently created debugger variable
```

---

#### **Related references**

[1.2.1 Breakpoints and watchpoints on page 1-17.](#)

### 1.3.212 up

Moves and displays the current frame pointer up the call stack towards the top frame. It also displays the function name and source line number for the specified frame.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

up [*offset*]

Where:

*offset*

Specifies a frame offset from the current frame pointer in the call stack. If no offset is specified then the default is one.

---

#### Example 1-215 Examples

---

up	# Move and display information 1 frame up from current frame pointer
up 2	# Move and display information 2 frames up from current frame pointer

---

#### Related references

[1.2.5 Call stack on page 1-22.](#)

### 1.3.213 up-silently

Moves the current frame pointer up the call stack towards the top frame.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

up-silently [*offset*]

Where:

*offset*

Specifies a frame offset from the current frame pointer in the call stack. If no offset is specified then the default is one.

#### Example 1-216 Examples

---

up-silently	# Move 1 frame up from current frame pointer
up-silently 2	# Move 2 frames up from current frame pointer

---

#### Related references

[1.2.5 Call stack on page 1-22.](#)

### 1.3.214 wait

Instructs the debugger to wait until the target stops.

#### Syntax

```
wait [time-out[ms | s]]
```

Where:

*time-out*

Specifies the period of time.

ms

Specifies the time in milliseconds. This is the default.

s

Specifies the time in seconds.

#### Example 1-217 Examples

---

<code>wait 1000</code>	<code># Wait or time-out after 1 second</code>
<code>wait 0.5s</code>	<code># Wait or time-out after half a second</code>

---

#### Related references

[1.2.2 Execution control on page 1-19.](#)

### 1.3.215 watch

Sets a watchpoint for a data symbol. The debugger stops the target when the memory at the specified address is written.

This command records the ID of the watchpoint in a new debugger variable, `$n`, where `n` is a number. You can use this variable, in a script, to delete or modify the watchpoint behavior. If `$n` is the last or second-to-last debugger variable, then you can also access the ID using `$` or `$$` respectively.

Watchpoints are only supported on scalar values.

Some targets do not support watchpoints. Currently you can only set a watchpoint on:

- A hardware target using a debug hardware agent.
- Linux applications using *gdbserver* or *undodb-server*.

The availability of watchpoints depends on the hardware target. In the case of Linux application debug, the availability of watchpoints also depends on the Linux kernel version and configuration.

The address of the instruction that triggers the watchpoint might not be the address shown in the PC register. This is because of pipelining effects.

#### Syntax

```
watch [-d] [-p] {[filename:]symbol | *address} [vmid vmid]
```

Where:

`-d`

Disables the watchpoint immediately after creation.

`-p`

Specifies whether or not the resolution of an unrecognized watchpoint location results in a pending watchpoint being created.

*filename*

Specifies the file.

*symbol*

Specifies a global/static data symbol. For arrays or structs you must specify the element or member.

*address*

Specifies the address. This can be either an address or an expression that evaluates to an address.

*vmid*

Specifies the Virtual Machine ID (VMID) to apply the breakpoint to. This can be either an integer or an expression that evaluates to an integer.

#### Example 1-218 Examples

```
watch myVar1          # Set write watchpoint on myVar1
watch *0x80D4         # Set write watchpoint on address 0x80D4
```

#### Related references

[1.3.121 rwatch](#) on page 1-166.

[1.3.16 clearwatch](#) on page 1-59.

[1.3.5 awatch](#) on page 1-48.

[1.2.1 Breakpoints and watchpoints](#) on page 1-17.

### 1.3.216 **whatis**

Displays the data type of an expression.

#### **Syntax**

`whatis [expression]`

Where:

*expression*

Specifies an expression. If no *expression* is specified then the last expression is repeated.

---

#### **Note**

---

This command does not execute the expression.

---

#### **Example 1-219 Examples**

---

<code>whatis 4+4</code>	<code># Display data type of expression result</code>
<code>whatis myVar</code>	<code># Display data type of variable (myVar)</code>

---

### 1.3.217 where, backtrace, info stack

Displays a numbered list of the calling stack frames including the function names and source line numbers. You can use `set backtrace` to control the default call stack display settings.

---

**Note**

Each frame is assigned a number that increases from the bottom frame (zero) through the call stack to the top frame that is the start of the application.

---

#### Syntax

```
info stack [n | -n] [full]
```

```
backtrace [n | -n] [full]
```

```
where [n | -n] [full]
```

Where:

- n* Specifies *n* frames from the bottom of the call stack.
- n* Specifies *n* frames from the top of the call stack.
- full* Specifies the additional display of local variables.

#### Example 1-220 Examples

---

```
info stack           # Display call stack
backtrace -5        # Display top 5 frames of the call stack
backtrace full      # Display call stack including local variables
where               # Display call stack
```

---

#### Related references

- [1.2.5 Call stack on page 1-22.](#)
- [1.2.15 Information on page 1-29.](#)

### 1.3.218 while

Enables you to write scripts with conditional loops that execute debugger commands.

#### Syntax

```
while condition
...
optional_commands
...
end
```

Where:

#### *condition*

Specifies a conditional expression. Follow the **while** statement with one or more debugger commands that execute repeatedly while *condition* evaluates to true.

#### *optional\_commands*

Specifies optional commands that can also be used inside the **while** statement to change the loop behavior:

#### *loop\_break*

Exit the loop.

#### *loop\_continue*

Skip the remaining commands and return to the start of the loop.

Enter each debugger command on a new line and terminate the **while** command by using the **end** command.

#### Example 1-221 Examples

```
# Define a while loop containing commands to conditionally execute
# myVar is a variable in the application code
while myVar<10
    step
    wait
    x
    set myVar++
end
```

#### Related references

[1.2.4 Scripts on page 1-21.](#)



### 1.3.219 x

Displays the content of memory at a specific address.

#### Syntax

`x[/flag]...[/flag]...[address]`

Where:

*flag*

Specifies additional flags:

*count*

Specifies the number of values to display. If none specified, then the default is 1.

Size of memory:

**b**

1 byte

**h**

2 bytes

**w**

4 bytes (default)

**g**

8 bytes.

Output format:

**x**

hexadecimal (casts the value to an unsigned integer prior to printing in hexadecimal)

**d**

signed decimal

**u**

unsigned decimal

**o**

octal

**t**

binary

**a**

absolute hexadecimal address

**c**

character

**f**

floating-point

**i**

assembler instruction

————— **Note** —————

If no output format is specified then the initial default is *x* , unless preceded by another command using output format options in which case the same format is retained.

*address*

Specifies the address. This can be either an address, a symbol name, or an expression that evaluates to an address. If no *address* is specified then the default value is used. Some commands that access memory can set this default value. For example, *x*, *print*, *output*, and *info breakpoints*.

————— **Note** —————

This command sets a default address variable to the location after the last accessed address.

## Example 1-222 Examples

---

```
x 0x8000      # Display memory at address 0x8000
x/3wx 0x8000  # Display 3 words of memory from address 0x8000 (hexadecimal)
x/4b $SP      # Display 4 bytes of memory from address in SP register
x/4i $PC      # Display 4 instructions from address in PC register
x /h 0x8000   # Read a half-word from address 0x8000
```

---

### Related references

[1.2.9 Memory](#) on page 1-26.

[1.2.14 Display](#) on page 1-29.

[1.1.3 Expressions within DS-5](#) on page 1-10.

[1.1.4 Built-in functions within DS-5 expressions](#) on page 1-11.

[1.1.8 printf\(\) style format string](#) on page 1-15.

## Chapter 2

# CMM-style commands supported by the debugger

Describes how to use each of the commands with examples.

It contains the following sections:

- [2.1 Conformance and usage of CMM-style commands](#) on page 2-268.
- [2.2 CMM-style commands groups: All](#) on page 2-269.
- [2.3 CMM-style commands listed in alphabetical order](#) on page 2-271.

## 2.1 Conformance and usage of CMM-style commands

CMM-style commands are a small subset of commands, sufficient for running target initialization scripts. CMM is a scripting language supported by some third-party debuggers.

To execute CMM-style commands you must create a debugger script file containing the CMM-style commands and then use the DS-5 Debugger source command to run the script.

---

### Note

For full debug support, ARM® recommends that you use the DS-5 Debugger commands. See [DS-5 Debugger Commands on page 1-8](#) for more information.

---

### Syntax of CMM-style commands

Many commands accept arguments and flags using the following syntax:

```
command [argument] [/i>flag]. . .
```

A flag acts as an optional switch and is introduced with a forward slash character. Where a command supports flags, the flags are described as part of the command syntax.

---

### Note

Commands are not case sensitive. Abbreviations are underlined.

---

### Usage of CMM-style commands

The commands you submit to the debugger must conform to the following rules:

- Each command line can contain only one debugger command.
- When referring to symbols, you must use the same case as the source code.

Many commands can be abbreviated. For example, `break.set` can be abbreviated to `b.s`. The syntax definition for each command shows how it can be abbreviated by underlining it, for example, `break.set`.

In the syntax definition of each command:

- Square brackets [ . . . ] enclose optional parameters.
- Braces { . . . } enclose required parameters.
- A vertical pipe | indicates alternatives from which you must choose one.
- Parameters that can be repeated are followed by an ellipsis ( . . . ).

Do not type square brackets, braces, or the vertical pipe. Replace parameters in italics with the value you want. When you supply more than one parameter, use the separator as shown in the syntax definition for each command. If a parameter is a name that includes spaces, enclose it in double quotation marks.

Descriptive comments can be placed either at the end of a command or on a separate line. You can use either `//` or `;` to identify a descriptive comment.

### Using expressions with CMM-style commands

Some commands accept expressions. In an expression, you can access the content of registers and variables by using a function-like notation, for example:

```
print "The result of my expression is: " v.value(myVar)+4+r(R0)
```

Where `v.value()` can be used to access the content of a variable and `r()` can be used to access the content of a register.

## 2.2 CMM-style commands groups: All

Displays all the CMM-style commands by group.

This section contains the following subsections:

- [2.2.1 Controlling breakpoints on page 2-269.](#)
- [2.2.2 Controlling data and display settings on page 2-269.](#)
- [2.2.3 Controlling images, symbols, and libraries on page 2-269.](#)
- [2.2.4 Controlling target execution and connections on page 2-270.](#)
- [2.2.5 Displaying the call stack and associated variables on page 2-270.](#)
- [2.2.6 Controlling the debugger and program information on page 2-270.](#)
- [2.2.7 Supporting commands on page 2-270.](#)

### 2.2.1 Controlling breakpoints

List of CMM-style commands that enable you to control the starting and stopping of the debugger using breakpoints.

`break.delete`

Deletes a breakpoint at the specified address.

`break.disable`

Disables a breakpoint at the specified address.

`break.enable`

Enables a breakpoint at the specified address.

`break.set`

Sets a software breakpoint at the specified address.

Type `help` followed by a command name for more information on a specific command.

### 2.2.2 Controlling data and display settings

List of all the CMM-style commands that enable you to display specific output on the command-line.

`data.dump`

Displays data at a specific address or address range.

`data.set`

Writes data to memory.

`print`

Concatenates the results of one or more expressions.

`register.set`

Sets the value of a register.

`var.global`

Displays all global variables.

`var.local`

Displays all local variables in a function.

`var.print`

Concatenates the results of one or more expressions.

Type `help` followed by a command name for more information on a specific command.

### 2.2.3 Controlling images, symbols, and libraries

List of all the CMM-style commands that enable you to load files:

`data.load.binary`

Loads a binary image file.

`data.load.elf`

Loads an ARM *Executable and Linking Format* (ELF) file.

Type `help` followed by a command name for more information on a specific command.

#### 2.2.4 Controlling target execution and connections

List of all the CMM-style commands that enable you to connect to a target:

`break`  
Stops running the target.

`go`  
Starts running the device.

`system.down`  
Disconnects the debugger from the target.

`system.up`  
Connects to the specified target.

Type `help` followed by a command name for more information on a specific command.

#### 2.2.5 Displaying the call stack and associated variables

List of all the CMM-style commands that enable you to display stacks and variables:

`var.frame`  
Displays the stack frame.

Type `help` followed by a command name for more information on a specific command.

#### 2.2.6 Controlling the debugger and program information

List of all the CMM-style commands that enable you to control scripts:

`var.new`  
Creates a new script variable and zero-initializes it. Script variables are for use at runtime only.

`var.set`  
Sets and displays the value of an existing script variable.

Type `help` followed by a command name for more information on a specific command.

#### 2.2.7 Supporting commands

List of all the miscellaneous CMM-style commands

`help`  
Displays help information for a specific command or a group of commands listed according to specific debugging tasks.

`wait`  
Pauses the execution of a script for a specified period of time.

Type `help` followed by a command name for more information on a specific command.

## 2.3 CMM-style commands listed in alphabetical order

Displays all the commands in alphabetical order.

This section contains the following subsections:

- [2.3.1 break](#) on page 2-272.
- [2.3.2 break.delete](#) on page 2-273.
- [2.3.3 break.disable](#) on page 2-274.
- [2.3.4 break.enable](#) on page 2-275.
- [2.3.5 break.set](#) on page 2-276.
- [2.3.6 data.dump](#) on page 2-277.
- [2.3.7 data.load.binary](#) on page 2-278.
- [2.3.8 data.load.elf](#) on page 2-279.
- [2.3.9 data.set](#) on page 2-280.
- [2.3.10 go](#) on page 2-281.
- [2.3.11 help](#) on page 2-282.
- [2.3.12 print](#) on page 2-283.
- [2.3.13 register.set](#) on page 2-284.
- [2.3.14 system.down](#) on page 2-285.
- [2.3.15 system.up](#) on page 2-286.
- [2.3.16 var.frame](#) on page 2-287.
- [2.3.17 var.global](#) on page 2-288.
- [2.3.18 var.local](#) on page 2-289.
- [2.3.19 var.new](#) on page 2-290.
- [2.3.20 var.print](#) on page 2-291.
- [2.3.21 var.set](#) on page 2-292.
- [2.3.22 wait](#) on page 2-293.

### 2.3.1 break

Stops running the target.

#### Syntax

break

#### Example 2-1 Examples

---

```
break          ; Stop running the target
```

---



### 2.3.2 **break.delete**

Deletes a breakpoint at the specified address.

#### **Syntax**

`break.delete expression`

Where:

*expression*

Specifies the breakpoint address. This can be either an address, a symbol name, or an expression that evaluates to an address. You can use the syntax `symbol\line` to refer to a specific source line offset from a symbol.

#### **Example 2-2 Examples**

---

```
break.delete 0x8000 ; Delete breakpoint at address 0x8000
break.delete main   ; Delete breakpoint at address of main()
break.delete main+4 ; Delete breakpoint 4 bytes after address of main()
break.delete main\2 ; Delete breakpoint 2 source lines after address of main()
```

---

### 2.3.3 **break.disable**

Disables a breakpoint at the specified address.

#### **Syntax**

`break.disable expression`

Where:

*expression*

Specifies the breakpoint address. This can be either an address, a symbol name, or an expression that evaluates to an address. You can use the syntax `symbol\line` to refer to a specific source line offset from a symbol.

#### **Example 2-3 Examples**

---

```
break.disable 0x8000 ; Disable breakpoint at address 0x8000
break.disable main  ; Disable breakpoint at address of main()
break.disable main+4 ; Disable breakpoint 4 bytes after address of main()
break.disable main\2 ; Disable breakpoint 2 source lines after address of main()
```

---

### 2.3.4 **break.enable**

Enables a breakpoint at the specified address.

#### **Syntax**

`break.enable. expression`

Where:

*expression*

Specifies the breakpoint address. This can be either an address, a symbol name, or an expression that evaluates to an address. You can use the syntax `symbol\line` to refer to a specific source line offset from a symbol.

#### **Example 2-4 Examples**

---

```
break.enable 0x8000 ; Enable breakpoint at address 0x8000
break.enable main  ; Enable breakpoint at address of main()
break.enable main+4 ; Enable breakpoint 4 bytes after address of main()
break.enable main\2 ; Enable breakpoint 2 source lines after address of main()
```

---

### 2.3.5 **break.set**

Sets a software breakpoint at the specified address.

#### **Syntax**

`break.set expression [/flag]`

Where:

*expression*

Specifies the breakpoint address. This can be either an address, a symbol name, or an expression that evaluates to an address. You can use the syntax `symbol\line` to refer to a specific source line offset from a symbol.

*/flag*

Specifies an additional flag:

disable

Disables the breakpoint immediately after setting it.

#### **Example 2-5 Examples**

---

```
break.set 0x8000      ; Set breakpoint at address 0x8000
break.set main        ; Set breakpoint at address of main()
break.set main+4      ; Set breakpoint 4 bytes after address of main()
break.set main\2      ; Set breakpoint 2 source lines after address of main()
```

---

### 2.3.6 data.dump

Displays data at a specific address or address range. By default, the display size is 0x20 bytes of data unless an address range is specified.

#### Syntax

`data.dump expression [/flag]...`

Where:

*expression*

Specifies the address or address range. This can be either an address, an address range, or an expression that evaluates to an address. You can use -- to specify an address range and ++ to specify an offset from an address.

*/flag*

Specifies additional flags:

*byte*

Formats the data as 1 byte

*word*

Formats the data as 2 bytes

*long*

Formats the data as 4 bytes

*quad*

Formats the data as 8 bytes

*width*

Specifies the number of columns

*nohex*

Suppresses the hexadecimal output

*noascii*

Suppresses the ASCII output

*le*

Formats the data as little endian

*be*

Formats the data big endian.

If no endianness is specified then the debugger looks for information at the start address of the loaded image otherwise little endian is used

#### Example 2-6 Examples

---

```
data.dump 0x8000           ; Display 0x20 bytes (default) from address 0x8000
data.dump 0x8000--0x8170   ; Display data in address range 0x8000--0x8170
data.dump r(PC)++0x100     ; Display 0x100 bytes from address in PC register
```

---

### 2.3.7 data.load.binary

Loads a binary image file.

---

**Note**

Loading a binary image does not change the program counter or any symbols that are currently loaded.

---

#### Syntax

`data.load.binary filename expression`

Where:

*filename*

Specifies the image file.

*expression*

Specifies the load address. This can be either an address, a symbol name, or an expression that evaluates to an address. If none specified, then the default is `0x0`.

#### Example 2-7 Examples

---

```
data.load.binary "myFile.bin"           ; Load image at address 0x0
data.load.binary "../my directory/myFile.bin" ; Load image at address 0x0
data.load.binary "myFile.bin" 0x8000      ; Load image at address 0x8000
```

---

### 2.3.8 data.load.elf

Loads an ARM *Executable and Linking Format* (ELF) file. This format is described in the ARM ELF specification and uses the .axf file extension.

---

**Note**

Loading an ELF image sets the program counter to the entry point of the image, if present.

---

#### Syntax

`data.load.elf filename [/flag]...`

Where:

*filename*

Specifies the image file.

*/flag*

Specifies additional flags:

`nocode`

Do not load code and data to the target.

`nosymbol`

Do not load symbols.

`noclear`

Symbol table is not cleared before loading the image.

`noreg`

Do not set register values, for example, PC and status registers.

#### Default

By default, this command loads code and data to the target, clears the existing symbol table before loading the new symbols into the symbol table, and sets the registers.

You must use additional flags if you want to modify the default options. For example, you must use `/noclear` if you want to load the symbols from multiple images.

#### Example 2-8 Examples

---

```
data.load.elf "myFile.axf"           ; Load image and symbols
data.load.elf "../my directory/myFile.axf" ; Load image and symbols
data.load.elf "myFile.axf" /nosymbol  ; Load image without symbols
```

---

### 2.3.9 data.set

Writes data to memory.

#### Syntax

`data.set address [%format] expression [/flag]...`

Where:

*address*

Specifies the address or address range. This can be either an address, an address range, or an expression that evaluates to an address. You can use `--` to specify an address range.

*format*

Specifies additional formatting:

`byte`

Formats the data as 1 byte

`word`

Formats the data as 2 bytes

`long`

Formats the data as 4 bytes

`quad`

Formats the data as 8 bytes

`float.ieee`

Formats the data as a 4 byte floating-point.

`float.ieee dbl`

Formats the data as an 8 byte floating-point.

`le`

Formats the data as little endian

`be`

Formats the data big endian.

If no endianness is specified then the debugger searches for this information in the loaded image otherwise little endian is used.

*expression*

Specifies the data.

*flag*

Specifies additional flags:

`verify`

Verifies the write operation.

`compare`

Compares the data in memory but does not write to memory.

#### Example 2-9 Examples

```
data.set r(PC) 0x10          ; Write 0x10 to address in PC register
data.set 0x100--0x3ff 0x0    ; Zero initialize memory
data.set 0x8000--0x100 %w 0x2000 /compare ; Compare data in memory with 0x2000
data.set 0x100--0x3ff 0x0 /verify ; Zero initialize memory and verify
```



### 2.3.10 go

Starts running the device.

#### Syntax

go

#### Example 2-10 Examples

---

```
go ; Start running the device
```

---

### 2.3.11 help

Displays help information for a specific command or a group of commands listed according to specific debugging tasks.

#### Syntax

```
help [command | group]
```

Where:

*command*

Specifies an individual command.

*group*

Specifies a group name for specific debugging tasks:

*all*

Displays all the commands

*breakpoints*

Controlling breakpoints.

*data*

Controlling data and display settings.

*files*

Controlling images, symbols and libraries.

*running*

Controlling target execution and stepping.

*stack*

Displaying the call stack and associated variables.

*status*

Controlling the default settings and program status information.

*support*

Additional supporting commands.

#### Example 2-11 Examples

---

```
help var.frame      # Display help information for var.frame command
help print          # Display help information for print command
help breakpoints    # Display group of breakpoint commands
help status         # Display group of status commands
```

---

### 2.3.12 **print**

Concatenates the results of one or more expressions.

#### **Syntax**

```
print [%printing_format] expression...
```

Where:

*printing\_format*

Specifies either [ascii | binary | decimal | hex]. If none specified then the default is decimal format.

*expression*

Specifies an expression that is evaluated and the result is returned.

#### **Example 2-12 Examples**

---

```
print %h r(R0)           ; Display R0 register in hexadecimal
print %d r(PC)           ; Display PC register in decimal
print 4+4                ; Display result of expression in decimal
print "Result is " 4+4    ; Display string and result of expression
print "Value is: " myVar  ; Display string and variable value
print v.value(myVar)      ; Display variable value
```

---

### 2.3.13 **register.set**

Sets the value of a register.

#### **Syntax**

`register.set name expression`

Where:

*name*

Specifies the name of a register.

*expression*

Specifies an expression that is evaluated and the result assigned to a register.

#### **Example 2-13 Examples**

---

```
register.set R0 15           ; Set value of R0 register to 15
register.set R0 (10*10)      ; Set value of R0 register to result of expression
register.set R0 r(R0)+1      ; Increment the value of R0 register
register.set PC main         ; Set value of PC register to address of main()
```

---

### 2.3.14 **system.down**

Disconnects the debugger from the target.

#### **Syntax**

system.down

#### **Example 2-14 Examples**

---

```
system.down                ; Disconnect from target
```

---

### 2.3.15 **system.up**

Connects to the specified target.

#### **Syntax**

system.up

---

#### **Example 2-15 Examples**

---

<code>system.up</code>	<code>; Connect to target</code>
------------------------	----------------------------------

---

### 2.3.16 **var.frame**

Displays the stack frame.

#### **Syntax**

`var.frame [%printing_format] [/flag]...`

Where:

*%printing\_format*

Specifies either [ascii | binary | decimal | hex]. If none specified then the default is decimal format.

*/flag*

Specifies additional flags:

novar

Disables the display of variables.

nocaller

Disables the display of function callers. This is the default.

args

Displays arguments. This is the default.

locals

Displays local variables.

caller

Displays function callers.

json

Specifies an output option to display messages in JSON format.

#### **Example 2-16 Examples**

---

```
var.frame /locals /caller      ; Display variables and function callers
var.frame %hex /locals /caller ; Display variables and callers in hexadecimal
var.frame /novar              ; Do not display any variables
var.frame /json               ; Display stack frame in JSON format
```

---

### 2.3.17 **var.global**

Displays all global variables.

#### **Syntax**

`var.global [%printing_format] [/flag]`

Where:

*%printing\_format*

Specifies either [ascii | binary | decimal | hex]. If none specified, then the default is decimal format.

*/flag*

Specifies an additional flag:

`json`

Specifies an output option to display messages in JSON format.

#### **Example 2-17 Examples**

---

```
var.global          ; Display all global variables
var.global %h       ; Display all global variables in hexadecimal
```

---



### 2.3.18 **var.local**

Displays all local variables in a function.

#### **Syntax**

`var.local [%printing_format] [/flag]`

Where:

*%printing\_format*

Specifies either [ascii | binary | decimal | hex]. If none specified, then the default is decimal format.

*/flag*

Specifies an additional flag:

`json`

Specifies an output option to display messages in JSON format.

#### **Example 2-18 Examples**

---

```
var.local           ; Display all local variables
var.local %h        ; Display all local variables in hexadecimal
```

---

### 2.3.19 **var.new**

Creates a new script variable and zero-initializes it. Script variables are for use at runtime only.

#### **Syntax**

`var.new \name`

Where:

*name*

Specifies the name of a script variable.

#### **Example 2-19 Examples**

---

```
var.new \myVar ; Create new script variable
```

---

### 2.3.20 var.print

Concatenates the results of one or more expressions.

#### Syntax

```
var.print [%printing_format] expression... [/flag]
```

Where:

*%printing\_format*

Specifies either [ascii | binary | decimal | hex]. If none specified, then the default is decimal format.

*expression*

Specifies an expression that is evaluated and the result is returned. You can use script variables in an expression by preceding the name with a backslash. Script variables are for use at runtime only.

*/flag*

Specifies an additional flag:

`json`

Specifies an output option to display messages in JSON format.

#### Example 2-20 Examples

---

```
var.print "Value is: " myVar1      ; Display string and myVar1
var.print myVar1 " and " myVar2    ; Display concatenated string/variables
var.print %h myVar1                ; Display myVar1 in hexadecimal
var.print \myVar                   ; Display value of script variable
```

---

### 2.3.21 **var.set**

Sets and displays the value of an existing script variable. It can also display the result of an expression. Script variables are for use at runtime only.

#### **Syntax**

```
var.set [\name=]expression
```

Where:

*\name*

Specifies the name of an existing script variable.

---

#### **Note**

---

If you specify the name of an existing script variable then you must use this command after the `var.new` command.

---

*expression*

Specifies an expression that is evaluated and the result is returned. If you specify an expression with the name option, then the value of that script variable is also updated with the result of the expression.

#### **Example 2-21 Examples**

---

```
var.set \myVar           ; Display value of script variable
var.set \myVar=3+3       ; Set value of script variable and display result
var.set 3+3              ; Display result
```

---

### 2.3.22 wait

Pauses the execution of a script for a specified period of time.

#### Syntax

```
wait number{m | s}
```

Where:

*number*

Specifies the period of time.

m

Specifies the time in milliseconds.

s

Specifies the time in seconds.

#### Example 2-22 Examples

---

```
wait 1s           ; Wait one second  
wait 0.5s        ; Wait half a second  
wait 1000m       ; Wait one thousand milliseconds
```

---

# Appendix A

## GNU Free Documentation License

It contains the following sections:

- *A.1 GNU Free Documentation License* on page Appx-A-295.
- *A.2 ADDENDUM: How to use this License for your documents* on page Appx-A-300.

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