LAUTERBACH
DEVELOPMENT TOOLS

General Commands Reference Guide S

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MANUAL

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History

29-Aug-23	Description for SYStem.CONFIG.DEBUGPORT updated.
23-Aug-23	New command sYmbol.List.Enum.
19-May-23	Updated the window sYmbol.ECA.List by introducing a new checkbox **LENient** and replacing the column **Time** with **signature**.
26-Apr-23	Renamed sYmbol.ECA.BINary.EXPORT to sYmbol.ECA.BINary.EXPORT.Decisions.
12-Aug-22	New option **/WinTOP** for the command STOre.
28-Jul-22	Updated description of sYmbol.MATCH Best.
13-Apr-22	New command sYmbol.DEOBFUSCATE.
24-Jan-22	New command sYmbol.ECA.BINary.PROCESS.
13-Dec-21	Added description for the command sYmbol.ECA.Init.
03-Dec-21	Added description for the command sYmbol.CLEANUP.AlignmentPaddings.
14-Jul-21	New commands: SYStem.MCDCommand and SYStem.MCDconfig.
19-Apr-21	New commands: sYmbol.ECA.BINary.CollapseAll, sYmbol.ECA.BINary.ExpandAll, sYmbol.ECA.BINary.FilterMapped, and sYmbol.ECA.BINary.FilterType.
19-Apr-21	Renamed sYmbol.ECA.SetDecisionState to sYmbol.ECA.BINary.SetDecisionState, and sYmbol.ECA.ViewDecisions to sYmbol.ECA.BINary.view.
19-Apr-21	Renamed sYmbol.ECA.EditDecision to sYmbol.ECA.BINary.EditDecision, and sYmbol.ECA.SetConditionOffset to sYmbol.ECA.BINary.SetConditionOffset.
08-Apr-21	Added description for commands: sYmbol.ECA.EditDecision, sYmbol.ECA.SetConditionOffset, sYmbol.ECA.SetDecisionState, and sYmbol.ECA.ViewDecisions.
24-Mar-21	Added description for the command sYmbol.DONE.
18-Jan-21	Added description for the command group SVE.

05-Jan-21	Added description for command sYmbol.List.SourceFunction.

SELFTEST — Execute selftest operation

Format: **SELFTEST**

Executes the **SELFTEST** operation. Error results are shown in the selected **AREA** window.

SETUP Setup commands

Using the **SETUP** command group, many parameters of the debugger or window system can be changed.

For additional **SETUP** commands, refer to the **SETUP** commands in **"PowerView Command Reference"** (ide_ref.pdf).

See also

- SETUP.ALIST
- SETUP.BreakTransfer
- SETUP.DIS
- SETUP.EMUPATH
- SETUP.IMASKASM
- SETUP.LISTCLICK
- SETUP.SIMULINK
- SETUP.StepAtBreakPoint
- SETUP.StepBeforeGo
- SETUP.StepNoBreak
- SETUP.StepTrace
- SETUP.StepWithinTask
- SETUP.TIMEOUT
- SETUP.VarCall
- SETUP.VerifyBreakSet
- SETUP.BreakPointTableWalk
- SETUP.COLORCORE
- SETUP.DUMP
- SETUP.GoOnPaused
- SETUP.IMASKHLL
- SETUP.PROCESS
- SETUP.StepAllCores
- SETUP.StepAutoAsm
- SETUP.StepByStep
- SETUP.StepOnPaused
- SETUP.StepWithinBreakpoints
- SETUP.sYmbol
- SETUP.Var
- SETUP.VarPtr

▲ 'SETUP' in 'PowerView Command Reference'

SETUP.ALIST — Default analyzer display

The **SETUP.ALIST** commands allow to set up the default display of the **Analyzer.List** command.

See also

- SETUP

SETUP.ALIST.RESet — Reset analyzer display

Format: **SETUP.ALIST.RESet**

Resets analyzer display to the default settings.

SETUP.ALIST.set — Default analyzer display

Format: **SETUP.ALIST.set** *<items>* … [**/BT** | **/FT**]

The syntax of the command is the same as the channel selection for the command **Analyzer.List**. The option defines if the Flowtrace or the Bustrace analyzer should be used as default by **all** analyzer display commands.

Example:

```
SETUP.ALIST Address CPU TIme.REF      ; display external trace, cpu and
                                      time
```

SETUP.BreakPointTableWalk — Set up MMU translation for breakpoints

Format: **SETUP.BreakPointTableWalk** [**ON** | **OFF**]

When set to ON, this command enables MMU translation for breakpoint tag delete.

See also

- SETUP

Format: **SETUP.BreakTransfer** [**ON** | **OFF**] (deprecated)

This command is deprecated because the TRACE32 TCF integration provides a synchronization between TRACE32 PowerView and Eclipse. For example, setting a breakpoint or executing a single step at the TRACE32 side will be reported to Eclipse and vice versa.

For more information, see **"TRACE32 as TCF Agent"** (app_tcf_setup.pdf).

See also

■ SETUP

SETUP.COLORCORE Enable coloring for core-specific info in SMP systems

Format: **SETUP.COLORCORE** [**ON** | **OFF**]

ON (default)	Core-specific information is displayed against a colored window background (SMP debugging and tracing only).
OFF	Coloring of core-specific information is disabled.

See also

■ SETUP

▲ 'PowerView - Screen Display' in 'PowerView User's Guide'

Format:	**SETUP.DIS** [*<fields>* [*<bar>*]] [*<constants>*]
<fields>:	[*<code>*] [*<label>*] [*<mnemonic>*] [*<comment>*]
<bar>:	[*<head>*] [*<bottom>*]
<constants>:	[**Hex** | **Decimal**] [**Signed** | **Unsigned**] [**Absolut** | **sYmbol**]

The command sets **default values** for configuring the disassembler output of **newly created windows** (e.g. **Data.List**). The command does **not affect existing windows** containing disassembler output.

Among other things the size of columns and the format of for constants (signed, unsigned, …) can be configured.

The first four parameters for this command configure the size of the columns in disassembler output:

<code>	Number of displayed code bytes. Set to zero is possible.
<label>	Size of the label field.
<mnemonic>	Size of the mnemonic field.
<comment>	Size of the comment field.

The next two arguments limit the movement of the PC bar within the window:

<head>	Size of reserved area on the top of the window (in percent).
<bottom>	Size of reserved area in bottom of window.

With these arguments, you can configure the display of constants and symbols:

Hex	In the mnemonic field the constants are displayed in hex.
Decimal	In the mnemonic field the constants are displayed in decimal.
Signed	The constants are displayed as signed numbers.
Unsigned	The constants are displayed as unsigned numbers.

Absolut In the mnemonic field the constants are displayed absolute, with the comment field they are displayed symbolically.

sYmbol The constants are displayed symbolically within the mnemonic field.

There might be more architecture specific keywords. E.g.: For the 68K family there is an additional parameter <traparg> to specify the number of bytes to be used as argument after trap commands (for OS-9). For PowerPC you can use **Simple** (default) or **Generic** to chose between simple or generic mnemonics. Please see the related **Processor Architecture Manual** for architecture specific keywords.

Example:

```
SETUP.DIS Unsigned              ; display constants as unsigned values

SETUP.DIS sYmbol                ; Switch to symbolic display of constants
```

See also

■ SETUP ■ List ■ List.auto

SETUP.DUMP Defaults for hex-dumps

Format: **SETUP.DUMP** [/*<option>* ...]

<option> For a description of the options, see **Data.dump**.

Example:

```
SETUP.DUMP /Byte                ; display width is now byte by default
```

See also

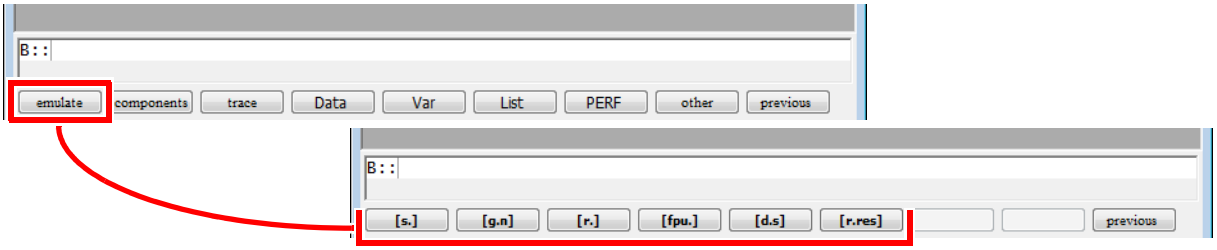
■ SETUP ■ Data.dump ■ Var.DUMP

Format: **SETUP.EMUPATH** "*<command>*" …

The most left softkey selects emulation softkeys. These softkeys will be defined by this command.

```
SETUP.EMUPATH "s." "g.n" "r." "fpu." "d.s 0x0ff000 0x0" "r.res"
```

gives the following softkeys:



See also

- SETUP

SETUP.GoOnPaused Route go to paused core

Virtual targets only: MCD

Format: **SETUP.GoOnPaused** [**ON** | **OFF**]

Default: OFF.

ON **Go** command will be sent to a core even if it is in “paused” state.

OFF If selected core is “paused” state, Go command will be sent to the next core which is in “stopped” state.

See also

- SETUP

Format: **SETUP.IMASKASM** [**ON** | **OFF**]

If enabled, the interrupt enable bit of the microcontroller will be disabled during single-step operations. The interrupt routine is not executed during single-step operations. After single step the interrupt enable bit is restored to the value before the step. This command is not implemented within all emulation probes.

NOTE: On some processors this modification is also seen by the user program. So this option can affect the flow of the target program. Accesses to the interrupt-enable bit can see the wrong values. Operations to modify the interrupt enable bit may not work as expected.

See also

■ SETUP ■ Step.single

▲ 'Release Information' in 'Legacy Release History'

SETUP.IMASKHLL Mask interrupts during HLL step

Format: **SETUP.IMASKHLL** [**ON** | **OFF**]

If enabled, the interrupt enable bit of the microcontroller will be disabled during HLL single-step operation. The interrupt routine is not executed during single-step operations. After single step the interrupt enable bit is restored to the value before the step. This command is not implemented within all emulation probes.

NOTE: By changing the register through target software, this option can affect the flow of the target program. Accesses to the interrupt-enable bit will see the wrong values. Operations to modify the interrupt enable bit will not work as expected. When the HLL line enables the interrupts (e.g. in an RTOS function call) then pending interrupts will be executed.

See also

■ SETUP ■ Step.single

▲ 'Release Information' in 'Legacy Release History'

Format: **SETUP.LISTCLICK** "*<command>*"

Executes the defined *<command>* when you double-click a variable or function in HLL-source (with the left mouse key). The name of the variable/function is appended to the command. The characters '?' or '*' can be used to mark the position of the variable/function name in the command. Lines with '*' will be executed without further input query.

Example 1: Default action when you double-click a function in a TRACE32 window, e.g. in the **List.Mix** window:

```
; display a listing for the double-clicked function in a new List
; window that is superimposed on the previous List window
SETUP.LISTCLICK "WinOverlay.List `*`"
```

Example 2: Default action when you double-click a variable in a TRACE32 window, e.g. in the **List.Mix** window:

```
SETUP.LISTCLICK "Var ?"                ; lets you modify the variable in
                                       the
                                       ; TRACE32 command line
```

Example 3: A user-defined action:

```
SETUP.LISTCLICK "Var.View %Multiline *"    ;openatemporarywindowwith
                                           variable
```

See also

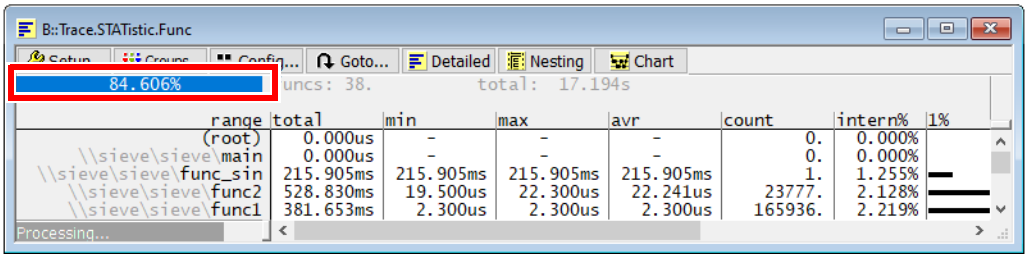
- SETUP
- List
- List.auto
- WinOverlay

Format: **SETUP.PROCESS** [**ON** | **OFF**]

Default: OFF.

OFF While trace is processing, the string “PROCESING” is displayed on the top left corner of **<trace>.STATistic** windows.

ON While trace is processing, the processing percentage is displayed on the top left corner of **<trace>.STATistic** windows.



See also

- SETUP

SETUP.SIMULINK Deprecated command

Format: **SETUP.SIMULINK ON** [/*<option>*] | **OFF** (deprecated)

<option>: *<release>* | **IntegrationDir** *<init_dir>* | **ToModelAlways** | *<debug>*

<release>: **R2010A** | **R2010B** | **R2011A** | **R2011B** | **R2012A** | **R2012B** | **R2010A** | **R2013A** | **R2013B** | **R2014A** | **R2014B**

<debug>: **Verbose** | **NoExchange**

This command is no longer needed in the new integration. For information about the new TRACE32 Simulink integration, refer to **“Integration for Simulink”** (int_simulink.pdf).

See also

- SETUP

Format: **SETUP.StepAllCores** [**ON** | **OFF**]

Default: OFF.

Forces assembler single stepping on all cores of an SMP system.

If you debug a multicore system in SMP configuration a single step on HLL code affects all cores while single stepping on ASM code does affect only the active core.
By switching **SETUP.StepAllCores** to **ON** also single steps on assembler level will affect all cores.

Lauterbach recommends to keep **SETUP.StepAllCores OFF**

Support of this feature depends on your CPU.
Setting **SETUP.StepAllCores** to **ON** might have no effect.
The setting is supported for MPC5xxx PowerPCs. It is not yet supported for ARM or TriCore.
Please contact Lauterbach, if you need this feature for your target architecture.

By just typing the command and appending a blank, you can view the current setting in the TRACE32 message line.
By executing the command without arguments, **SETUP.StepAllCores** toggles the current setting.

See also

- SETUP

Format: **SETUP.StepAtBreakPoint** [**ON** | **OFF** | **DEFault**]
SETUP.StepBreak [**ON** | **OFF**] (deprecated)

When interrupts are pending and the emulation is started on a breakpoint, it is possible that the target executes the interrupt routine and returns to the same breakpoint location after. The debugging 'hangs' on the breakpoints. To avoid this, this option will first execute a single step when the program would start on a breakpoint. On some processors with internal interrupt sources, the **SETUP.IMASKASM** option must also be turned **ON**. This option is usually the default for ICD.

DEFault Selects the architecture's default behavior.

OFF Performs an ASM single step before continuing program execution after a **Go**.

ON Immediately continues program execution after a **Go**.

See also

■ SETUP

SETUP.StepAutoAsm HLL steps stops at assembler code

Format: **SETUP.AutoAsm** [**ON** | **OFF**]

When a single step is performed in HLL debug mode and the target address of the step is code without HLL information (e.g. a module compiled without HLL debug symbols), the debugger will per default continue single stepping in the background until the next HLL line is reached (i.e. step from HLL line to HLL line). If the setting it turned **ON**, the debugger will stop at the address without debug symbols. Use this setting to debug modules without HLL debug information or compiler generated code sections.

See also

■ SETUP

▲ 'Release Information' in 'Legacy Release History'

Format: **SETUP.StepBeforeGo** [**ON** | **OFF**]

Perform an ASM single step before each **Go**. In contrast to the **SETUP.StepAtBreakPoint** command, this option steps always regardless the emulation is started on a breakpoint or not.

OFF Performs an ASM single step before continuing program execution after a **Go**.

ON Immediately continues program execution after a **Go**.

See also

- SETUP

SETUP.StepByStep Single step HLL lines

Format: **SETUP.StepByStep** [**ON** | **OFF**]

Single steps HLL when executing an HLL step. On some processors with internal interrupt sources, the **SETUP.IMASKASM** option must also be turned on to avoid stepping through the interrupt program.

See also

- SETUP

SETUP.StepNoBreak Stepping HLL lines with disabled breakpoints

Format: **SETUP.StepNoBreak** [**ON** | **OFF**]

OFF User-defined breakpoints are active while single stepping in HLL.

ON User-defined breakpoints are not active while single stepping in HLL.

See also

- SETUP

SETUP.StepOnPaused Route step to selected core

Virtual targets only: MCD

Format: **SETUP.StepOnPaused** [**ON** | **OFF**]

Default: OFF.

ON The MCD step command is also sent to a core in “paused” state.

OFF The MCD step command is sent to the next core which is in “stopped” state and not in “paused stated.

See also

- SETUP

SETUP.StepTrace Show stepping trail in list window

Format: **SETUP.StepTrace** [**ON** | **OFF**]

If this option is enabled, list windows will show stepping trails.

See also

- SETUP

SETUP.StepWithinBreakpoints Multi-core step on SMP systems

Format: **SETUP.StepWithinBreakpoints** [**ON** | **OFF**]

Enables/disables multi-core step on SMP systems.

See also

- SETUP

Format: **SETUP.StepWithinTask** [**ON** | **OFF**]

When enabled all HLL stepping and temporary breakpoints will be task selective (on the currently active task). This allows to step and debug shared code without stopping in another task.

See also

- SETUP

SETUP.sYmbol Length of symbols

Format: **SETUP.sYmbol** *<path_len> <name_len> <type_len>* [**ON** | **OFF**]

Configures the width of the columns for the symbol display commands. The **SETUP.sYmbol** command only affects the display of symbols, not the number of significant characters during symbol entry.

<path_len>	Sets the default display width for columns which hold a complete symbol path, including program and module names. An example is the width of the **path\symbol** column in the **sYmbol.List** window.
<name_len>	Sets the default display width for single symbol names. An example is the width of the **symbol** column in the **sYmbol.Browse** window.
<type_len>	Sets the default display width for columns holding information on the symbol type. An example is the width of the **type** column in the **sYmbol.Browse** window.
ON, **OFF**	Displays or hides the program name in symbol paths. An example is the path in the **path\symbol** column of the **sYmbol.List** window.

See also

- SETUP
- List
- List.auto
- sYmbol.Browse

Format: **SETUP.TIMEOUT** *<factor>*

Values larger than 1 stretch the time-out delay within the emulation monitor. This value determines, how long a window waits for becoming inactive. Short values will result in a fast screen update, but may result in flickering windows when a spot point or the OS Awareness is active. Large values will cause a slower update on the screen when real-time emulation is running.

See also

- SETUP
- Data.dump
- Data.Test
- List
- List.auto

Format:	**SETUP.Var** [%*<format>* …]

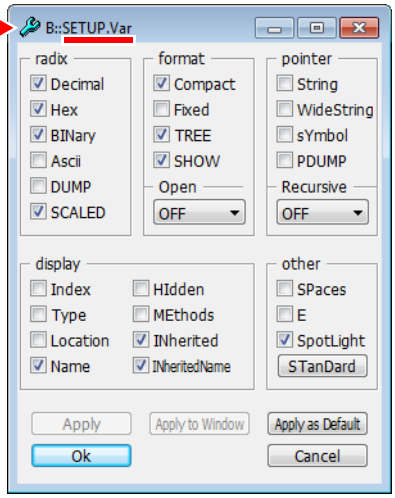
Defines the default formatting of variables in **Var** windows.

- Without *<format>* parameters, the **SETUP.Var** command opens the **SETUP.Var** dialog window. (Same as choosing **Var** menu > **Format** from the TRACE32 menu bar.)
- With one or more parameters: The settings can be changed via the TRACE32 command line or a PRACTICE script (*.cmm) while the dialog window remains closed.

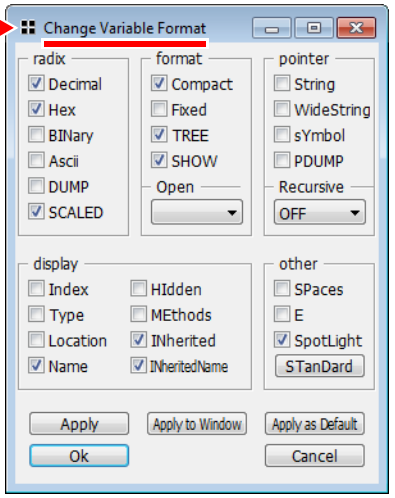
Your settings are used during a TRACE32 session, or until you change the settings again during the same session.

<format>	For a description of the *<formats>*, see section "**Display Formats**" of the **Var** command group.

A



B



A Global format settings.

Use the command **SETUP.Var**, or choose **Var** menu > **Format** to open the **SETUP.Var** dialog window.
In this dialog window, you can make format settings that apply to all **Var.*** windows you open afterwards. Your changes have no effect on **Var.*** windows that are already open.
For a description of the buttons in the **SETUP.Var** dialog window, see table [A] below.

B Local format settings.

Right-click any variable in a **Var.*** window, and then select **Format** from the popup menu to open the **Change Variable Format** dialog window.
Use this dialog window to format just a particular variable or all variables in a particular **Var.*** window.
For a description of the buttons in the **Change Variable Format** dialog window, see table [B] below.

[A] - Description of Buttons in the SETUP.Var Window

STanDard	Selects only the check boxes that belong to the built-in standard settings. All other check boxes are cleared.
Apply as Default	Applies your settings without closing the dialog window.
OK	Applies your settings and closes the dialog window.

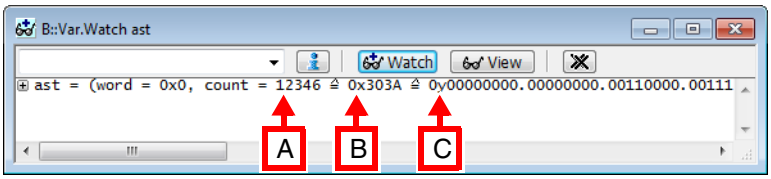
[B] - Description of Buttons in the Change Variable Format Dialog Window

STanDard	Selects only the check boxes that belong to the built-in standard settings. All other check boxes are cleared.
Apply	Applies the settings only to a particular variable you have selected in a particular **Var.*** window. The formatting of the other variables remains unchanged.
Apply to Window	Applies the settings to all variables displayed in a particular **Var.*** window. **To apply new format settings to a particular Var.* window only:** 1. Right-click any variable in the desired **Var.*** window, and then select **Format** from the popup menu. The **Change Variable Format** dialog window opens. 2. Make your new settings. 3. Click **Apply to Window**. The new settings are applied as local format settings to this particular **Var.*** window only. **NOTE**: All the other **Var.*** windows continue to use the global format settings as configured in the **SETUP.Var** dialog window.
Apply as Default	The local format settings of a particular **Var.*** window become the new global format settings. You can view the new configuration in the **SETUP.Var** dialog window.
OK	Applies your settings and closes the dialog window.

Examples

Example 1: Three *<format>* settings are switched on while the **SETUP.Var** dialog window remains closed. Then the **Var.Watch** window is opened, displaying the variable `ast` in the new format:

```
SETUP.Var %Decimal.on %Hex.on %BINary.on      ; see above screenshot [A]

Var.Watch flags ast
```



A Decimal.on **B** Hex.on **C** BINary.on

Example 2: The built-in *<format>* standard is restored.

```
SETUP.Var %STanDard                           ; restores the built-in
                                              ; standard
```

See also

■ SETUP ■ Var

▲ 'Var' in 'General Commands Reference Guide V'
▲ 'Format Variable' in 'Training Source Level Debugging'

Format: **SETUP.VarCall** [*<address>*]

If a function is called from the **Var** commands, a dummy routine is placed in memory to catch the processor after the called function has terminated. Under normal circumstances this code is never reached, as the HLL debugger breaks, when the end of the function is reached. If the command **Var.Call** is used, a **Go** command may start the function without any breakpoints set to the return point. In this cases, the processor will loop endless in the 'dummy' routine. Processors with linear addressing usually require no fixed address, the routine is kept on the stack. Processors with special addressing, like 8051 cannot keep a function on the stack. For this processors the command **SETUP.VarCall** can define a free location in code memory to hold the endless loop of the dummy function. The required space is usually two bytes.

Example:

```
SETUP.VarCall P:0x00fff0       ; place the dummy routine at P:0x00fff0
Var.NEWLOCAL \x                ; create virtual variable for result
Var.Call \x=func5(4,8,17)      ; call a function of the target program
```

See also

- SETUP

Format: **SETUP.VarPtr** [*<address_range>*]

Defines the address ranges for valid memory pointers. This range is checked whenever an automatic access to the contents of a pointer is made. Pointer referenced by an HLL expression are not checked against this range.

```
SETUP.VarPtr 0x0--0x0ffff
Var vpchar = 0x123456                   ; set pointer to character to
                                        ; 123456

Var *vpchar                             ; manual access to pointer, not
                                        ; checked

displays: *vpchar = 0

Var %Recursive vpchar                   ; automatic pointer access is
displays: vpchar = 0x123456 ->          ; checked
INVALID

SETUP.VarPtr 0x0--0x0ffffff             ; enlarge the address space for
                                        ; pointers

Var %Recursive vpchar                   ; automatic pointer access is
displays: vpchar = 0x123456 -> 0x0      ; checked

SETUP.VarPtr 0x0--0x1ffff||0x800000--0x80ffff
```

See also

- SETUP

SETUP.VerifyBreakSet Additional verification for software breakpoints

Format: **SETUP.VerifyBreakSet** [**ON** | **OFF**]

Default: OFF

Setting **SETUP.VerifyBreakSet** to **ON** forces the debugger to perform an additional verification whenever a software breakpoint become active or inactive.

See also

- SETUP

SIM TRACE32 Instruction Set Simulators

The **SIM** command group covers the following features for the TRACE32 Instruction Set Simulators:

- Cache/MMU/MPU simulation: configuration, enabling and basic analysis

  Cache simulation is currently only fully implemented for the ARM architecture. It can be implemented for other architectures on request.

  Please be aware that enabling the cache/MMU simulation slows down the simulator performance.

- Trace generation: configuration
- Peripheral Simulation Models: load and unload

  For more information on the PSM refer to **"API for TRACE32 Instruction Set Simulator"** (simulator_api.pdf) and **"Library for Peripheral Simulation"** (simulator_api_lib.pdf).

See also

- SIM.AREA
- SIM.CACHE
- SIM.command
- SIM.INTerrupt
- SIM.List
- SIM.LOAD
- SIM.RESet
- SIM.UNLOAD

SIM.AREA Selects area for simulation output

Format: **SIM.AREA** *<name>*

Specify output **AREA** for API function SIMUL_Printf(simulProcessor processor, const char *format, …).

Example:

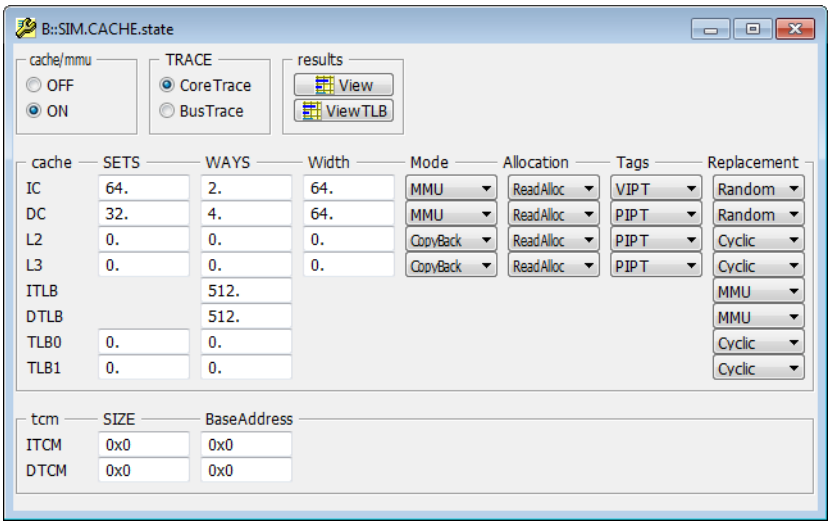
```
AREA.Create SimulOut                    ; create a new AREA

AREA.view SimulOut                      ; display created AREA

SIM.AREA SimulOut                       ; assign AREA to SIMUL_Printf
                                        ; function
```

See also

- SIM
- SIM.command

Command group for cache/MMU simulation, simulation of tightly-coupled memory, simulator trace generation and more.

For configuration, use the TRACE32 command line, a PRACTICE script (*.cmm), or the **SIM.CACHE.state** window.



See also

- SIM.CACHE.Allocation
- SIM.CACHE.Mode
- SIM.CACHE.MPURegions
- SIM.CACHE.OFF
- SIM.CACHE.ON
- SIM.CACHE.Replacement
- SIM.CACHE.SETS
- SIM.CACHE.state
- SIM.CACHE.Tags
- SIM.CACHE.TRACE
- SIM.CACHE.View
- SIM.CACHE.ViewTLB
- SIM.CACHE.WAYS
- SIM.CACHE.Width
- SIM
- SIM.command

▲ 'Release Information' in 'Legacy Release History'

Format:	**SIM.CACHE.Allocation** *<cache_type>* **ReadAlloc** | **WriteAlloc**
<cache_type>:	**DC** | **L2** | **L3** | …

Describes how the CPU deals with a cache miss on a data store/write access.

In the **SIM.CACHE.state** window, the **Allocation** field shows the cache properties of the selected CPU. If these properties do not fit, they should be changed before a **SYStem.Up**.

ReadAlloc The data from a memory address is only loaded to the cache on read/load accesses.

WriteAlloc The data from a memory address is loaded to the cache on a store/write access and the new data is written in the cache line. If it is also stored/written to memory depends on the cache mode (write-through or copy-back).

The allocation technique is taken from the MMU if **SIM.CACHE.Mode** is set to MMU.

```
SIM.CACHE.Allocation IC ReadAlloc     ; the instruction cache is a
                                      ; read allocate cache
```

See also

- SIM.CACHE
- SIM.CACHE.state

Format: **SIM.CACHE.Mode ITCM** | **DTCM** *<mode>*

<mode>: **CopyBack**
WriteThrough
MMU

Defines the strategy used for the memory coherency. It is recommended to perform this setup before **SYStem.Up**.

CopyBack Copy back strategy guarantees memory coherency.
When a cache hit occurred for a data store/write, the cache contents is updated and the corresponding cache line is marked as dirty. The data value is copied back to memory when the contents of the cache line is evicted.

WriteThrough Write Through strategy guarantees memory coherency.
When a cache hit occurs for a data store/write, the cache contents is updated and the data is also stored/written to memory.

MMU The strategy for memory coherency is taken from the MMU.

See also

- SIM.CACHE
- SIM.CACHE.state

SIM.CACHE.MPURegions Specify MPU regions

Format: **SIM.CACHE.MPURegions** *<region>*

Defines the number of MPU regions implemented on your Cortex-R4 core.

See also

- SIM.CACHE
- SIM.CACHE.state

SIM.CACHE.OFF — Disable cache and MMU simulation

Format: **SIM.CACHE.OFF**

Disables cache and MMU simulation.

See also

- SIM.CACHE
- SIM.CACHE.state

SIM.CACHE.ON — Enable cache and MMU simulation

Format: **SIM.CACHE.ON**

Enables cache and MMU simulation.

See also

- SIM.CACHE
- SIM.CACHE.state

SIM.CACHE.Replacement — Define the replacement strategy

Format: **SIM.CACHE.Replacement** *<cache> <replace>*

<cache>: **ITLB** | **DTLB** | **TLB0** | **TLB1**

<replace>: **NONE**
Random
FreeRandom
LRU
MMU

Defines the replacement strategy for each cache.

In the **SIM.CACHE.state** window, the **Replacement** field shows the cache properties of the selected CPU. If these properties do not fit, they should be changed before a **SYStem.Up**.

Cyclic	Cyclic (round-robin) replacement strategy is used. One round robin counter for each cache set.
Random	Random replacement strategy is used.
LRU	Last recently used replacement strategy is used.
MMU	The replacement strategy is defined by the CPU. Please use **SIM.CACHE.Replacement MMU** if your CPU uses a not listed replacement strategy.

See also

- SIM.CACHE
- SIM.CACHE.state

Format:	**SIM.CACHE.SETS** *<cache> <number>*
<cache>:	**TLB0** | **TLB1**

Defines the number of cache/TLB sets.

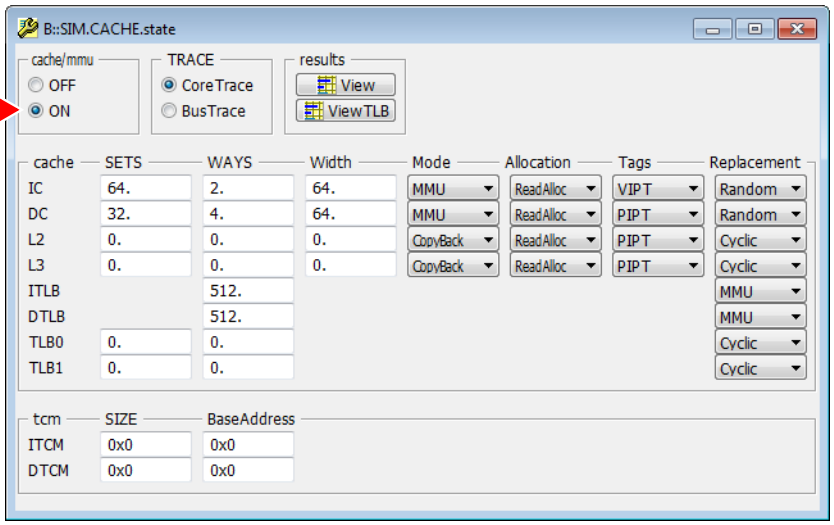
In the **SIM.CACHE.state** window, the **SETS** field shows the cache properties of the selected CPU. If these properties do not fit, they should be changed before a **SYStem.Up**.

See also

- SIM.CACHE
- SIM.CACHE.state

Format: **SIM.CACHE.state**

Displays the simulator settings for cache and MMU.



A For descriptions of the commands in the **SIM.CACHE.state** window, please refer to the **SIM.CACHE.*** commands in this chapter.

Example: For information about **ON**, see **SIM.CACHE.ON**.

See also

- SIM.CACHE
- SIM.CACHE.Allocation
- SIM.CACHE.Mode
- SIM.CACHE.MPURegions
- SIM.CACHE.OFF
- SIM.CACHE.ON
- SIM.CACHE.Replacement
- SIM.CACHE.SETS
- SIM.CACHE.Tags
- SIM.CACHE.TRACE
- SIM.CACHE.View
- SIM.CACHE.ViewTLB
- SIM.CACHE.WAYS
- SIM.CACHE.Width

Format: **SIM.CACHE.Tags** *<cache> <tag>*

<tag>: **VIVT**
PIPT
VIPT
AVIVT

Defines the address mode for cache lines. The address mode for the cache lines is taken from the MMU if **SIM.CACHE.Mode** is set to MMU. It is recommended to perform this setup before **SYStem.Up**.

VIVT Virtual Index, Virtual Tag
The logical address is used as tag for a cache line.

PIPT Physical Index, Physical Tag
The physical address is used as tag for a cache line.

VIPT Virtual Index, Physical Tag

AVIVT Address Space ID + Virtual Index, Virtual Tag

See also

- SIM.CACHE
- SIM.CACHE.state

SIM.CACHE.TRACE Select simulator trace method

Format: **SIM.CACHE.TRACE BusTrace** | **CoreTrace**

BusTrace	Trace information is generated for all bus transfers. E.g. if the cache is simulated trace information is generated for the burst cycles that filled the cache lines.
CoreTrace (default)	Trace information is generated for all executed instructions and performed load/store operations. Cache accesses are included.

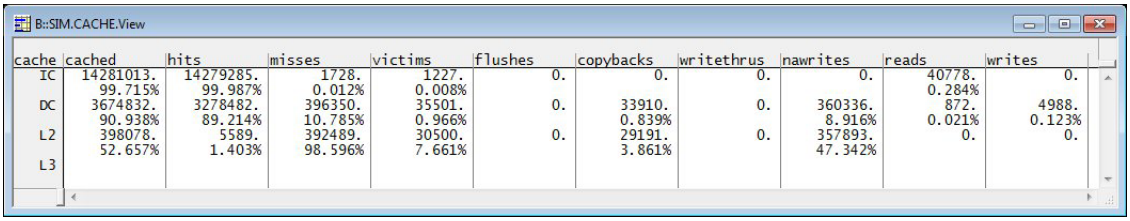
See also

- SIM.CACHE
- SIM.CACHE.state

Format: **SIM.CACHE.View**

Displays an analysis of the simulated memory accesses if cache simulation is used. Analysis results can be displayed while program execution is running.

For detailed information on the interpretation of the results, refer to the **CTS.CACHE.View** command.



cache	cached	hits	misses	victims	flushes	copybacks	writethrus	nawrites	reads	writes
IC	14281013.	14279285.	1728.	1227.	0.	0.	0.	0.	40778.	0.
	99.715%	99.987%	0.012%	0.008%					0.284%	
DC	3674832.	3278482.	396350.	35501.	0.	33910.	0.	360336.	872.	4988.
	90.938%	89.214%	10.785%	0.966%		0.839%		8.916%	0.021%	0.123%
L2	398078.	5589.	392489.	30500.	0.	29191.	0.	357893.	0.	0.
	52.657%	1.403%	98.596%	7.661%		3.861%		47.342%		
L3										

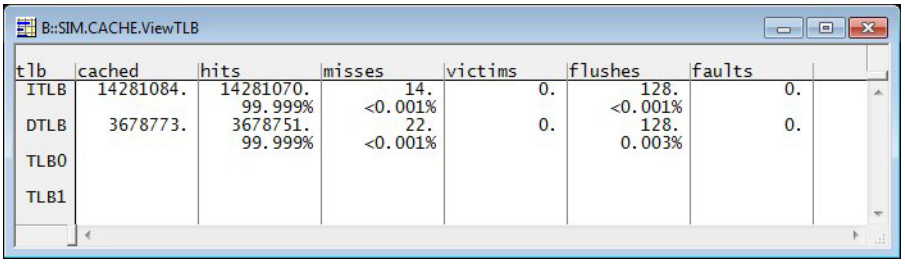
See also

- SIM.CACHE
- SIM.CACHE.state

SIM.CACHE.ViewTLB Analysis of TLB accesses for MMU simulation

Format: **SIM.CACHE.ViewTLB**

Displays an analysis of the simulated TLB accesses if MMU simulation is used. Analysis results can be displayed while program execution is running.



tlb	cached	hits	misses	victims	flushes	faults
ITLB	14281084.	14281070.	14.	0.	128.	0.
		99.999%	<0.001%		<0.001%	
DTLB	3678773.	3678751.	22.	0.	128.	0.
		99.999%	<0.001%		0.003%	
TLB0						
TLB1						

See also

- SIM.CACHE
- SIM.CACHE.state

Format: **SIM.CACHE.WAYS** *<cache> <ways>*

<cache>: **IC** | **DC** | **L2** | **L3** | **ITLB** | **DTLB** | **TLB0** | **TLB1**

Defines the number of cache ways (blocks) for each cache.

In the **SIM.CACHE.state** window, the **WAYS** field shows the cache properties of the selected CPU. If these properties do not fit, they should be changed before a **SYStem.Up**.

Example:

```
SIM.CACHE.WAYS IC 4.              ; The instruction CACHE has 4 blocks
```

See also

- SIM.CACHE
- SIM.CACHE.state

SIM.CACHE.Width Define width of cache line

Format: **SIM.CACHE.Width IC** | **DC** | **L2** | **L3** *<width>*

Defines the width of a single cache line in bytes.

In the **SIM.CACHE.state** window, the **Width** field shows the cache properties of the selected CPU. If these properties do not fit, they should be changed before a **SYStem.Up**.

Example:

```
SIM.CACHE.Width IC 32.            ; A cache line for the instruction cache
                                  ; is 32. byte
```

See also

- SIM.CACHE
- SIM.CACHE.state

Format: **SIM.command** *<cmd>* [*<string>*] [*<address>*] [*<time>*] [*<value>*]

Issues a command to all loaded simulation models. The parameters are interpreted by the loaded models.

See also

- SIM
- SIM.AREA
- SIM.CACHE
- SIM.INTerrupt
- SIM.List
- SIM.LOAD
- SIM.RESet
- SIM.UNLOAD

SIM.INTerrupt Trigger interrupt

Format: **SIM.INTerrupt** *<level> <vector>*

Triggers the specified interrupt.

Not all arguments are supported or required by all architectures.

Example for MPC55xx:

```
SIM.INTerrupt , 0x20                ; no priority required that is
                                    ; why "," is used

                                    ; interrupt vector 0x0 is triggered
```

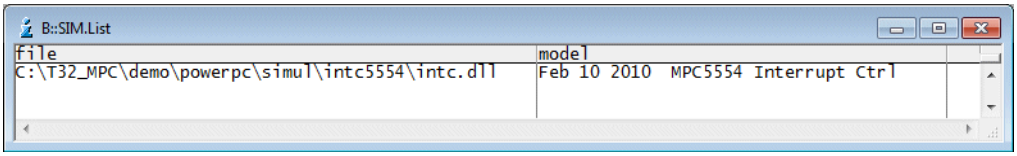
Example for TriCore:

```
SIM.INTerrupt 15.                   ; the interrupt is triggered by its
                                    ; corresponding level

                                    ; <vector> is not supported,
                                    ; instead the vector is calculated
                                    ; from the BIV register value
```

See also

- SIM
- SIM.command

Format: **SIM.List**



See also

■ SIM ■ SIM.command

SIM.LOAD Load simulator module

Format: **SIM.LOAD** *<file>* [*<parameter>* ...]

Loads simulator DLL. The parameters are specific for the loaded DLL.

Example:

```
SIM.RESet                              ; reset simulator
SIM.LOAD demoport.dll 20000 0          ; loads DLL with your parameters
```

See also

■ SIM ■ SIM.command

▲ 'Release Information' in 'Legacy Release History'

SIM.RESet Reset TRACE32 Instruction Set Simulator

Format: **SIM.RESet**

Unloads all loaded DLL and resets all time base.

See also

■ SIM ■ SIM.command

Format: **SIM.UNLOAD** [*<file>*]

Unloads a simulator DLL.

Example:

```
SIM.UNLOAD demoport.dll                ; unload specified DLL

SIM.UNLOAD                             ; unload all DLLs
```

See also

- SIM
- SIM.command

SLTrace

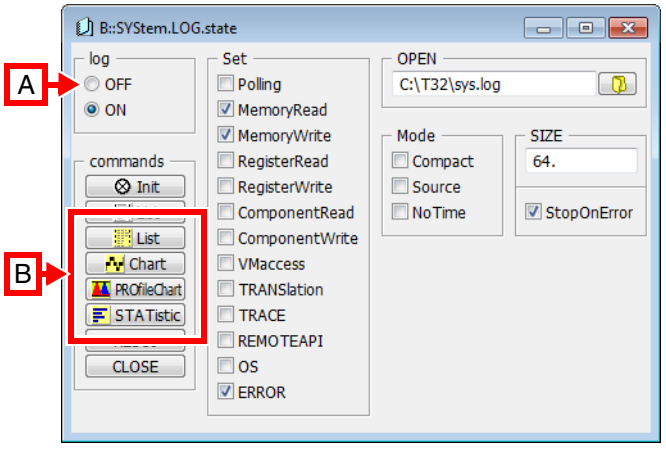
Trace sink for SYStem.LOG events

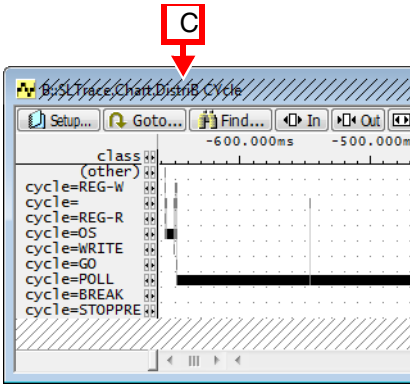
Format:	**SLTrace.***<trace_windows>*
<trace_windows>:	**List** | **Chart.Distrib** | **ProfileChart.DistriB** | **STATistic.DistriB**

The **SLTrace** command group allows to trace and analyze the **SYStem.LOG** events, i.e. the read and write accesses TRACE32 performs to the target hardware.

This is useful for analyzing critical timing of accesses done by the debugger. It may help to improve the speed of remote API calls.

<trace_windows>	You can view the system-log trace in chart, profile chart, trace listing or trace statistic windows. For your convenience, the *<trace_windows>* are directly accessible from the **SYStem.LOG.state** window, as shown below [**B**]. For descriptions of the subcommands, please refer to the general *<trace>* command descriptions in **"General Commands Reference Guide T"** (general_ref_t.pdf). **Example**: For a description of **SLTrace.List** refer to **<trace>.List**





A Set the **SYStem.LOG** to **OFF** so that the recorded system-log trace can be displayed in a *<trace_window>* or an existing *<trace_window>* can be refreshed with the latest the system-log trace.

B To open a *<trace_window>*, click the button you want in the **SYStem.LOG.state** window [**B**].

C Diagonal lines in a *<trace_window>* indicate that a system-log trace is being recorded and that the window has not yet been updated, i.e. **SYStem.LOG** is still **ON**.

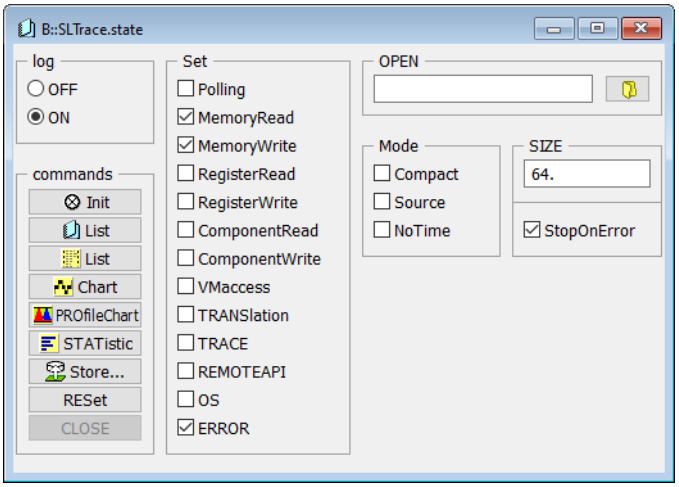
See also

- SYStem.LOG
- SYStem.LOG.state

SLTrace.state — Display configuration window

Format: **SLTrace.state**

Displays the **SLTrace.state** window, where you can configure the **SLTrace**.



SNOOPer Sample-based trace

The **SNOOPer** trace is one of the TRACE32 trace methods which allows to gain runtime information with just a debugger. In order to get the runtime information the debugger periodically reads out information such as memory/variable contents, the program counter, or other system information while the program execution is running.

Ideally, the debugger can read this information non-intrusively. The readout period is in the microsecond range in this case. If this is not possible, the program execution has to be stopped periodically to read the desired information. The readout periods then tend to be in the millisecond range.

To achieve high SNOOPer frequencies, the sampling is performed by the software running on the TRACE32 debug hardware where the collected samples are times-stamped and stored to a temporary buffer. The buffer contents is read by TRACE32 PowerView after the recording stopped or is streamed to the host during recording if the temporary buffer within the debug hardware is smaller than the trace buffer size requested by the user.

If a TRACE32 software-only tool is used, the readout periods can be larger depending on the communication link in use. Since the sampling software runs on the host computer, it is more likely that the SNOOPer is suspended by other programs running there.

The **"Application Note for the SNOOPer Trace"** (app_snooper.pdf) introduces standard use cases and contains important information about the technical conditions of the SNOOPer trace.

The trace features of the **SNOOPer** can be configured and controlled with the command group **SNOOPer**.

The chapter **"SNOOPer-specific Trace Commands"**, page 54 describes the SNOOPer-specific configuration commands. While the chapter **"Generic SNOOPer Trace Commands"**, page 66 lists the SNOOPer trace analysis and display commands, which are generic for all TRACE32 trace methods.

See also

- Trace.METHOD

- 'Introduction' in 'Application Note for the SNOOPer Trace'
- 'Generic SNOOPer Trace Commands' in 'General Commands Reference Guide S'
- 'SNOOPer-specific Trace Commands' in 'General Commands Reference Guide S'
- 'Release Information' in 'Legacy Release History'

SNOOPer.<specific_cmds> Overview of SNOOPer-specific commands

See also

- SNOOPer.SELect
- SNOOPer.PC
- SNOOPer.TValue
- SNOOPer.SIZE
- SNOOPer.Rate
- SNOOPer.CORE
- SNOOPer.TDelay
- SNOOPer.Mode
- SNOOPer.TOut

▲ 'SNOOPer' in 'General Commands Reference Guide S'

SNOOPer.CORE Select cores for PC snooping

Format: **SNOOPer.CORE** [*<number>*…]

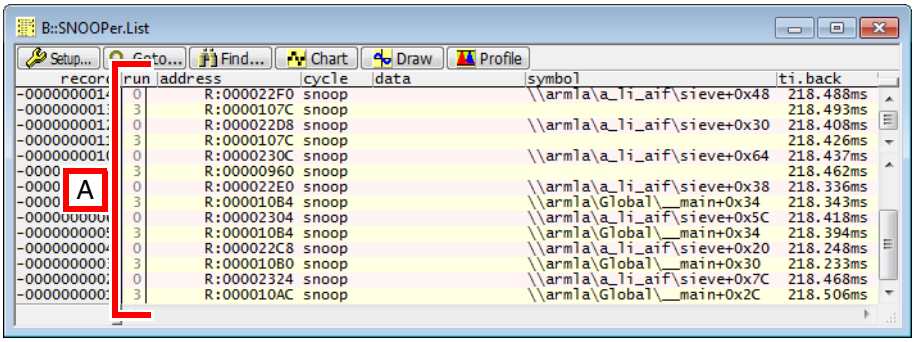
Selects all or specified cores for PC snooping.

<number>	If no argument is specified, then the command selects all cores.

Example: In this script, the cores 0. and 3. of an SMP system are selected for PC snooping with the command **SNOOPer.CORE**. The result is then displayed in the **SNOOPer.List** window.

Prerequisite: The cores to be snooped have been assigned to the TRACE32 PowerView GUI with the command **CORE.ASSIGN**.

```
SNOOPer.state               ;optional step: open the SNOOPer.state window

SNOOPer.Mode PC             ;set the operation mode of the SNOOPer trace
                            ;to PC snooping

SNOOPer.CORE 0. 3.          ;select cores for PC snooping

Go                          ;start SNOOPer trace recording
WAIT 2.s
Break                       ;stop recording

SNOOPer.List                ;display the result
```



A 0 in the **run** column stands for core 0.
3 stands for core 3.

See also

- SNOOPer.<specific_cmds>
- ▲ 'Release Information' in 'Legacy Release History'

SNOOPer.ERRORSTOP — Set behavior on sampling errors

Format: **SNOOPer.ERRORSTOP [ON | OFF]**

Default: ON.

Set SNOOPer behavior when on sampling error. When this command is set to OFF, the SNOOPer continues sampling after a sampling error occurs.

[Example]

Format: **SNOOPer.Mode** *<mode>*

<mode>:
Memory
PC
PC+MMU
BMC
DCC
ETM
ETM32
SFT

Fifo
Stack

Changes [**ON** | **OFF**]
SLAVE [**ON** | **OFF**]
StopAndGo [**ON** | **OFF**]
AddressTrace [**ON** | **OFF**]
FAST [**ON** | **OFF**]
ContextID [**ON** | **OFF**]
JITTER [**ON** | **OFF**]

Selects the operation mode of the SNOOPer trace. This command can be used to configure the sampling object, the trace recording mode, and various further operation modes.

Sampling objects:

Memory	Samples the contents of up to 16 memory addresses/scalar variables.
PC	Samples the program counter (PC). This operation mode of the SNOOPer trace is referred to as PC snooping.

PC+MMU	Samples the program counter (PC) and the space ID. This operation mode of the SNOOPer trace is referred to as PC snooping. If the target processor has a memory management unit (MMU) and a target operating system (e.g. Linux) is used, several processes/tasks can run at the same logical addresses. In this scenario, the logical address sampled by the SNOOPer trace is not sufficient to assign the sampled PC to a program location. For a clear assignment, the information about the current task is also required. The **PC+MMU** mode can be used for this purpose: With every sample, the SNOOPer trace will read the actual program counter and the memory address containing the information about the current task. However, this mode is always intrusive, since the current task and the program counter have to be read exactly at the same time, which can only be achieved by stopping the program execution. For details, refer to your **OS Awareness Manual**.
BMC	Samples all active **benchmark counters**.
DCC	Samples data via Debug Communication Channel. (This command is locked if your processor architecture does not provide a Debug Communication Channel.)
ETM	Samples the ETM counter (16-bit). (This command is locked/unknown if your core has no ETM.)
ETM32	Samples the ETM counter (32-bit). (This command is locked/unknown if your core has no ETM.)
SFT	SFT software trace via LPD4 debug mode for RH850 processors. For details refer to **"RH850 Debugger and Trace"** (debugger_rh850.pdf).

Recording modes:

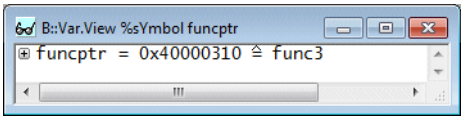
Fifo	If the SNOOPer trace is full, new records will overwrite older records. The trace always records the last cycles before the program execution is stopped.
Stack	If the SNOOPer trace is full, recording will be stopped. The trace always records the first cycles after starting the program execution.

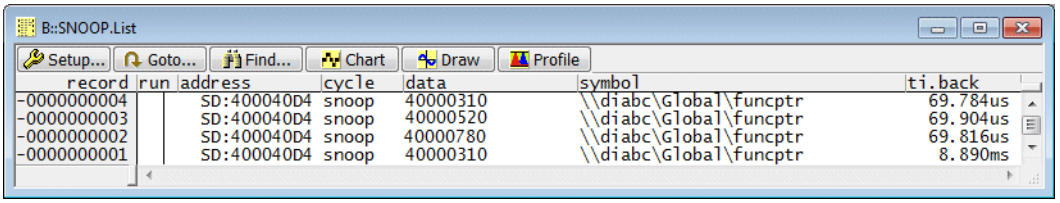
Further operation modes:

Changes	Samples only data changes.
SLAVE	**ON**: Ties the trace to the execution of the program, i.e. trace and the trigger work only during user program execution. **OFF**: Separates the trace from the program execution, i.e. trace is recording even when the program execution is stopped. (This command is only required in exceptional cases).
StopAndGo	Stops the target processor periodically to collect the data of interest. TRACE32 sets this automatically, if no runtime access of the configured sampling object is possible.
AddressTrace	The sampled data values are handled as addresses.
FAST	On certain ARM based derivatives from Texas Instruments (e.g. OMAP3xxx) this mode increases the maximum sampling rate of the snooper. This mode may not be used in multi-core debug sessions or if the core will be powered down.
ContextID	Samples the ARM Context ID register. This option is only available for some ARM cores.
JITTER	When enabled, this option applies a random jitter to sampling time.

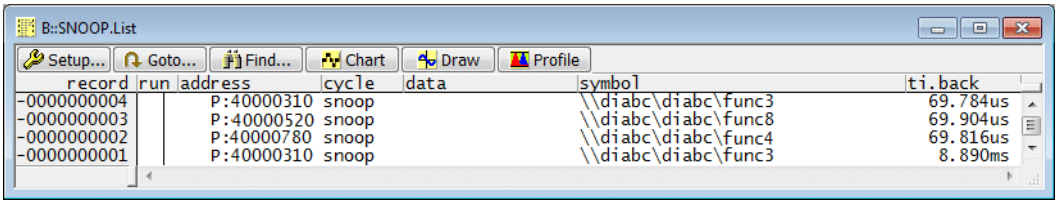
Example for AddressTrace Mode: Sample the content of a function pointer.

```
SNOOPer.Mode Memory

SNOOPer.SELect Var.RANGE(funcptr)

…
```






```
SNOOPer.Mode AddressTrace ON          ;advise TRACE32 to display the
                                      ;data value as address
```



See also

■ SNOOPer.<specific_cmds> ■ <trace>.Mode

▲ 'Release Information' in 'Legacy Release History'

Format: **SNOOPer.PC** [**ON** | **OFF**]

Reads the PC without stopping the target (PC-snooping).

SNoop.PC Prints the current PC in the state line (only once).

SNoop.PC ON | **OFF** Enables or disables permanent updates of the PC in the state line.

See also

- SNOOPer.<specific_cmds>

Format: **SNOOPer.Rate** *<value>* | *<time>*

Selects the sampling rate. The rate can be specified as time interval or as number of samples/s. The defined rate is not guaranteed. The actual frequency used by the SNOOPer may be lower depending on the target CPU and the sampling object.

Example:

```
SNOOPer.Rate 1000000.                   ; set to 1 MHz sample rate

SNOOPer.Rate 1.us                       ; same operation, 1 MHz sample rate
```

See also

- SNOOPer.<specific_cmds>

SNOOPer.SELect Define address for monitoring

[Examples]

Format: **SNOOPer.SELect** [[**%***<format>*] *<address>* | *<range>*] [[**%***<format>*] *<address>* | *<range>*…] [**/***<option>*]

<format>: **Byte** | **Word** | **Long** | **Quad** | **TByte** | **PByte** | **HByte** | **SByte**
CORE *<core_number>*

<option>: **DIALOG**

Defines the sampling addresses for the SNOOPer trace **Memory** mode. Up to 16 sampling addresses can be specified using the **SNOOPer.SELect** command. The parameter can be an address or an address range. If the parameter is a single address, the access site is per default one byte. This is also true if a symbolic address is used (e.g. HLL variable).

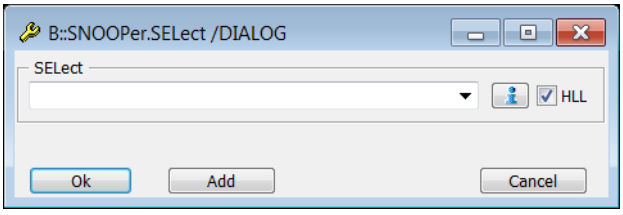
When executed without arguments, the **SNOOPer.SELect** command clears all previously set sampling addresses.

Byte (default), **Word**, **TByte**, **Long**, **PByte**, **HByte**, **SByte**	Access size • **Byte** (8-bit accesses) **Word** (16-bit accesses) • **TByte** (24-bit accesses) **Long** (32-bit accesses) • **PByte** (40-bit accesses) **HByte** (48-bit accesses) • **SByte** (56-bit accesses) **Quad** (64-bit accesses) •
CORE *<core_number>*	Performs the sampling on the specified core.
DIALOG	If the **SNOOPer.SELect** command is entered with the **DIALOG** option, a dialog is displayed.

Examples

Example 1:

```
SNOOPer.SELect /DIALOG
```



Example 2:

```
SNOOPer.SELect 0x10000000        ; sample one byte from address 0x1000

SNOOPer.SELect mcount            ; sample one byte from integer variable
                                 ; mcount
```

Example 3: If more than one byte have to be sampled, the access size has to be specified using the *<format>* option, e.g. `%Word` or `%Long`.

```
SNOOPer.SELect %Word 0x1000      ; sample two bytes from address 0x1000

SNOOPer.SELect %Long mcount      ; sample four bytes from integer
                                 ; variable mcount
```

Example 4: If the parameter is an address range, the access size is automatically set to the size of the range.

```
SNOOPer.SELect 0x1000--0x1001     ; sample two bytes from address 0x1000

SNOOPer.SELect Var.RANGE(mcount)  ; sample the address range of the
                                  ; variable mcount
```

Var.RANGE(<hll_expression>)	Returns the address range occupied by the specified HLL expression

Example 5: If more that one address should be sampled, the addresses have to be specified using one single **SNOOPer.SELect** command. The access size has to be specified for each sampling address.

```
SNOOPer.SELect %Long mcount %Word plot1 0x1000--0x1001
```

See also

- SNOOPer.<specific_cmds>

SNOOPer.SIZE — Define trace buffer size

Format: **SNOOPer.SIZE** *<records>*

Sets the size of the SNOOPer trace memory. The size is specified in number of records (samples). TRACE32 PowerView allocates memory on the host for the requested size. The SNOOPer trace buffer size is thus only limited by the resources of the host.

See also

- SNOOPer.<specific_cmds>

SNOOPer.TDelay — Define trigger delay

Format: **SNOOPer.TDelay** *<records>* | *<percent>***%**

Selects the delay between the trigger point and the execution of the trigger action defined with **SNOOPer.TOut**. The delay can be specified in number of records or as percentage of the SNOOPer trace depth.

Example:

```
SNOOPer.TDelay 1000.          ; sample 1000. records after the ;trigger
                              ; point then execute the trigger action.

SNOOPer.TDelay 40%            ; continue with the sampling after the
                              ; trigger point until 40% of the trace
                              ; buffer are filled then execute the
                              ; trigger action.
```

See also

- SNOOPer.<specific_cmds>

SNOOPer.TOut — Define the trigger destination

Format:	**SNOOPer.TOut** *<trigger_action>*
<trigger_action>:	**Trace** | **Program** | **PULSE** | **BUSA**

Defines the *<trigger_action>* that should be executed when the value defined with the **SNOOPer.TValue** command is sampled. This command is used in conjunction with the SNOOPer **Memory** and **PC** modes.

Trace	Stop the SNOOPer trace recording.
Program	Stop program execution.
PULSE	Trigger pulse generator.
BUSA	Trigger bus line A.

See also

- SNOOPer.<specific_cmds>

Format: **SNOOPer.TValue** *<value>* | *<range>* | *<bitmask>*

Defines the data value, data value range or bit mask that should trigger the action defined with the **SNOOPer.TOut** command. This command is used in conjunction with the SNOOPer **Memory** and **PC** modes.

Example:

```
SNOOPer.TValue 0x1              ; trigger the TOut action when the value
                                ; 0x1 is sampled

SNOOPer.TValue 0xA00--0xAFF     ; trigger the TOut action when a value
                                ; within the data range 0xA00--0xAFF is
                                ; sampled

SNOOPer.TValue !0               ; trigger the TOut action when a value
                                ; different from 0 is sampled
```

See also

- SNOOPer.<specific_cmds>

SNOOPer.ACCESS Define access path to program code for trace decoding

See command **<trace>.ACCESS** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 131).

SNOOPer.Arm Arm the trace

See command **<trace>.Arm** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 133).

SNOOPer.AutoArm Arm automatically

See command **<trace>.AutoArm** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 134).

SNOOPer.AutoInit Automatic initialization

See command **<trace>.AutoInit** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 139).

SNOOPer.BookMark Set a bookmark in trace listing

See command **<trace>.BookMark** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 140).

SNOOPer.BookMarkToggle Toggles a single trace bookmark

See command **<trace>.BookMarkToggle** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 142).

SNOOPer.Chart — Display trace contents graphically

See command **<trace>.Chart** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 143).

SNOOPer.Chart.DistriB — Distribution display graphically

See command **<trace>.Chart.DistriB** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 158).

SNOOPer.Chart.sYmbol — Symbol analysis

See command **<trace>.Chart.sYmbol** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 172).

SNOOPer.Chart.VarState — Variable activity chart

See command **<trace>.Chart.VarState** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 188).

SNOOPer.ComPare — Compare trace contents

See command **<trace>.ComPare** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 191).

SNOOPer.DISable — Disable the trace

See command **<trace>.DISable** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 196).

SNOOPer.DRAW — Plot trace data against time

See command **<trace>.DRAW** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 200).

SNOOPer.DRAW.channel — Plot no-data values against time

See command **<trace>.DRAW.channel** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 203).

SNOOPer.DRAW.Var — Plot variable values against time

See command **<trace>.DRAW.Var** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 209).

SNOOPer.EXPORT — Export trace data for processing in other applications

See command **<trace>.EXPORT** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 211).

SNOOPer.FILE — Load a file into the file trace buffer

See command **<trace>.FILE** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 232).

SNOOPer.Find — Find specified entry in trace

See command **<trace>.Find** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 234).

SNOOPer.FindAll — Find all specified entries in trace

See command **<trace>.FindAll** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 236).

SNOOPer.FindChange — Search for changes in trace flow

See command **<trace>.FindChange** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 237).

SNOOPer.Get — Display input level

See command **<trace>.Get** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 241).

SNOOPer.GOTO — Move cursor to specified trace record

See command **<trace>.GOTO** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 243).

SNOOPer.Init — Initialize trace

See command **<trace>.Init** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 245).

SNOOPer.List — List trace contents

See command **<trace>.List** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 247).

SNOOPer.ListVar — List variable recorded to trace

See command **<trace>.ListVar** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 265).

SNOOPer.LOAD — Load trace file for offline processing

See command **<trace>.LOAD** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 269).

SNOOPer.OFF — Switch off

See command **<trace>.OFF** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 277).

SNOOPer.PROfileChart — Profile charts

See command **<trace>.PROfileChart** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 283).

SNOOPer.PROfileChart.COUNTER Display a profile chart

See command **<trace>.PROfileChart.COUNTER** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 293).

SNOOPer.PROfileSTATistic Statistical analysis in a table versus time

See command **<trace>.PROfileSTATistic** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 322).

SNOOPer.PROTOcol Protocol analysis

See command **<trace>.PROTOcol** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 339).

SNOOPer.PROTOcol.Chart Graphic display for user-defined protocol

See command **<trace>.PROTOcol.Chart** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 339).

SNOOPer.PROTOcol.Draw Graphic display for user-defined protocol

See command **<trace>.PROTOcol.Draw** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 341).

SNOOPer.PROTOcol.EXPORT Export trace buffer for user-defined protocol

See command **<trace>.PROTOcol.EXPORT** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 342).

SNOOPer.PROTOcol.Find Find in trace buffer for user-defined protocol

See command **<trace>.PROTOcol.Find** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 343).

SNOOPer.PROTOcol.List Display trace buffer for user-defined protocol

See command **<trace>.PROTOcol.List** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 344).

SNOOPer.PROTOcol.PROfileChart Profile chart for user-defined protocol

See command **<trace>.PROTOcol.PROfileChart** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 347).

SNOOPer.PROTOcol.PROfileSTATistic Profile chart for user-defined protocol

See command **<trace>.PROTOcol.PROfileSTATistic** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 348).

SNOOPer.PROTOcol.STATistic Display statistics for user-defined protocol

See command **<trace>.PROTOcol.STATistic** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 350).

SNOOPer.REF Set reference point for time measurement

See command **<trace>.REF** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 357).

SNOOPer.RESet Reset command

See command **<trace>.RESet** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 357).

SNOOPer.SAVE Save trace for postprocessing in TRACE32

See command **<trace>.SAVE** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 358).

SNOOPer.SelfArm — Automatic restart of trace recording

See command **<trace>.SelfArm** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 362).

SNOOPer.SnapShot — Restart trace capturing once

See command **<trace>.SnapShot** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 372).

SNOOPer.state — Display trace configuration window

See command **<trace>.state** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 375).

SNOOPer.STATistic — Statistic analysis

See command **<trace>.STATistic** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 377).

SNOOPer.STATistic.DistriB — Distribution analysis

See command **<trace>.STATistic.DistriB** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 400).

SNOOPer.Timing — Waveform of trace buffer

See command **<trace>.Timing** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 496).

SNOOPer.TRACK — Set tracking record

See command **<trace>.TRACK** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 499).

See command **<trace>.View** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 501).

SNOOPer.ZERO Align timestamps of trace and timing analyzers

See command **<trace>.ZERO** in 'General Commands Reference Guide T' (general_ref_t.pdf, page 502).

SPE — Signal Processing eXtension (SPE)

PowerPC 55xx/85xx only

The **SPE** command group is used to display and modify the SPE (Signal Processing eXtension) registers for PowerPC.

See also

■ SPE.Init ■ SPE.Set ■ SPE.view ❑ SPE()

▲ 'SPE Function' in 'General Function Reference'

SPE.Init — Initialize SPE registers

PowerPC 55xx/85xx only

Format: **SPE.Init**
SPE.RESet (deprecated)

Initializes all SPE registers to zero.

See also

■ SPE ■ SPE.view

SPE.Set — Modify SPE registers

PowerPC 55xx/85xx only

Format: **SPE.Set** *<register>* *<value>* [*/<option>*]

<register>: **R0..R31** | **ACC** | **SPEFSCR**

Writes the given value to the specified SPE register.

<option> For a description of the options, see **Register.view**.

R0..**R31** and **ACC** Are 64-bit values that are entered as 16-digits hex values. See example.

Example:

```
SPE.Set R15 0x123456789ABCDEF0
SPE.Set ACC 0xFFFFFFFFFFFFFFFF
```

See also

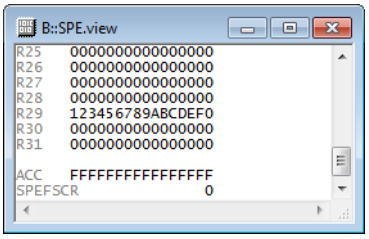
■ SPE ■ SPE.view

SPE.view Display SPE register window

PowerPC 55xx/85xx only

Format: **SPE.view** [/*<option>*]

Opens a window displaying the SPE vector registers **R0**..**R31**, **ACC** and **SPEFSCR**.



<option> For a description of the options, see **Register.view**.

See also

■ SPE ■ SPE.Init ■ SPE.Set ❑ SPE()

SSE — SSE registers (Streaming SIMD Extension)

Intel® x86

The **SSE** command group is used to display and modify the SSE (Streaming SIMD Extensions) registers for Intel® x86.

See also

■ SSE.Init ■ SSE.Set ■ SSE.view ❑ SSE()

▲ 'Command Groups for Special Registers' in 'Intel® x86/x64 Debugger'
▲ 'SSE Function' in 'General Function Reference'

SSE.Init — Initialize SSE registers

Intel® x86

Format: **SSE.Init**

Sets the SSE registers to their default values.

See also

■ SSE

SSE.Set — Modify SSE registers

Intel® x86

Format: **SSE.Set** *<register> <value>* … [**/***<option>*]

Modifies the SSE registers.

<option> For a description of the options, see **Register.view**.

See also

■ SSE

Format: **SSE.view** [/*<option>*]

Displays the SSE registers.

<option> For a description of the options, see **Register.view**.

See also

■ SSE

▲ 'Release Information' in 'Legacy Release History'

StatCol — Statistics collector

For a description of the **StatCol** commands, see **"System Trace User's Guide"** (trace_stm.pdf).

Step — Steps through the program

Using the **Step** command group, you can step through the program in a controlled way, executing an assembly opcode, a source line or a function at a time.

See also

- Step.Asm
- Step.Back
- Step.BackChange
- Step.BackOver
- Step.BackTill
- Step.Change
- Step.Diverge
- Step.Hll
- Step.Mix
- Step.Over
- Step.single
- Step.Till
- Go
- List

▲ 'Release Information' in 'Legacy Release History'

Step.Asm — Assembler single-stepping

Format: **Step.Asm** [*<count>*]

Switches to assembler mode before performing the required single steps via the **Step** command. The performed steps are assembly steps.

See also

- Step
- Step.single

Step.Back — Step back

Format: **Step.Back**

This command can only be used together with the Context Tracking System (**CTS**). The command steps back one assembler instruction or one HLL line. Under certain conditions, the command automatically activates **CTS** when it is turned off.

See also

- Step
- Step.single

Step.BackChange — Step back till expression changes

Format: **Step.BackChange**

Steps back till the expression changes. The command will stop also, if the expression cannot be evaluated.

Example:

```
Step.BackChange Register(A7)          ; steps till register A7 changes

Step.BackChange                       ; steps till the longword at
Data.Long(sd:0x100)                   location
                                      ; 100 changes
```

See also

- Step
- Step.single

▲ 'Release Information' in 'Legacy Release History'

Step.BackOver — Step back

Format: **Step.BackOver**

This command can only be used together with the Context Tracking System (**CTS**). The command steps back one assembler instruction or one HLL line.

Under certain conditions, the command automatically activates **CTS** when it is turned off.

See also

- Step
- Step.single

▲ 'Release Information' in 'Legacy Release History'

Step.BackTill — Step back till expression true

Format: **Step.BackTill** [*<boolean_expression>*]

Steps back till the boolean expression becomes true. The command will stop also, if the expression cannot be evaluated.

Example:

```
Step.BackTill Register(A7)>0x1000     ; steps till register A7 is larger
                                      ; than 1000

Step.BackTill                         ; steps till the longword at
Data.Long(sd:0x100)==0x0              ; location 100 gets the value 0
```

See also

- Step
- Step.single

Step.Change — Step till expression changes

Format: **Step.Change** [<*expression*>]

Steps till the expression changes. The command will stop also, if the expression cannot be evaluated.

Example:

```
Step.Change Register(A7)              ; steps till register A7 changes

Step.Change Data.Long(SD:0x100)       ; steps till the long word at
                                      ; location 100 changes
```

See also

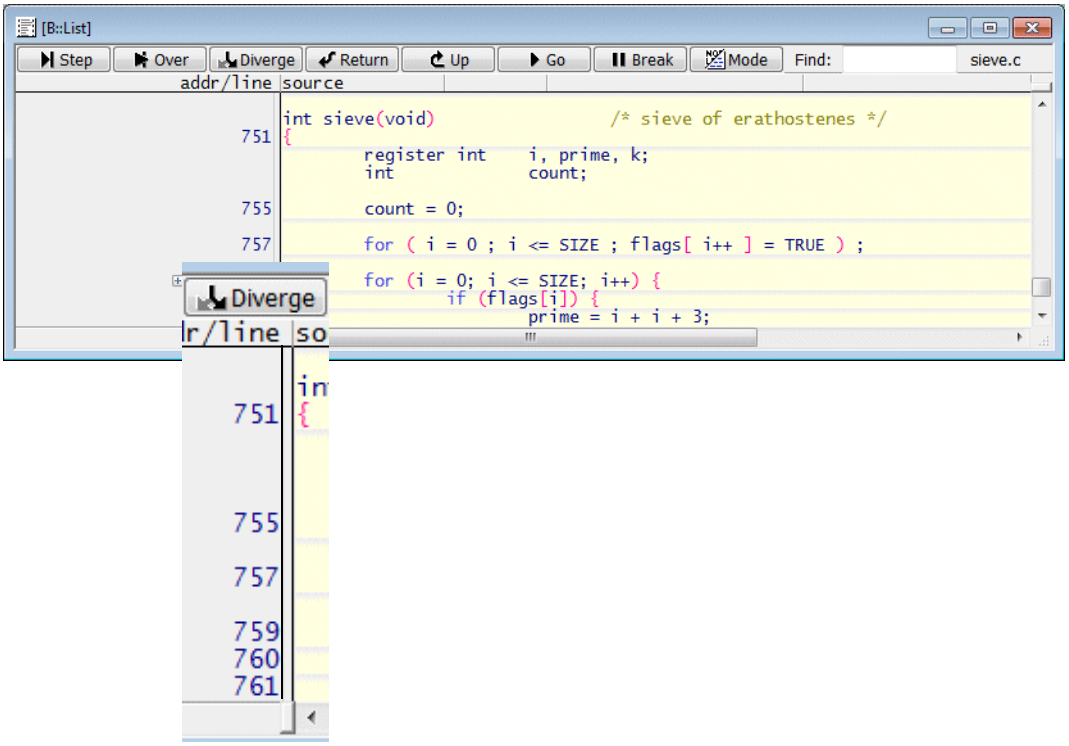
- Step
- Step.single

Format:	**Step.Diverge**

The **Step.Diverge** command can be used to exit loops or to fast forward to not yet reached HLL lines. It performs **Step.Over** repeatedly until an HLL line is reached which has not been reached in the previous steps.

TRACE32 maintains a list of all HLL lines which were already reached. These reached lines are marked with a slim grey line in the List window (see picture below).

In ASM/MIX mode, **Step.Diverge** applies to assembler code lines instead of HLL lines.

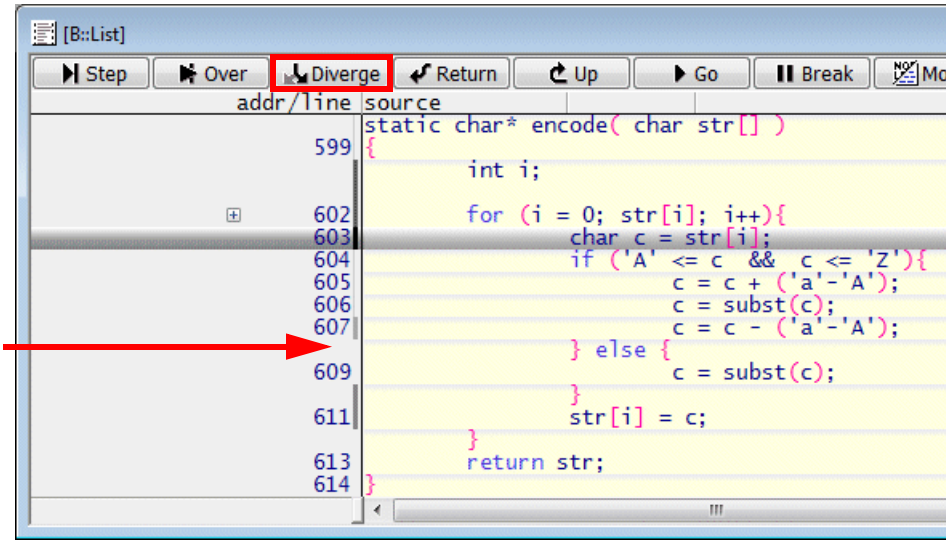


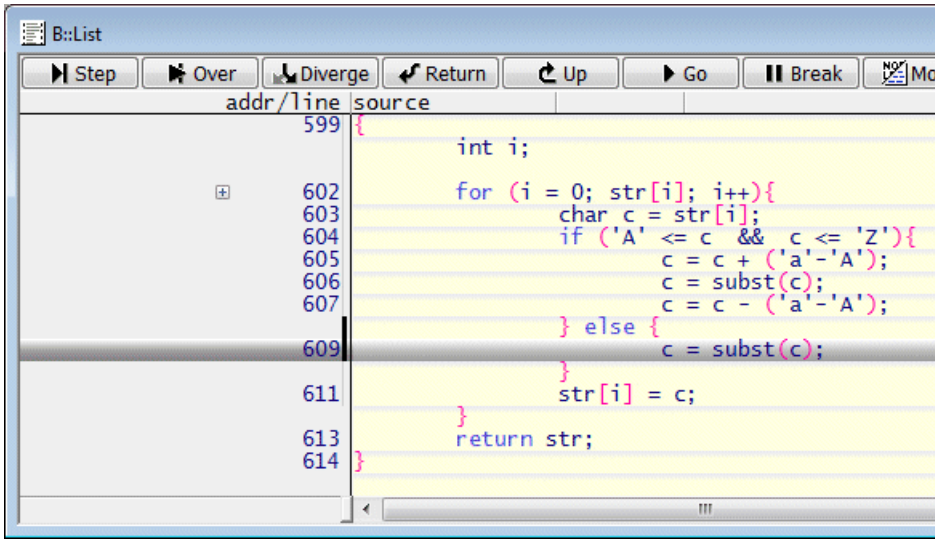
The *reached lines list* is cleared when you use the **Go.direct** command without address or the **Break** command while the program execution is stopped.

The *reached lines list* is not cleared at the following commands:

- **Step.single**, **Step.Over**, **Step.Change** *<expression>*, **Step.Till** *<condition>*
- **Var.Step.Change** *<hll_expression>*, **Var.Step.Till** *<hll_condition>*
- **Go.Return**, **Go.Up**, **Go.direct** *<address>*
- **Var.Go.direct** *<hll_expression>*

The debugger did not reach the **else** branch yet





See also

■ Step ■ Step.single

▲ 'Release Information' in 'Legacy Release History'

Format: **Step.Hll** [*<count>*]

Similar to the **Step.single** command, except that simultaneous switching into high-level language mode occurs.

See also

■ Step ■ Step.Mix ■ Step.single

▲ 'Release Information' in 'Legacy Release History'

Step.Mix Mixed single-stepping

Format: **Step.Mix** [*<count>*]

Similar to the **Step.single** command, except that simultaneous switching into mixed mode takes place.

See also

■ Step ■ Step.Hll ■ Step.single

Format: **Step.Over**

Steps within a function and runs called functions in real-time.

The method for this command is depends, whether the operation-mode is HLL or assembler (ASM/MIX).

ASM In assembler mode the debugger reads the instruction at the current PC. On a CALL instruction a **Go.Next** command is executed. All other instructions will cause a regular single-step command.

HLL In HLL mode the system first executes an HLL single-step. After this step it checks, whether the PC is still in the same function. If the PC has left the function it will check the value addressed by the SP. With that value being within the original function, the program is continued to that point. If this address contains no HLL breakpoint the above procedure will be repeated (HLL step …).

See also

- Step
- Step.single

▲ 'Release Information' in 'Legacy Release History'

Step.single Single-stepping

Format: **Step.single** [*<count>*]

Executes one program step until the next assembler instruction or HLL line, depending on the current debug mode, is reached. *<count>* is the number of command executions (default is 1).

Examples:

```
Step.single                    ; single step
Step.single 10.                ; 10 steps
```

See also

- Step
- Step.Asm
- Step.Back
- Step.BackChange
- Step.BackOver
- Step.BackTill
- Step.Change
- Step.Diverge
- Step.Hll
- Step.Mix
- Step.Over
- Step.Till
- SETUP.IMASKASM
- SETUP.IMASKHLL
- Var.Step

Format: **Step.Till** [*<boolean_expression>*]

Steps till the boolean expression becomes true. The command will stop also if the expression cannot be evaluated.

Examples:

```
Step.Till Register(A7)>0x1000          ; steps till register A7 is larger
                                       ; than 1000

Step.Till Data.Long(SD:0x100)==0x0     ; steps till the long word at
                                       ; location 100 gets the value 0
```

See also

- Step
- Step.single

STM System trace configuration

STM by ARM, STM and STDI by Texas Instruments

A system trace is a hardware module on a SoC which enables the developer to output predefined hardware or software messages without affecting the run-time behavior of the system.

For a description of the **STM** commands, see **"System Trace User's Guide"** (trace_stm.pdf).

STOre — Store settings as PRACTICE script

Format:	**STOre** *<file>* [[**%***<format>*]*<item>* …] [**/***<option>*]
<format>:	**sYmbol** | **NosYmbol**
<item>:	**default** | **ALL** | **Win** | **WinPAGE** | **WinTOP** | **SYStem** …
<option>:	**NoDate**

Stores settings in the format of a PRACTICE script (*.cmm). The script can be executed by using the **DO** command.

<format>	Description
sYmbol	Addresses (e.g. for the commands **Break** or **GROUP**) are stored as symbols. With this option, breakpoints can be stored and recalled for a newer version of the program with different addresses. The keyword must be entered **before the item** which shall be stored. The default can be set with **SETUP.STOre.SYMBOLIC**.
NosYmbol	Addresses (e.g. for the commands **Break** or **GROUP**) are stored as scalar values (plain hex). With this option, stored breakpoints can be recalled when no debug symbols are available. The keyword must be entered **before the item** which shall be stored.

<item>	Description
no item specified	If no item is specified, then the **default** setting is used; see **default** below.
AREA	Store the current **AREA** settings.
ALL	Store all settings.
Analyzer	See **Analyzer** command.
AnalyzerFocus	Save the current AUTOFOCUS configuration to a file.
ART	See **ART** command.
BookMark	Store the settings of trace bookmarks and address bookmarks - see **BookMark** command. To export bookmarks as an XML file, see **BookMark.EXPORT**.
Break	Store breakpoints - see **Break** command.
BSDL	Store the boundary scan settings. See **BSDL** command.

<item>	Description
CAnalyzer	See **CAnalyzer** command.
CAnalyzerFocus	Store the electrical settings for the CAnalyzer. See **CAnalyzer.ShowFocus**.
CIProbe	See **CIProbe** command.
Count	See **Count** command.
default	Some settings are stored by default, **except for the window setting**.
EDITOR	Store the auto-indentation settings, etc. for all TRACE32 editors. See **SETUP.EDITOR**.
FDX	See **FDX** command.
FLASH	(For diagnostic purposes only.) Store the FLASH declaration displayed in the **FLASH.List** window and the settings made with the **FLASH.TARGET** command.
GLOBAL	Stores global PRACTICE macros with the current values - see **GLOBAL** command.
GROUP	See **GROUP** command.
HELP	Stores help settings and bookmarks - see **HELP** command
HISTory	See **HISTory** command.
LA	Logic Analyzer - see **LA** command.
LOGGER	See **LOGGER** command.
MAP	See **MAP** command.
MARKER	See **sYmbol.MARKER**.
NAME	See **NAME** command.
NoDate (deprecated)	Omit the date at the beginning of the generated script. Use the option **/NoDate** instead.
On-chip	See **Onchip** command.
PBREAK	Stores the breakpoints created for PRACTICE scripts (*.cmm). See **PBREAK** command group.
PERF	Performance Analyzer - see **PERF** command.
POD	See **POD** command.
Register, RegSet	See **Register** command.
SNOOP	See **SNOOP** command.
SPATH	Source search path - see **sYmbol.SPATH** command.
SPATHCACHE	Stores cached directories from the **sYmbol.SPATH** command.

<item>	Description
Symbolic | **HEX** (deprecated)	Addresses are stored as symbols or scalar values (plain hex). Use the format parameter **%sYmbol** or **%NosYmbol** instead.
SYnch	See **SYnch** command.
SYStem	See **SYS** command.
TRANSlation	Store all static address TRANSlations as well as all common, transparent and protected address ranges as displayed by command **TRANSlation.List**.
TrOnchip	Trigger Onchip - see **TrOnchip** command.
TrPOD	Trigger Probe - see **TP** command.
VCO	See **VCO** command.
Win	Store entire window configuration.
WinPAGE	Store the current window page. See **WinPAGE** command.
WinTOP	Store the active window. See **WinTOP** command.

<option>	Description
NoDate	Omit the comment containing the current date at the beginning of the generated PRACTICE script file (*.cmm).

Example: executing the following STOre command in TRACE32 PowerView for ARM64 connected to Zynq-Ultrascale+ processor

```
STOre ~~~\test.cmm SYStem
```

produces the following file:

```
B::

SYStem.RESet
SYStem.CPU ZYNQ-ULTRASCALE+-APU
SYStem.CONFIG CoreNumber 4.
SYStem.CONFIG CORE 1. 1.
CORE.ASSIGN 1. 2. 3. 4.
SYStem.MemAccess DAP
SYStem.CpuBreak Enable
SYStem.CpuSpot Enable
SYStem.JtagClock 10.MHz
SYStem.Option.MMUPLM OFF
SYStem.Option.ENRESET OFF
SYStem.Option.TRST OFF
SYStem.CONFIG.DAPIRPRE 0.
SYStem.CONFIG.DAPDRPRE 0.
SYStem.CONFIG.DAPIRPOST 12.
SYStem.CONFIG.DAPDRPOST 1.
SYStem.CONFIG.SLAVE OFF
SYStem.CONFIG.TAPState SELectDRscan
SYStem.Mode Up

ENDDO
```

See also

- AutoSTOre
- BookMark.List
- ClipSTOre
- SETUP.QUITDO
- SETUP.STOre

SVE — Access the scalable vector extension SVE

This command group allows to access the scalable vector extension (SVE). They are available for the processor architecture ARMv8.2 and newer.

SVE.Init — Initialize SVE registers

Format: **SVE.Init**

Sets the SVE registers to their default values.

SVE.RESet — Reset SVE settings

Format: **SVE.RESet**

Resets debugger SVE settings.

SVE.Set — Modify SVE registers

Format: **SVE.Set**

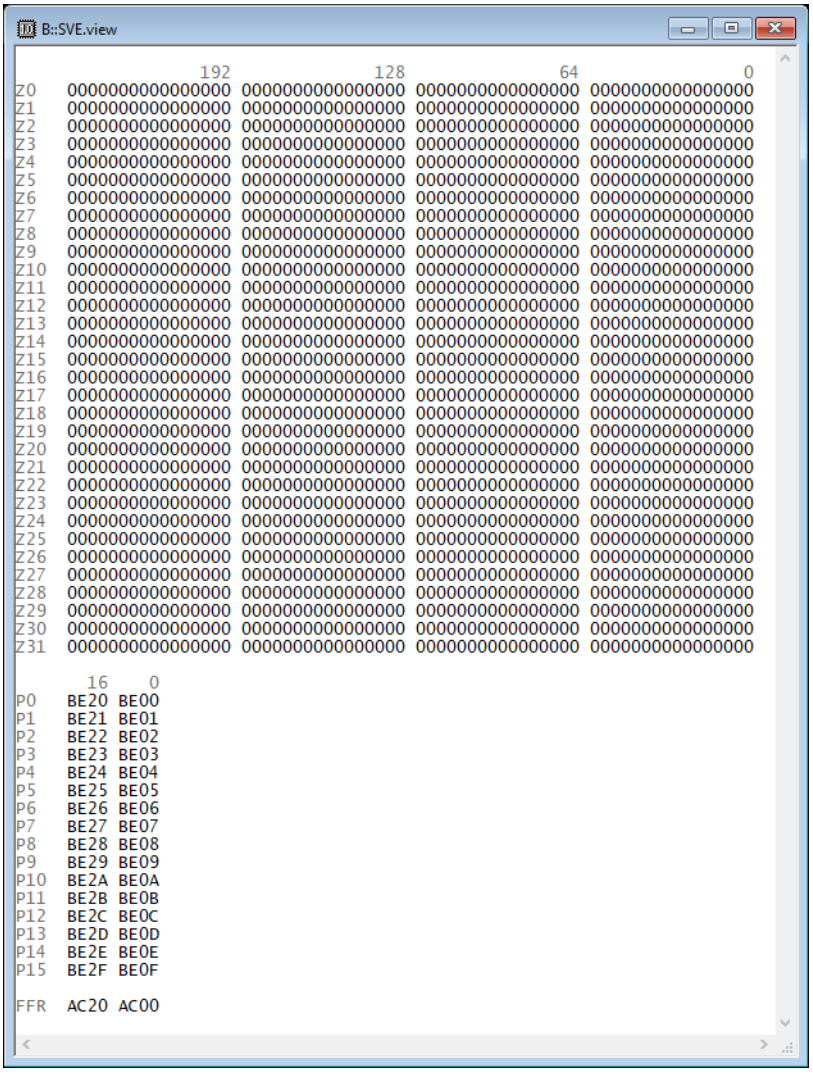
Allows to modify SVE registers. Predicate registers and the FFR cannot be modified.

Registers can be modified with either floating-point values, or hexadecimal values.

Format:	**SVE.view**

All accessible SVE registers are displayed in a window. The contents of this window depend on the implemented vector size.

The FFR register cannot be displayed. Predicate registers are read only.



sYmbol

Debug symbols

See also

- sYmbol.AddInfo
- sYmbol.AutoLOAD
- sYmbol.Browse
- sYmbol.CASE
- sYmbol.CHECK
- sYmbol.Class
- sYmbol.CLEANUP
- sYmbol.ColorCode
- sYmbol.ColorDef
- sYmbol.CREATE
- sYmbol.CUTLINE
- sYmbol.Delete
- sYmbol.DeleteMACRO
- sYmbol.DeletePATtern
- sYmbol.DEMangle
- sYmbol.DEOBFUSCATE
- sYmbol.DONE
- sYmbol.ECA
- sYmbol.ForEach
- sYmbol.INFO
- sYmbol.LANGUAGE
- sYmbol.List
- sYmbol.LSTLOAD
- sYmbol.MARKER
- sYmbol.MATCH
- sYmbol.MEMory
- sYmbol.Modify
- sYmbol.name
- sYmbol.NAMESPACES
- sYmbol.NEW
- sYmbol.OVERLAY
- sYmbol.PATCH
- sYmbol.POINTER
- sYmbol.POSTFIX
- sYmbol.PREFIX
- sYmbol.RELOCate
- sYmbol.RESet
- sYmbol.SourceBeautify
- sYmbol.SourceCONVert
- sYmbol.SourceLOAD
- sYmbol.SourcePATH
- sYmbol.SourceRELOAD
- sYmbol.STATE
- sYmbol.STRIP
- sYmbol.TYPEINFO
- sYmbol.View

▲ 'sYmbol Functions' in 'General Function Reference'
▲ 'Release Information' in 'Legacy Release History'

Overview sYmbol

Using the **sYmbol** command group, you can list, browse, or modify existing symbols and create new symbols.

Symbolic information is stored in several tables combined with one another. For details about the syntax of symbols, search paths and C++ support, refer to the description of the **Var** command group.

Statics	Contains all static symbols, i.e. symbols with a fixed address. The symbol may be local related to a function, a module or a program.
Functions	Contains all function blocks and additional information about functions, i.e. virtual frame pointers, register usage, stack frame layout.
Locals	All local symbols of a function. The ranges of validity are also contained in this table.
Modules	A module is one separately compiled program unit, i.e. one source file.
Types	High level language types and the physical description. Only named types are included in this table.
Sources	Contains a list of all HLL source files and the path names to the sources.
SPATH	List of directories of the source search path.

Lines	High level language source lines, respectively blocks. On one address can be one high level language block only.
Sections	Logical and physical program address ranges. According to the compiler a differentiation between 'CODE', 'DATA', 'BSS', 'ROMABLE' etc. is made. For each section special access rights are valid.
Programs	Usually only one program is loaded. If more than one has been loaded, the option **NoClear** must be used together with the **Data.LOAD** command.
Stacks	Contains information about the stack frame. Usually this is the offset between a register in the processor and a “virtual frame pointer”. This information is needed when there is no real frame pointer register used by highly optimizing compilers.
Attributes	This table is target dependent. It may contain information about different processor executing environments (e.g. ARM/Thumb) or special code constructs (e.g. jump tables or literal data in code).
Macros	Contains the contents of preprocessor macros. This information is not available for all compilers. However it may be generated manually with the **sYmbol.CREATE.MACRO** command.
Map	Holds a log of all memory operations during download. Only maintained when the option **MAP** was set with the load command.
Compilers	This listing contains compiler specific information. It cannot be displayed and is determined on internal use by the HLL debugger

PRACTICE Functions

Refer to **“sYmbol Functions”** in General Function Reference, page 298 (general_func.pdf).

Format: **sYmbol.AddInfo**

The command can provide additional information about structures, pointers or variables. The information can scale the display, make typecasts or provide application specific interpretation of information (e.g. C++ descriptor displays).

Here is a list of additional symbolic information types that can be set (not all symbolic information types are available depending on what the information is assigned to):

Scaled *<multiplier>* [*<offset>* *<explanation>*]]	Scales the value of the element: trueValue = (srcValue * multiplier) + offset.
RScaled *<multiplier>* [*<offset>* [*<explanation>*]]	Scales the value of the element: trueValue = (multiplier / srcValue) + offset
<explanation>	Any user-defined text, such as class name, meaning, type, unit of measurement, etc. (See example)
JSTRING	Handles the element as pointer pointing to a string stored in the Java jstring representation. (See example)
NSTRING *<bitmask>*	Handles the element as pointer pointing to a structure, where the first element is the string length and the next element is the string. (See example)
ZSTRING	Handles the element as pointer pointing to a C-like string (string terminated by zero). (See example)
MaskedPointer *<mask>* [*<offset>*]	Modifies the pointer target address: truePointer = (srcPointer & mask) | offset (See example)
MostDerived *<struct/class_name>*	Forces data referenced by a pointer to be displayed as data of the declared struct or class (See example)
DESCRIPTOR	Forces data references by a pointer to be displayed according to a descriptor.
ENUM *<item_value>* *<item_name>*	Adds a name for a value inside a variable.
Hex	Marks the element to be displayed in hexadecimal.
Decimal	Marks the element to be displayed in decimal.

Ascii	Marks the element to be displayed as ASCII.
sYmbol	Marks the element to be displayed as a pointer to a symbol.
HIDE	Hides the element from watch windows.
BigEndian	Forces access to element in BigEndian byte order.
LittleEndian	Forces access to element in LittleEndian byte order.
LINK *<link_name>*	Format an element as defined by the **sYmbol.AddInfo.LINK** command.

See also

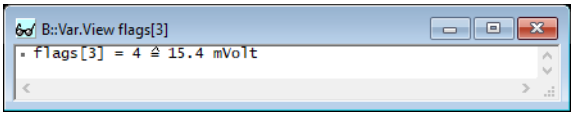
- sYmbol.AddInfo.Address
- sYmbol.AddInfo.LINK
- sYmbol.AddInfo.LOADASAP2
- sYmbol.AddInfo.RESet
- sYmbol.AddInfo.Var
- sYmbol.AddInfo.Delete
- sYmbol.AddInfo.List
- sYmbol.AddInfo.Member
- sYmbol.AddInfo.Type
- sYmbol

Format:	**sYmbol.AddInfo.Address** *<range>* | *<address>* *<info>* [*<parameters>*]
<info>:	**Scaled** *<multiplier>* [*<offset>* [*<explanation>*]] **RScaled** *<multiplier>* [*<offset>* [*<explanation>*]] …

Adds scaling information to an address or an address range. All symbolic information types are described in **sYmbol.AddInfo**.

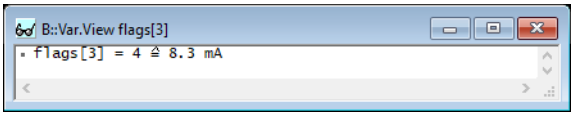
Example 1:

```
; multiply each HLL variable that is located in the address range
; 0xA1080000++0xff by 1.34 and add 10. Use mVolt as unit

sYmbol.AddInfo.Address 0xA1080000++0xff Scaled 1.34 +10. " mVolt"
```



Example 2:

```
; multiply the reciprocal contents of each HLL variable that is located
; in the address range 0xA1080000++0xff by 20. and add +3.3. Use mA as
; unit

sYmbol.AddInfo.Address 0xA1080000++0xff RScaled 20. +3.3 " mA"
```



See also

- sYmbol.AddInfo

Format: **sYmbol.AddInfo.Delete** *<name>*

Deletes existing information from the given variable or type name.

Example:

```
sYmbol.AddInfo.Var cstr1 ZSTRING

sYmbol.AddInfo.Delete "cstr1"
```

See also

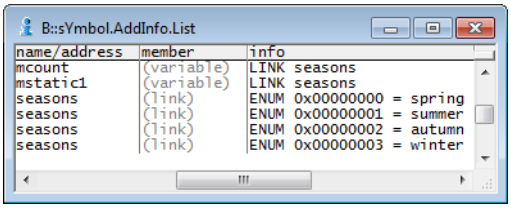
- sYmbol.AddInfo
- sYmbol.AddInfo.RESet

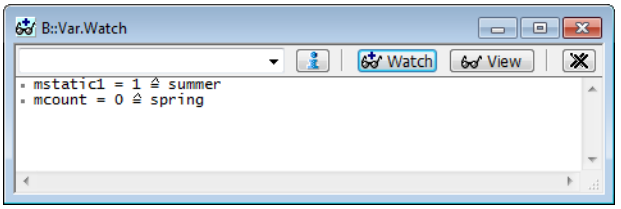
Format:	**sYmbol.AddInfo.LINK** *<link_name> <info>* [*<parameters>*]
<info>:	**NSTRING** *<bitmask>* **JSTRING** **ZSTRING** **MostDerived** *<struct | class>* **DESCRIPTOR** *<bitmask> <struct | class>* ...

Defines information for other **sYmbol.AddInfo** commands. All symbolic information types are described in **sYmbol.AddInfo**.

Example:

```
sYmbol.AddInfo.List

;1. create description group 'seasons'
;2. link meaningful description to each numerical value
sYmbol.AddInfo.LINK seasons enum 0 "spring"
sYmbol.AddInfo.LINK seasons enum 1 "summer"
sYmbol.AddInfo.LINK seasons enum 2 "autumn"
sYmbol.AddInfo.LINK seasons enum 3 "winter"
; equivalent to C statement symbols for
; "enum seasons {spring, summer, autumn, winter};"

;link the integer variables to the description group 'seasons'
sYmbol.AddInfo.Var mcount   LINK seasons
sYmbol.AddInfo.Var mstatic1 LINK seasons

Var.Watch
Var.AddWatch mcount
Var.AddWatch mstatic1

Var.set mcount=0
Var.set mstatic1=1
```



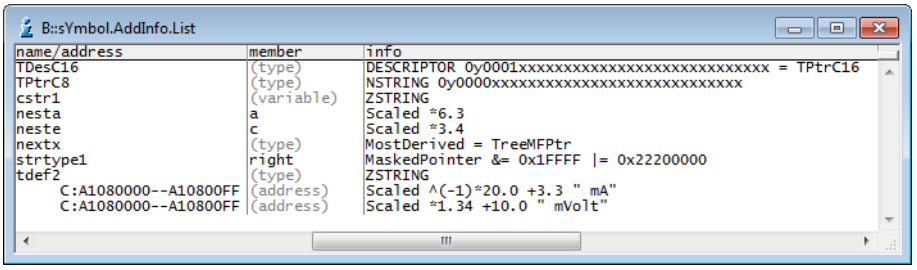


See also

- sYmbol.AddInfo

Format: **sYmbol.AddInfo.List**

Shows all available additional information which has been declared by **sYmbol.AddInfo** commands.



See also

■ sYmbol.AddInfo

sYmbol.AddInfo.LOADASAP2 Load scaling information from ASAP2 file

Format: **sYmbol.AddInfo.LOADASAP2** *<file>*

Loads the scaling and physical unit information from an ASAP2 file.

See also

■ sYmbol.AddInfo ■ Data.LOAD.ASAP2

▲ 'Release Information' in 'Legacy Release History'

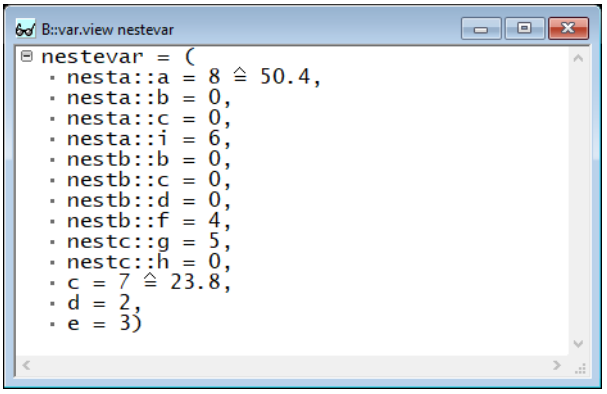
Format:	**sYmbol.AddInfo.Member** *<type> <member> <info>* [*<parameters>*]
<info>:	**Scaled** *<multiplier>* [*<offset>* [*<explanation>*]] **RScaled** *<multiplier>* [*<offset>* [*<explanation>*]] **ZSTRING** **MaskedPointer** *<mask> <offset>* **MostDerived** *<struct/class_name>* ...

Add information to specific member of a specific struct or class. All symbolic information types are described in **sYmbol.AddInfo**.

<type>	Name of struct or class.
<member>	Name of struct or class element.

Example 1

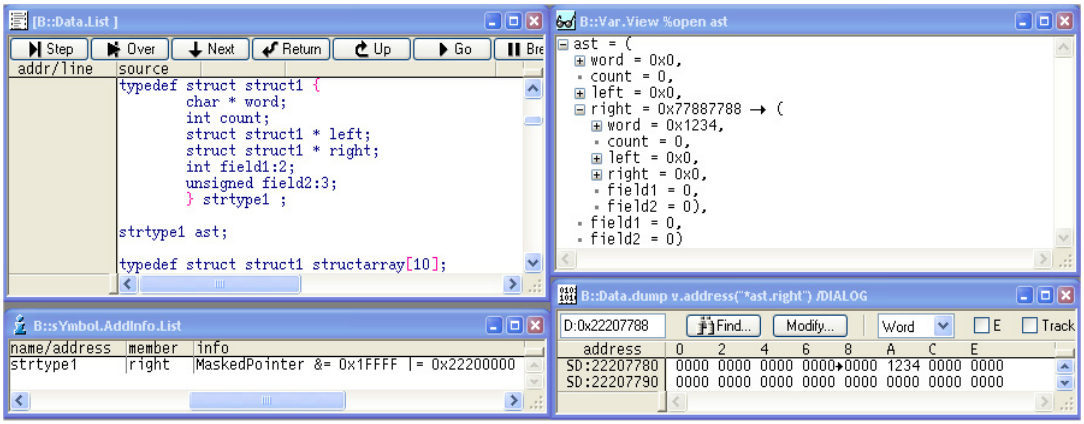
```
sYmbol.AddInfo.Member neste c Scaled 3.4

sYmbol.AddInfo.Member nesta a Scaled 6.3
```



Example 2

A masked pointer is a pointer where only a part of the “pointer value” is stored. In the following example, the element ast->right is a value, whose lower 17 bits are the part of an address. The target address is calculated using the lower 17 bits and adding 0x22200000 as base address. The pointer in this example is declared using the command:

```
sYmbol.AddInfo.Member strtype1 right MaskedPointer 0x0001FFFF 0x22200000
```



Example 3

C Code:

```
struct example{ uint32 mode : 2; } instance;
enum values { on = 0, off, flicker };
```

PRACTICE script:

```
;                      <class_name> <member> ENUM <item_value> <item_name>
sYmbol.AddInfo.Member  example      mode     ENUM  0            "on"
sYmbol.AddInfo.Member  example      mode     ENUM  1            "off"
sYmbol.AddInfo.Member  example      mode     ENUM  2            "flicker"

sYmbol.CREATE.MACRO on       0
sYmbol.CREATE.MACRO off      1
sYmbol.CREATE.MACRO flicker  2
sYmbol.CREATE.Done

Var.Set instance.mode=flicker
```

See also

- sYmbol.AddInfo

Format: **sYmbol.AddInfo.RESet**

Removes all additional information.

See also

- sYmbol.AddInfo
- sYmbol.AddInfo.Delete

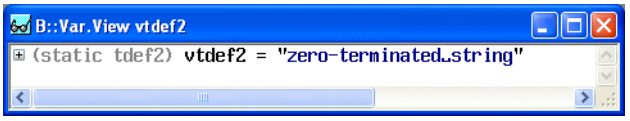
sYmbol.AddInfo.Type Add information to a data type

Format: **sYmbol.AddInfo.Type** *<type> <info>* [*<parameters>*]

<info>:
NSTRING *<bitmask>*
JSTRING
ZSTRING
MostDerived *<struct | class>*
DESCRIPTOR *<bitmask> <struct | class>*
...

Add information to a specific data type. All symbolic information types are described in **sYmbol.AddInfo**.

```
sYmbol.AddInfo.Type tdef2 ZSTRING     ; the data type tdef2 is a zero-
                                      ; terminated string
```



The following shows examples to display Symbian OS descriptors and strings correctly in the debugger window.

```
sYmbol.AddInfo.Type "TDesC16" DESCRIPTOR 0x1xxxxxxx "TPtrC16"

sYmbol.AddInfo.Type "TPtrC8" NSTRING 0x0xxxxxxx

sYmbol.AddInfo.Type nextx MostDerived "TreeMFPtr"
```

See also

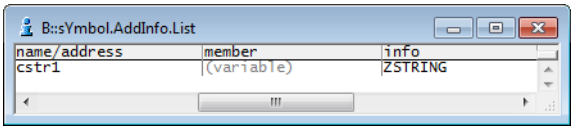
- sYmbol.AddInfo

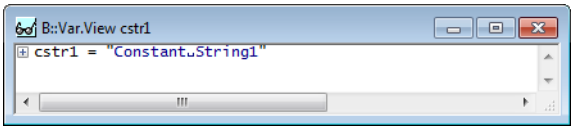
Format:	**sYmbol.AddInfo.Var** *<var>* *<info>* [*<parameters>*]
<info>:	**Scaled** *<multiplier>* [*<offset>* [*<explanation>*]] **RScaled** *<multiplier>* [*<offset>* [*<explanation>*]] **ZSTRING** **MaskedPointer** *<mask>* *<offset>* **MostDerived** *<string>* ...

Adds type information to a variable. All symbolic information types are described in **sYmbol.AddInfo**.

Example:

```
sYmbol.AddInfo.Var cstr1 ZSTRING      ;The contents of cstr1 is a zero-
                                      ;terminated string

sYmbol.AddInfo.List                   ;Display definition list
```





See also

- sYmbol.AddInfo

Format: **sYmbol.AutoLOAD**.*<sub_cmd>*

The command **sYmbol.AutoLOAD** allows to automate the loading of symbol files. This is helpful if a boot loader or an RTOS downloads code to the target. To debug this downloaded code loading of the appropriate symbol information is required.

The **sYmbol.AutoLOAD** command maintains a list for automatic loading of symbol information. This list contains:

- A list of address ranges
- For each address range a component name and an appropriate load command

Whenever the user wants to display an address within a specified address range, and TRACE32 also needs symbol information for the display, the appropriate load command is automatically started.

See also

- sYmbol.AutoLOAD.CHECK
- sYmbol.AutoLOAD.CHECKDLL
- sYmbol.AutoLOAD.CHECKLINUX
- sYmbol.AutoLOAD.CHECKUEFI
- sYmbol.AutoLOAD.CHECKWINCE
- sYmbol.AutoLOAD.config
- sYmbol.AutoLOAD.Delete
- sYmbol.AutoLOAD.LOADEPOC
- sYmbol.AutoLOAD.SET
- sYmbol
- sYmbol.AutoLOAD.CHECKCoMmanD
- sYmbol.AutoLOAD.CHECKEPOC
- sYmbol.AutoLOAD.CHECKQNX
- sYmbol.AutoLOAD.CHECKWIN
- sYmbol.AutoLOAD.CLEAR
- sYmbol.AutoLOAD.Create
- sYmbol.AutoLOAD.List
- sYmbol.AutoLOAD.RESet
- sYmbol.AutoLOAD.TOUCH

Format:	**sYmbol.AutoLOAD.CHECK** [**now** [**/***<option>*] | **ON** | **OFF** | **ONGO**]
<option>:	**MACHINE** *<machine_magic>* | *<machine_id>* | *<machine_name>*

A single **sYmbol.AutoLOAD.CHECK** command triggers the refresh of the Autoloader table (**sYmbol.AutoLOAD.List**).

now	Update the Autoloader table now.
ON	If set to **ON**, TRACE32 updates the autoloader table after every single step and whenever the program execution is stopped. This significantly slows down the speed of TRACE32.
OFF	If set to **OFF**, no automatic update of the autoloader table is done.
ONGO	TRACE32 updates the autoloader table whenever the program execution is stopped.
MACHINE	Updates the autoloader table only for the specified machine. See also **"What to know about the Machine Parameters"** (general_ref_t.pdf).

See also

- sYmbol.AutoLOAD
- sYmbol.AutoLOAD.config

Format:	**sYmbol.AutoLOAD.CHECKCoMmanD** *<load_command>* [*/<option>*]
<option>:	**MACHINE** *<machine_magic>* | *<machine_id>* | *<machine_name>*

The dynamic autoloader reads the target's component table and fills the autoloader list with the components found on the target. All necessary information, such as load addresses and space IDs, are retrieved from kernel-internal information. The dynamic autoloader is activated by the command **sYmbol.AutoLOAD.CHECK**.

<load_command>	If an address is accessed that is covered by the autoloader list, the autoloader calls *<load_command>* and appends the load addresses and the space ID of the component to the action. Usually, *<load_command>* is a call to a PRACTICE script (*.cmm) that handles the parameters and loads the symbols. Please see the example scripts in the ~~/demo directory.
MACHINE	Allows to specify different autoloader scripts for different machines. See also **"What to know about the Machine Parameters"** (general_ref_t.pdf).

Example:

```
sYmbol.AutoLOAD.CHECKCoMmanD "DO autoload"

sYmbol.AutoLOAD.CHECK

sYmbol.AutoLOAD.List
```

This command needs an OS Awareness configured for the OS running on the target. Please see the **OS Awareness Manuals** (rtos_*<os>*.pdf) for further information.

NOTE:	The dynamic autoloader covers only components that are already started. Components that are not in the current process/library table are not covered.

See also

- sYmbol.AutoLOAD
- sYmbol.AutoLOAD.CHECKCMD()
- sYmbol.AutoLOAD.config

Format: **sYmbol.AutoLOAD.CHECKDLL** [*<address>*] [*<load_command>*]

This command can only be used with Texas Instruments DSPs.

If the symbol **__DLModules** is not available, please specify the *<address>* for the automatic DLL file loader. If no *<load_command>* is specified **DO autoload** is used. The automatic DLL file loader is activated by the command **sYmbol.AutoLOAD.CHECK**.

Please refer also to the examples in ~~/demo/c5000/etc/dll/

See also

- sYmbol.AutoLOAD
- sYmbol.AutoLOAD.config

Format: **sYmbol.AutoLOAD.CHECKEPOC** *<load_command>*

The dynamic autoloader reads the target's process table and fills the autoloader list with the modules found on the target. All necessary information, such as load addresses and space IDs, are retrieved from kernel-internal information. The dynamic autoloader also covers dynamically loaded modules. The dynamic autoloader is activated by the command **sYmbol.AutoLOAD.CHECK**.

If an address is accessed that is covered by the autoloader list, the autoloader calls *<load_command>* and appends the load addresses and the space ID of the module to the action. Usually, *<load_command>* is a call to a PRACTICE script (*.cmm) that handles the parameters and loads the symbols. Please see the example scripts in the ~~/demo directory.

Example:

```
sYmbol.AutoLOAD.CHECKEPOC "DO autoload.cmm"
```

NOTE:
- The dynamic autoloader covers only modules that are already started. Modules that are not in the current process/library table are not covered.
- If a process symbol file is loaded, the dynamic autoloader adds the space ID, which may be used to load the symbols to the appropriate space.

See also

■ sYmbol.AutoLOAD ■ sYmbol.AutoLOAD.config

sYmbol.AutoLOAD.CHECKLINUX Configure autoloader for Linux debugging

Format: **sYmbol.AutoLOAD.CHECKLINUX** *<action>* (deprecated)

This command is deprecated. Use **sYmbol.AutoLOAD.CHECKCoMmanD** instead.

See also

■ sYmbol.AutoLOAD ■ sYmbol.AutoLOAD.config

sYmbol.AutoLOAD.CHECKQNX Configure autoloader for QNX debugging

Format: **sYmbol.AutoLOAD.CHECKQNX** *<action>* (deprecated)

This command is deprecated. Use **sYmbol.AutoLOAD.CHECKCoMmanD** instead.

See also

- sYmbol.AutoLOAD

sYmbol.AutoLOAD.CHECKUEFI Configure autoloader for UEFI debugging

Format: **sYmbol.AutoLOAD.CHECKUEFI** *<load_command>*

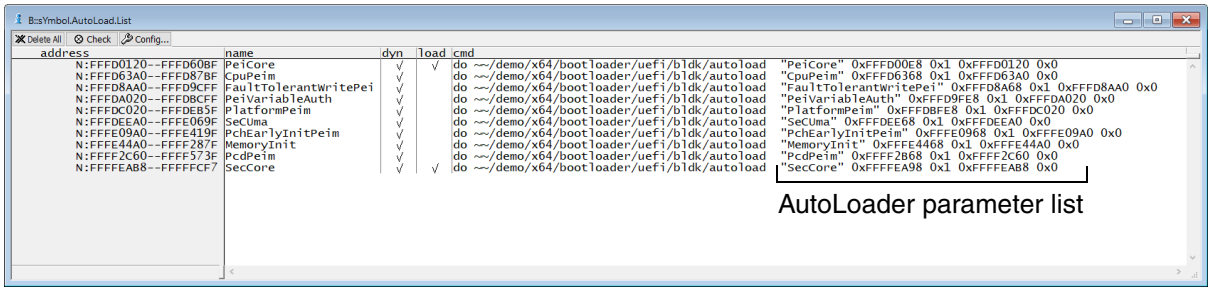
The UEFI code is provided by the boot FLASH, but debugging becomes more comfortable when debug symbols are available. TRACE32 uses the so-called **Autoloader** to realize the automatic loading of debug symbols whenever they are required.

The command **sYmbol.AutoLOAD.CHECKUEFI** specifies the command that is automatically used by the Autoloader to load the symbol information. Usually a script called `autoload.cmm` provided by Lauterbach is used.

The command **sYmbol.AutoLOAD.CHECKUEFI** implicitly also defines the parameters that TRACE32 uses internally for the Autoloader (see screenshot below).

When the Autoloader is configured, the command **sYmbol.AutoLOAD.CHECK** can be used to scan the UEFI module table and to activate the Autoloader. The command **sYmbol.AutoLOAD.List** allows to inspect the scanned module information.

Since the UEFI module table is updated by UEFI, a re-scan might be necessary.




```
sYmbol.AutoLOAD.CHECKUEFI \
                    "DO ~~/demo/x86/bootloader/uefi/h2o/autoload.cmm"

sYmbol.AutoLOAD.CHECK

sYmbol.AutoLOAD.List
```

See also

- sYmbol.AutoLOAD
- sYmbol.AutoLOAD.config

sYmbol.AutoLOAD.CHECKWIN — Configure autoloader

Format: **sYmbol.AutoLOAD.CHECKWIN** *<action>* (deprecated)

This command is deprecated. Use **sYmbol.AutoLOAD.CHECKCoMmanD** instead.

See also

- sYmbol.AutoLOAD

sYmbol.AutoLOAD.CHECKWINCE — Configure autoloader

Format: **sYmbol.AutoLOAD.CHECKWINCE** *<action>* (deprecated)

This command is deprecated. Use **sYmbol.AutoLOAD.CHECKCoMmanD** instead.

See also

- sYmbol.AutoLOAD

Format:	**sYmbol.AutoLOAD.CLEAR** *<address>* | *<component_name>* [*/<option>*]
<option>:	**MACHINE** *<machine_magic>* | *<machine_id>* | *<machine_name>*

Removes symbol information for the specified *<address>* or *<component_name>*.

MACHINE	Removes symbol information only for the specified machine. See also **"What to know about the Machine Parameters"** (general_ref_t.pdf).

Examples:

```
sYmbol.AutoLOAD.CLEAR C:0x5009B420

sYmbol.AutoLOAD.CLEAR "*trkengine*"
```

See also

- sYmbol.AutoLOAD

sYmbol.AutoLOAD.config Configure symbol autoloader

Format:	**sYmbol.AutoLOAD.config**

Opens a configuration dialog for the symbol autoloader.

See also

- sYmbol.AutoLOAD
- sYmbol.AutoLOAD.CHECKCoMmanD
- sYmbol.AutoLOAD.CHECKEPOC
- sYmbol.AutoLOAD.CHECKUEFI
- sYmbol.AutoLOAD.CONFIG()
- sYmbol.AutoLOAD.CHECK
- sYmbol.AutoLOAD.CHECKDLL
- sYmbol.AutoLOAD.CHECKLINUX
- sYmbol.AutoLOAD.List

Format: **sYmbol.AutoLOAD.Create** *<range> <component_name> <load_command>*

Specify an entry for the Autoloader table. The complete Autoloader table can be displayed with the **sYmbol.AutoLOAD.List** command.

<component_name> Is the TRACE32 internal name for the symbol file. Please use the command **sYmbol.List.Program** to get this name.

<load_command> Can be either a command of the **Data.LOAD** command group or a PRACTICE script (*.cmm).

Example:

```
sYmbol.AutoLOAD.Create 0x1000--0x2fff "thumble" \
                          "Data.LOAD.Elf thumble.axf /NoClear /NoCODE"

sYmbol.AutoLOAD.Create 0x10000--0x1ffff "can" "DO Load_CAN"
```

See also

- sYmbol.AutoLOAD

sYmbol.AutoLOAD.Delete Delete autoloader entries

Format: **sYmbol.AutoLOAD.Delete** [*<name>* | *<address>*]

Deletes entries from the autoloader table. Without parameters, this commands clears the entire autoloader table.

Example:

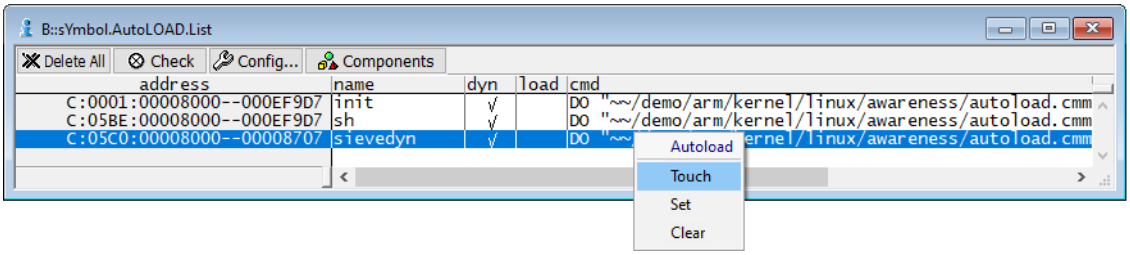
```
sYmbol.AutoLOAD.Delete "init"
```

See also

- sYmbol.AutoLOAD

Format: **sYmbol.AutoLOAD.List**

Lists the Autoloader table.



See also

- sYmbol.AutoLOAD
- sYmbol.AutoLOAD.config

Format:	**sYmbol.AutoLOAD.LOADEPOC** *<log_file> <load_command>* [**/***<option>*]
<option>:	**StripPATH** | **CutPATH** | **LowerPATH** **StripPART** *<number>* | *<string>*

When generating a Symbian OS ROM image (e.g. with “buildrom”), the builder generates a log file as well (usually “rombuild.log”). This log file contains the section addresses of all modules included in the image. The static autoloader reads this log file and fills the autoloader list with the modules found in the log file with it’s appropriate load addresses.

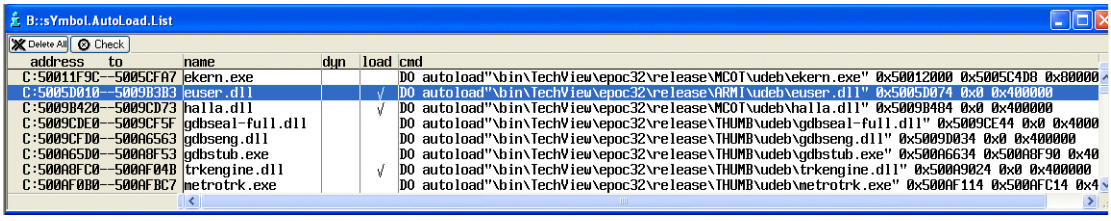
If an address is accessed that is covered by the autoloader list, the autoloader calls *<load_command>* and appends the load addresses of the module to the action. Usually, *<load_command>* is a call to a PRACTICE script that handles the parameters and loads the symbols. Please see the example scripts in the ~~/demo directory.

NOTE:

- The static autoloader addresses only modules that are linked into the ROM image. Modules loaded to the target dynamically are not covered.
- The log file does not include the process ID that a process will get when started. Thus, the static autoloader loads the symbols of a process to space ID zero.

Example:

```
sYmbol.AutoLOAD.LOADEPOC "la_001.techview.log" "DO autoload.cmm"
```



See also

- sYmbol.AutoLOAD

Format: **sYmbol.AutoLOAD.RESet**

Clears the autoloader table.

See also

- sYmbol.AutoLOAD

sYmbol.AutoLOAD.SET Mark symbol information manually as loaded

Format: **sYmbol.AutoLOAD.SET** *<name>* | *<address>* | *<addressrange>*

The command **sYmbol.AutoLOAD.Set** allows to manually mark symbol information as loaded. This is helpful to suppress an error message when no symbol information was generated for a specified address or component range.

Example:

```
sYmbol.AutoLOAD.SET 0x5015E030

sYmbol.AutoLOAD.SET "*efsrv*"
```

See also

- sYmbol.AutoLOAD

Format:	**sYmbol.AutoLOAD.TOUCH** *<component_name>* | *<addressrange>* | *<address>* [*/<option>*]
<option>:	**MACHINE** *<machine_magic>* | *<machine_id>* | *<machine_name>*

Initiates the loading of symbol information as defined by the **sYmbol.AutoLOAD.CHECKCoMmanD**.

<component_name>	Wildcards possible.
<address>	Any address within the address range used by a component.
<addressrange>	Touches all components mapped within the given address, e.g. librairies of a single process.
MACHINE	Touches only the component of the specified machine. See also **"What to know about the Machine Parameters"** (general_ref_t.pdf).

Examples:

```
sYmbol.AutoLOAD.TOUCH "*efsrv*"

sYmbol.AutoLOAD.TOUCH 0x50011f9c
```

See also

- sYmbol.AutoLOAD

See also

- sYmbol.Browse.Class
- sYmbol.Browse.Enum
- sYmbol.Browse.Function
- sYmbol.Browse.Module
- sYmbol.Browse.MVar
- sYmbol.Browse.name
- sYmbol.Browse.SFunction
- sYmbol.Browse.SModule
- sYmbol.Browse.SOURCE
- sYmbol.Browse.Struct
- sYmbol.Browse.sYmbol
- sYmbol.Browse.Type
- sYmbol.Browse.TypeDef
- sYmbol.Browse.Union
- sYmbol.Browse.Var
- sYmbol
- SETUP.sYmbol
- sYmbol.MATCHES()

▲ 'Release Information' in 'Legacy Release History'

sYmbol.Browse.Class Browse classes

Format: **sYmbol.Browse.Class** [*<name>*]

Lets you browse through the list of classes that have been loaded to the internal TRACE32 symbol database with **Data.LOAD**.

See also

- sYmbol.Browse
- sYmbol.Browse.name

sYmbol.Browse.Enum Browse enumeration types

Format: **sYmbol.Browse.Enum** [*<name>*]

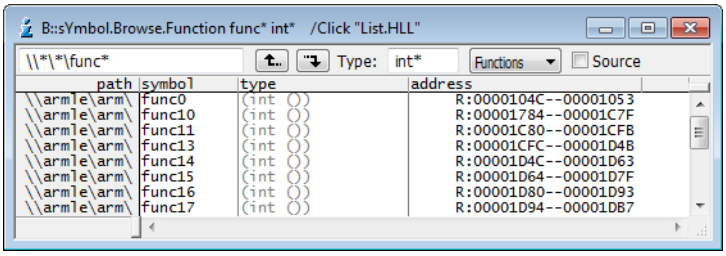
Lets you browse through the list of enumeration types that have been loaded to the internal TRACE32 symbol database with **Data.LOAD**.

See also

- sYmbol.Browse
- sYmbol.Browse.name

Format:	**sYmbol.Browse.Function** [*<name_pattern>* [*<type_pattern>*]] [**/***<option>*]
<option>:	**Click** *<cmd>* **Delete**

Lets you browse through the list of functions that have been loaded to the internal TRACE32 symbol database with **Data.LOAD**.



Alternatively, you can browse through the function list by selecting **Functions** from the drop-down list in the **sYmbol.Browse.sYmbol** window.

For a description of the command line arguments, see **sYmbol.Browse.sYmbol**.

In addition, the browser command is automatically executed when:

- A symbol is entered that ends with a wildcard or
- The symbol is not unique and the **sYmbol.MATCH** command is set to **Choose**.

Example:

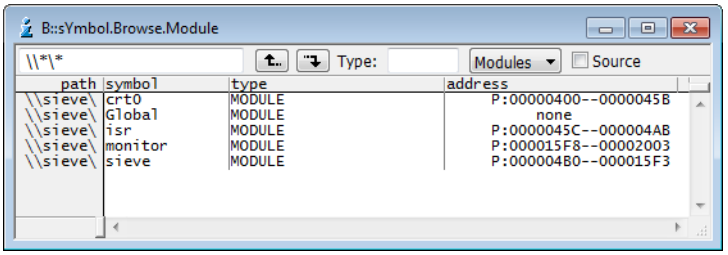
```
List.auto func*   ;First, the symbol browser opens, where you can select
                  ;the desired function with a double-click.

                  ;Then the selected function is displayed in the
                  ;List.auto window.
```

See also

- sYmbol.Browse
- sYmbol.Browse.name

Format:	**sYmbol.Browse.Module** [*<name_pattern>* [*<type_pattern>*]] [**/***<option>*]
<option>:	**Click** *<cmd>* **Delete**

Lets you browse through the list of modules that have been loaded to the internal TRACE32 symbol database with **Data.LOAD**.



Alternatively, you can browse through the module list by selecting **Modules** from the drop-down list in the **sYmbol.Browse.sYmbol** window.

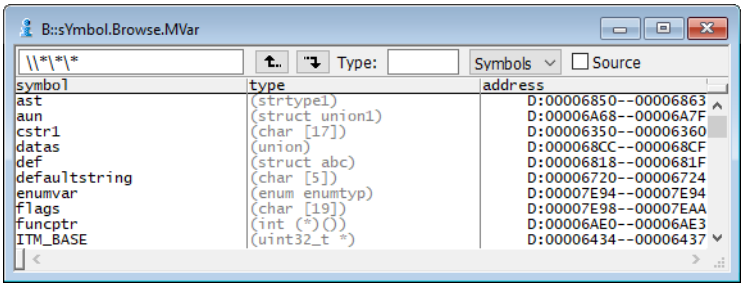
<name_pattern>, etc.	For a description of the command line arguments, see **sYmbol.Browse.sYmbol**.

See also

- sYmbol.Browse
- sYmbol.Browse.name

Format:	**sYmbol.Browse.MVar** [*<name_pattern>* [*<type_pattern>*]] [*/<option>*]
<option>:	**Click** *<cmd>* **Delete**

Lets you browse through the list of module variables that have been loaded to the internal TRACE32 symbol database with **Data.LOAD**. Functions and local variables are not displayed in the **sYmbol.Browse.MVar** window.



<name_pattern>, etc.	For a description of the command line arguments, see **sYmbol.Browse.sYmbol**.

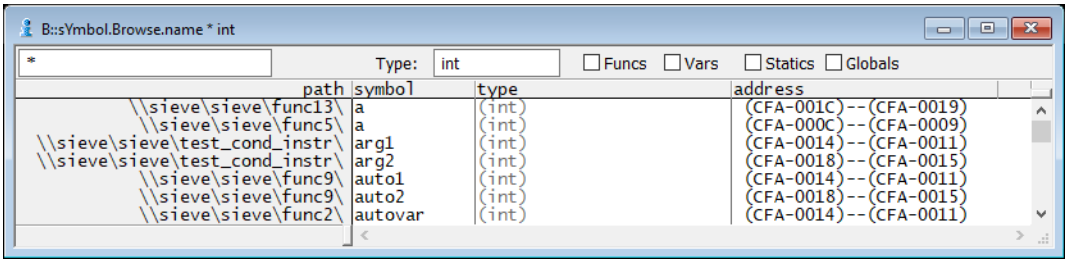
See also

- sYmbol.Browse
- sYmbol.Browse.name

sYmbol.Browse.name Browse symbols (flat)

Format:	**sYmbol.Browse.name** [*<name_pattern>* [*<type_pattern>*] [*/<option>*]
<option>:	**Click** *<cmd>* **Delete**

Display symbols sorted alphabetically. This command is an alias for **sYmbol.name**.



Lower and upper case characters are not distinguished. For mangled C++ symbols the search order is based on the function signatures. A complex search function is implemented to find symbol name very fast, if the complete name will be not known. The search patterns are:

'*'	Matches any string, empty strings too.
'?'	Matches any character, but not an empty character.
'"'	Can be used to input special characters like '*' or '?'

Click	Defines a command, that can be executed by a short click with the left mouse button. The characters '*' or '?' can be used as placeholder for the complete name of the symbol. Using the '*' will force the command to be executed without further interaction and without leaving the window. The character '?' will cause the cursor to leave the window and build a command line, that can be modified before entering.
Delete	Deletes the window after the selection has been made.

Refer to **sYmbol.name** for more information.

See also

- sYmbol.Browse
- sYmbol.Browse.Class
- sYmbol.Browse.Enum
- sYmbol.Browse.Function
- sYmbol.Browse.Module
- sYmbol.Browse.MVar
- sYmbol.Browse.SFunction
- sYmbol.Browse.SModule
- sYmbol.Browse.SOURCE
- sYmbol.Browse.Struct
- sYmbol.Browse.sYmbol
- sYmbol.Browse.Type
- sYmbol.Browse.TypeDef
- sYmbol.Browse.Union
- sYmbol.Browse.Var
- sYmbol.INFO

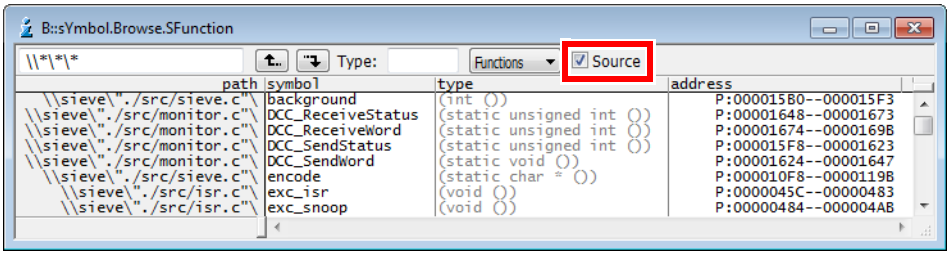
▲ 'The Symbol Database' in 'Training Source Level Debugging'

sYmbol.Browse.SFunction — Browse functions

Format:	**sYmbol.Browse.SFunction** [*<name_pattern>* [*<type_pattern>*]] [***/****<option>*]
<option>:	**Click** *<cmd>* **Delete**

Lets you browse through the list of functions that have been loaded to the internal TRACE32 symbol database with the **Data.LOAD** command.

The **S** in **SFunction** selects the **Source** check box. With the **Source** check box selected, the names of the source files are displayed instead of the module names.



Alternatively, you can browse through the function list by selecting **Functions** from the drop-down list in the **sYmbol.Browse.sYmbol** window.

<name_pattern>, etc.	For a description of the command line arguments, see **sYmbol.Browse.sYmbol**.

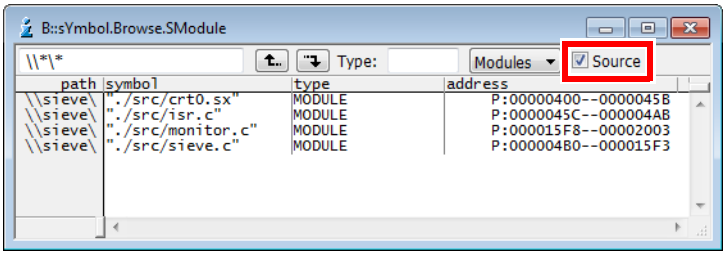
See also

- sYmbol.Browse
- sYmbol.Browse.name

Format:	**sYmbol.Browse.SModule** [*<name_pattern>* [*<type_pattern>*]] [**/***<option>*]
<option>:	**Click** *<cmd>* **Delete**

Lets you browse through the modules that have been loaded to the internal TRACE32 symbol database with **Data.LOAD**.

The **S** in **SModule** selects the **Source** check box. With the **Source** check box selected, the names of the source files are displayed instead of the module names.



Alternatively, you can browse through the module list by selecting **Modules** from the drop-down list in the **sYmbol.Browse.sYmbol** window.

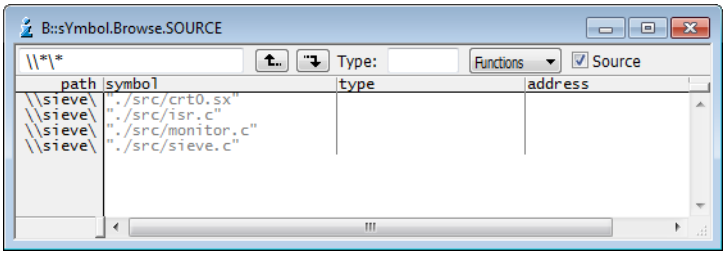
<name_pattern>, etc.	For a description of the command line arguments, see **sYmbol.Browse.sYmbol**.

See also

- sYmbol.Browse
- sYmbol.Browse.name

Format:	**sYmbol.Browse.SOURCE** [*<name_pattern>* [*<type_pattern>*]] [**/***<option>*]
<option>:	**Click** *<cmd>* **Delete**

Lets you browse through the list of source files that have been loaded to the internal TRACE32 symbol database with the **Data.LOAD** command.



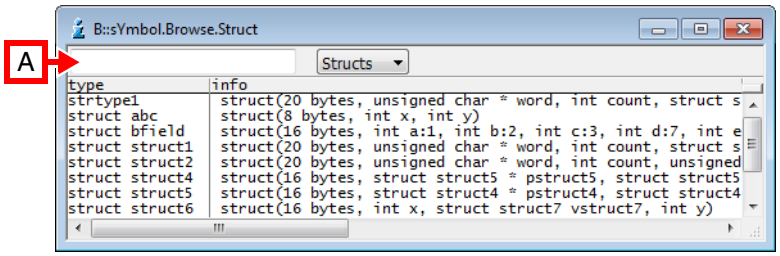
<name_pattern>, etc.	For a description of the command line arguments, see **sYmbol.Browse.sYmbol**.

See also

- sYmbol.Browse
- sYmbol.Browse.name

Format: **sYmbol.Browse.Struct** [*<name>*]

Lets you browse through the containers for different variable types that have been loaded to the internal TRACE32 symbol database with the **Data.LOAD** command.



A You can use the wildcards '*****' and '**?**' to filter the *<name>* list.

See also

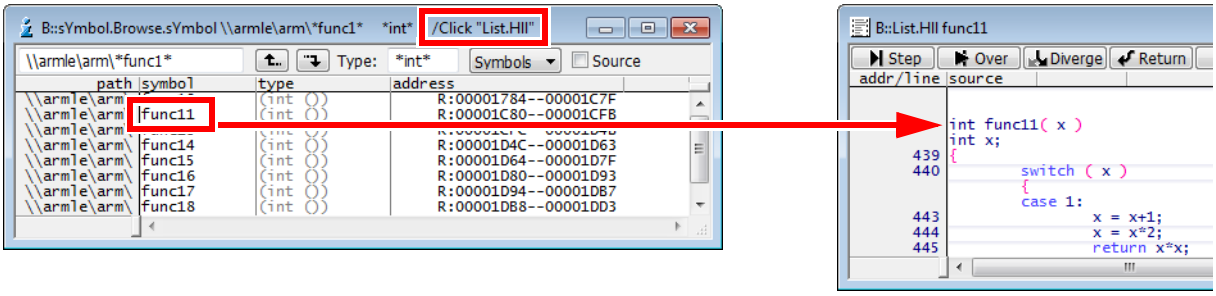
- sYmbol.Browse
- sYmbol.Browse.name

Format:	**sYmbol.Browse.sYmbol** [*<name_pattern>* [*<type_pattern>*]] [*/<option>*]
<option>:	**Click** *<cmd>* **Delete**

Lets you browse through the symbol and debug information that has been loaded to the internal TRACE32 symbol database with the **Data.LOAD** command.

Entering an ASCII string searches for symbols beginning with this string. The **Up** and **Down** buttons can be used to navigate up and down in the symbol tree.

Double-clicking a symbol in a **sYmbol.Browse.sYmbol** window opens the symbol in its default window. Alternatively, you can customize TRACE32's response to the double-click by using the **Click** *<cmd>* option. An example is shown in the screenshots below.



<name_pattern>	Path and symbol name, or just the symbol name.
<type_pattern>	HLL types.
The patterns support the wildcards ***** and **?** for filtering the display in the **sYmbol.Browse.*** windows.	
Click *<cmd>*	Command *<cmd>* will be executed after you double-click a symbol entry. Without the **Click** option, the double-clicked symbol opens in its default window.
Delete	Dialog will be closed after you double-click a symbol entry.

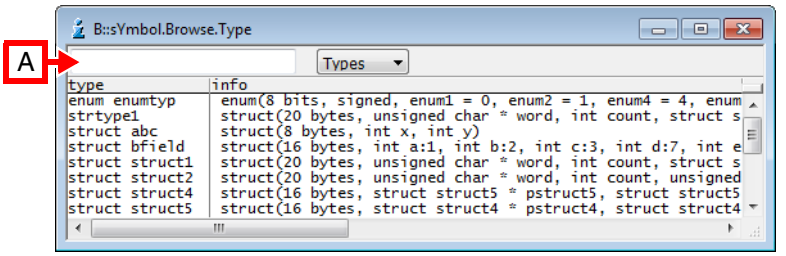
See also

■ sYmbol.Browse ■ sYmbol.Browse.name ■ sYmbol.STATE

▲ 'The Symbol Database' in 'Training Source Level Debugging'

Format:	**sYmbol.Browse.Type** [*<name>*]

Lets you browse through the list of HLL types that have been loaded to the internal TRACE32 symbol database with the **Data.LOAD** command.



A You can use the wildcards ***** and **?** to filter the list. See also *<name>* below.

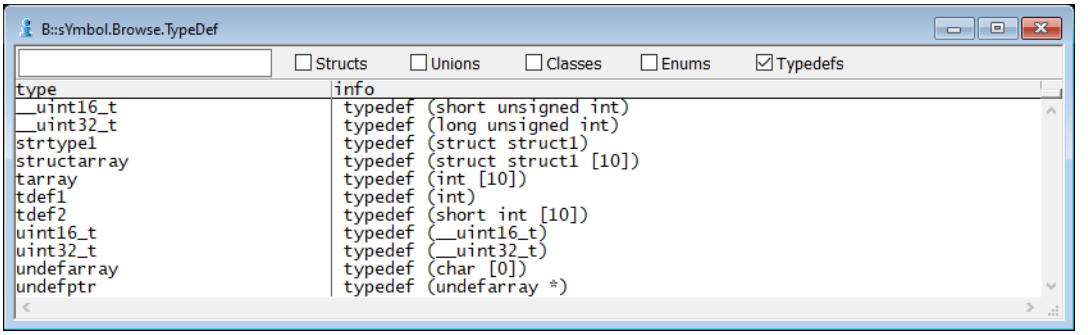
<name>	Name of an HLL type. HLL types include int, char, unsigned int, int*, struct *<name>*, enum *<name>*, etc.

See also

- sYmbol.Browse
- sYmbol.Browse.name
- ▲ 'Release Information' in 'Legacy Release History'

Format: **sYmbol.Browse.TypeDef** [*<name>*]

Lets you browse through the list of type definitions that have been loaded to the internal TRACE32 symbol database with **Data.LOAD**.



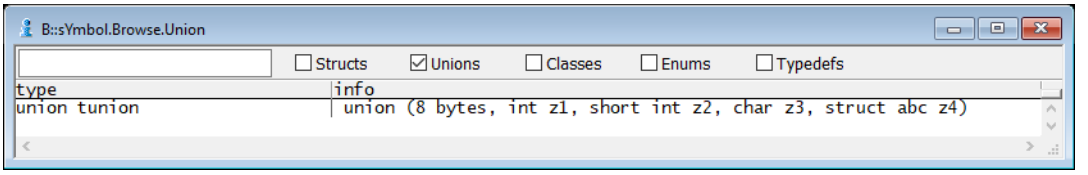
See also

- sYmbol.Browse
- sYmbol.Browse.name

sYmbol.Browse.Union Browse unions

Format: **sYmbol.Browse.Union** [*<name>*]

Lets you browse through the list of unions that have been loaded to the internal TRACE32 symbol database with **Data.LOAD**.



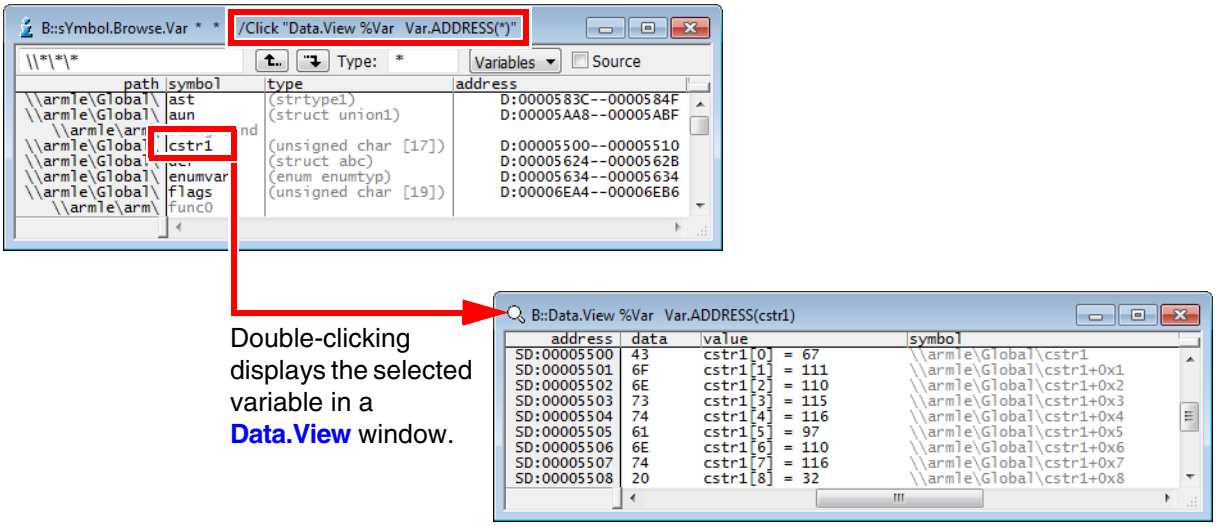
See also

- sYmbol.Browse
- sYmbol.Browse.name

Format:	**sYmbol.Browse.Var**[*<name_pattern>* [*<type_pattern>*]] [**/***<option>*]
<option>:	**Click** *<cmd>* **Delete**

Lets you browse through the list of variables that have been loaded to the internal TRACE32 symbol database. Alternatively, you can browse through the variables list by selecting **Variables** from the drop-down list in the **sYmbol.Browse.sYmbol** window.

Double-clicking a symbol in a **sYmbol.Browse.sYmbol** window opens the symbol in its default window. Alternatively, you can customize TRACE32's response to the double-click by using the **Click** *<cmd>* option. An example is shown in the figure below.



For a description of the command line arguments and another example for the **Click** *<cmd>* option, see **sYmbol.Browse.sYmbol**.

In addition, the browser command is automatically executed when:

- A symbol that ends with a wildcard is entered at the TRACE32 command line or
- The symbol is not unique and the **sYmbol.MATCH** command is set to **Choose**.

```
Var.Watch vd*      ;First, the symbol browser opens, where you can select
                   ;the desired variable with a double-click.

                   ;Then the selected variable is displayed in the
                   ;Var.Watch window.
```

See also

- sYmbol.Browse
- sYmbol.Browse.name

Format: **sYmbol.CASE** [**ON** | **OFF**]

If the option will be set (default), there is a differentiation between small and capital letters.

See also

- sYmbol
- Var

sYmbol.CHECK Check database

Format: **sYmbol.CHECK**

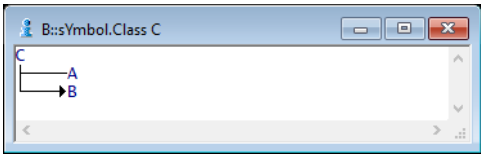
Checks the internal symbol database for errors. Can be used when the compiler output format is questionable.

See also

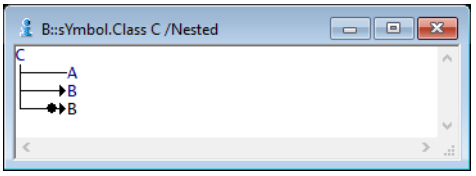
- sYmbol

Format:	**sYmbol.Class** *<class>* [**/Nested**]

Displays the base classes inherited by the class as a tree. As a default the inherited classes for C++ are displayed. With the **Nested** option regular included structures and pointers to structures are displayed also. This allows the usage of this command for non C++ applications.



View the hierarchy of a specific class.



See also

- sYmbol

Format:	**sYmbol.CLEANUP.***<sub_cmd>*
<sub_cmd>:	**sYmbols** | **CodeLiterals** | **AsmFrames** | **MidInstLines** [*/<option>*] | **FunctionRanges** | **DataInCode** | **LineRanges** | **DOUBLES** | **AlignmentPaddings**
<option>:	**VM** | **Forward** | **Backward** | **AlignToSymbols**

sYmbols	Removes all double symbols, all double type information, empty type information and redundant symbols for the common bank address range.
CodeLiterals	Architecture specific. Tries to fix debug information about literals that really contain executable code.
AsmFrames	Removes frame information for assembler frames.
MidInstLines	Ignores HLL line information which points to odd addresses plus terminates the disassembly of code lines. For option descriptions, see below.
FunctionRanges	Fixes overlapping function end addresses.
DataInCode	Identifies and marks data inside code areas (PowerPC only).
LineRanges	Tries to fix bad address range information of source lines.
DOUBLES	For a command description, see **sYmbol.CLEANUP.DOUBLES**.
AlignementPaddings	Detects memory address ranges at the end of functions that were inserted due to memory alignment and removes them from the function address ranges.

VM	Fixes code in VM (VM access class).
Forward, Backward	Moves questionable lines forward/backward.
AlignToSymbols	Keeps alignment of lines to symbols in code block.

See also

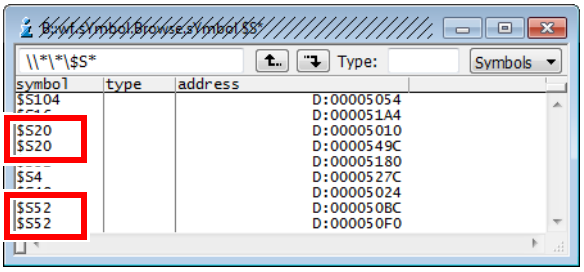
- sYmbol.CLEANUP.DOUBLES
- sYmbol

▲ 'Release Information' in 'Legacy Release History'

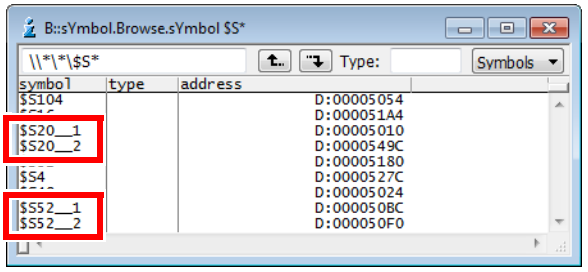
Format: **sYmbol.CLEANUP.DOUBLES**

Makes symbols loaded to the TRACE32 symbol database unique by appending two underscores and a serial number to ambiguous symbols: *<ambiguous_symbol>__<serial_number>*

Ambiguous symbols



Unique symbols after using **sYmbol.CLEANUP.DOUBLES**



See also

- sYmbol.CLEANUP

sYmbol.ColorCode Enable color coding

Format: **sYmbol.ColorCode** [**ON** | **OFF**]

Enables the source text color coding. Source color coding improves the readability of source files by using multiple colors. Enabled by default.

See also

- sYmbol

Format: **sYmbol.ColorDef** *<keyword> <value>*

Specify a color used for the display of keywords in your HLL code.

<value> All color definitions can be listed with the command **sYmbol.List.ColorDef**.

Example:

```
sYmbol.ColorDef "printf" 2            ; display all printf in green
```

See also

- sYmbol
- sYmbol.List.ColorDef
- SETUP.COLOR

▲ 'PowerView - Screen Display' in 'PowerView User's Guide'

sYmbol.CREATE Create and modify user-defined symbols

The **sYmbol.CREATE** command group allows to create new symbols or modify existing used-defined symbols. The created symbols will be made available to the debugger with the command **sYmbol.CREATE.DONE**.

See also

- sYmbol.CREATE.ATTRibute
- sYmbol.CREATE.Done
- sYmbol.CREATE.Function
- sYmbol.CREATE.Label
- sYmbol.CREATE.LocalVar
- sYmbol.CREATE.MACRO
- sYmbol.CREATE.Module
- sYmbol.CREATE.RESet
- sYmbol.CREATE.Var
- sYmbol
- sYmbol.Delete
- sYmbol.NEW

▲ 'Release Information' in 'Legacy Release History'

Format: **sYmbol.CREATE.ATTRibute***<attribute> <address>*|*<range>*

Creates a new user-defined attribute. The new attribute only becomes visible (e.g. in the **sYmbol.List.ATTRibute** window) after calling **sYmbol.CREATE.Done**.

Example:

```
sYmbol.CREATE.ATTRibute DATA 0x1000--0x1fff
sYmbol.CREATE.Done
```

See also

- sYmbol.CREATE

▲ 'Release Information' in 'Legacy Release History'

sYmbol.CREATE.Done Finish symbol creation

Format: **sYmbol.CREATE.Done**

Finishes the creation of new symbols and makes them available to the debugger. This command is only required for **sYmbol.CREATE** commands. **sYmbol.NEW** commands already contain this functionality, but will execute slower.

Example:

```
sYmbol.CREATE.Label mylab1 0x1000     ; creates "mylab1" at 1000
sYmbol.CREATE.Label mylab2 0x1010     ; creates "mylab2" at 1010
sYmbol.CREATE.Done                    ; make labels available to program
```

See also

- sYmbol.CREATE

Format: **sYmbol.CREATE.Function** *<name> <addressrange>*

Creates symbol information for a new function. The function has no parameters or local variables. It can only be used to define a range for a piece of code (e.g. for performance analysis).

Note that functions created with **sYmbol.CREATE.Function** will only become visible (e.g. in the **sYmbol.List** window) after calling **sYmbol.CREATE.Done**.

```
; function ends before mylabel2
sYmbol.CREATE.Function myfunc mylabel1--(mylabel2-1)
sYmbol.CREATE.Done
```

This is not required for **sYmbol.NEW.Function** which immediately commits all changes to the symbol table and thus executes slower.

```
; function ends before mylabel2
sYmbol.NEW.Function myfunc mylabel1--(mylabel2-1)
```

See also

- sYmbol.CREATE
- sYmbol.NEW.Function

Format: **sYmbol.CREATE.Label** *<name> <address>*

Creates a new label. A label is a symbol without type information that refers to a single memory location.

Example 1:

```
sYmbol.CREATE.Label mylab1 0x1000     ; creates "mylab1" at 1000
sYmbol.CREATE.Label mylab2 0x1010     ; creates "mylab2" at 1010
sYmbol.CREATE.Done                    ; make labels available to program
```

Example 2:

```
sYmbol.NEW.Label mylab3 0x1020        ; "mylab3" is available immediately
```

See also

- sYmbol.CREATE
- sYmbol.NEW.Label

sYmbol.CREATE.LocalVar Create user-defined local variable

Format: **sYmbol.CREATE.LocalVar** *<function> <var> <address>|<range> <type>*

Creates a new local variable in a user-defined function created with **sYmbol.CREATE.Function** or **sYmbol.NEW.Function**.

Note that local variables created with **sYmbol.CREATE.LocalVar** will only become visible (e.g. in the **sYmbol.List** window) after calling **sYmbol.CREATE.Done**. This is not required for **sYmbol.NEW.LocalVar** which immediately commits all changes to the symbol table and thus executes slower.

Example:

```
sYmbol.CREATE.Function myfunc 0x1000--0x10ff
sYmbol.CREATE.LocalVar myfunc loc_var 0x2000 int
sYmbol.CREATE.Done
```

See also

- sYmbol.CREATE

Format: **sYmbol.CREATE.MACRO** *<name> <contents>*

Creates a new macro. The macro can be used like a C-preprocessor macro. Parameters can be supplied in the same way.

Example:

```
; creation and usage of macro MY_NEXT(<arg>)
sYmbol.CREATE.MACRO MY_NEXT(p) ((p)->next)
sYmbol.CREATE.Done
Var.View MY_NEXT(myvar)
```

See also

■ sYmbol.CREATE ■ sYmbol.NEW.MACRO

▲ 'Release Information' in 'Legacy Release History'

sYmbol.CREATE.Module Create user-defined module

Format: **sYmbol.CREATE.Module** *<name> <range>*

Creates a user-defined module.

Example:

```
sYmbol.CREATE.Module test 50000--5ffff
sYmbol.CREATE.Done
sYmbol.Browse.Module
```

See also

■ sYmbol.CREATE ■ sYmbol.NEW.Module

Format: **sYmbol.CREATE.RESet**

Removes all symbols defined by **sYmbol.CREATE** or **sYmbol.NEW** commands.

See also

- sYmbol.CREATE
- sYmbol.NEW

sYmbol.CREATE.Var Create user-defined variable

Format: **sYmbol.CREATE.Var** *<variable_name> <address>|<range> <type>*

Creates a user-defined variable.

Examples:

```
sYmbol.List.Type /Unnamed                  ; list all types
sYmbol.CREATE.Var my_char 0x1000 char      ; create variable
sYmbol.CREATE.Done                         ; finish creation
sYmbol.INFO my_char                        ; display all information
                                           ; about the created variable
```

```
sYmbol.List.Type /Unnamed
sYmbol.CREATE.Var my_abc D:0xa000 struct abc
sYmbol.CREATE.Done
sYmbol.INFO my_abc
```

See also

- sYmbol.CREATE
- sYmbol.NEW.Var

Format: **sYmbol.CUTLINE** [*<length>*]

The number of source lines, displayed for one high-level line is limited. This prevents the display of large parts of source text in analyzer or data windows, if the source contains many definitions. The last lines are always displayed. Without arguments function is turned off, i.e. all lines are displayed again.

Example:

```
sYmbol.CUTLINE 3.       ; display max. 3 lines for each HLL line
```

See also

■ sYmbol

sYmbol.Delete Delete symbols of one program

Format: **sYmbol.Delete** [*<program>*]

Deletes all symbols of one program.

Example:

```
sYmbol.Delete \\mccp    ; delete only symbols of program "mccp"
```

See also

■ sYmbol ■ sYmbol.CREATE ■ sYmbol.NEW

▲ 'Release Information' in 'Legacy Release History'

Format: **sYmbol.DeleteMACRO** *<macro>*

Deletes certain macro information.

See also

- sYmbol
- ▲ 'Release Information' in 'Legacy Release History'

sYmbol.DeletePATtern Delete labels from symbol database using wildcards

Format: **sYmbol.DeletePATtern** *<symbol_pattern>*

Delete all labels from the symbol database that match the specified *<symbol_pattern>.* Allowed wildcards are ***** and **?**.

Example:

```
sYmbol.DeletePATtern _d_*
```

See also

- sYmbol

sYmbol.DEMangle C++ demangler

Format: **sYmbol.DEMangle** [**ON** | **OFF**] [**ON** | **OFF**]

The first argument activates the demangler, the second enables the demangling of function arguments.

Example:

```
sYmbol.DEMangle OFF          ; get_branches__6ForestFP4Tree (ANSI)
                             ; @Forest@get_branches$qp4Tree (TURBO-C++)
sYmbol.DEMangle ON OFF       ; Forest::get_branches
sYmbol.DEMangle ON           ; Forest::get_branches(Tree *)
```

See also

- sYmbol

sYmbol.DEOBFUSCATE Deobfuscate global and static symbol

[build 145539 - DVD 09/2022]

Format: **sYmbol.DEOBFUSCATE** *<file>* [*<module>*]

This command allows to deobfuscate global and static symbols for the defined module on user request.

The input *<file>* contains a list of real symbol name and obfuscated symbol name separated by a blank.

All symbols that match an obfuscated name are replaced with the real symbol name.

See also

- sYmbol
- sYmbol.Modify.NAMES

sYmbol.DONE Finish load of symbols

[build 133356 - DVD 09/2021]

Format: **sYmbol.DONE**

Finishes load of symbols when using **Data.LOAD MORE**.

See also

- sYmbol

The TRACE32 debugger receives all the necessary information about the source code via the debug information generated by the compiler. However, some commands require more details. Lauterbach provides the command line tool t32cast (see **"Application Note for t32cast"** (app_t32cast.pdf)) to generate these details.

t32cast analyzes the individual source code files and generates a .eca file per source code file, which is stored in the same directory. ECA stands for Extended Code Analysis.

The **sYmbol.ECA** command group allows to manage the .eca files.

ECA files are currently used by the **code coverage system**.

See also

- sYmbol.ECA.Delete
- sYmbol.ECA.Init
- sYmbol.ECA.List
- sYmbol.ECA.LOAD
- sYmbol.ECA.LOADALL
- sYmbol
- sYmbol.List.SOURCE

▲ 'Supported Code Coverage Metrics' in 'Application Note for Trace-Based Code Coverage'

sYmbol.ECA.BINary.CollapseAll Control the tree expansion

[build 134348 - DVD 09/2021]

Format: **sYmbol.ECA.BINary.CollapseAll**

Controls the tree expansion in the window. Currently loaded decisions can be inspected with **sYmbol.ECA.BINary.view**.

sYmbol.ECA.BINary.EditDecision Set start address of decision

[build 134102 - DVD 09/2021]

Format: **sYmbol.ECA.BINary.EditDecision** *<source>* [*<index>*] *<address>*
sYmbol.ECA.EditDecision (deprecated)

Allows editing the start address of a decision loaded from an ECA file. Currently loaded decisions can be inspected with **sYmbol.ECA.BINary.view**.

Example:

```
; single decision in line 145
sYmbol.ECA.BINary.EditDecision \"..\coverage.c"\145 P:0x8000710

; edit second decision in line 327
sYmbol.ECA.BINary.EditDecision \"..\coverage.c"\327 1. P:0x8000BEC
```

sYmbol.ECA.BINary.ExpandAll Control the tree expansion

[build 134348 - DVD 09/2021]

Format: **sYmbol.ECA.BINary.ExpandAll**

Controls the tree expansion in the window. Currently loaded decisions can be inspected with **sYmbol.ECA.BINary.view**.

sYmbol.ECA.BINary.EXPORT.Decisions Export decisions

[build 135075 - DVD 09/2021]

Format:	**sYmbol.ECA.BINary.EXPORT.Decisions** *<file>* [**/***<option>*]
<option>:	**FilterMapped** | **FilterType** | **StripPATH**

Export all loaded decisions together with the mappings to object code to a CSV file.
For documentation of the contents and command options refer to **sYmbol.ECA.BINary.view**.

sYmbol.ECA.BINary.FilterMapped Filter entries by the mapping state

[build 134348 - DVD 09/2021]

Format:	**sYmbol.ECA.BINary.FilterMapped** *<status>*
<type>:	**ALL** | **MAPPED** | **UNMAPPED** | **NOTINBINARY**]

Filters all entries by the mapping state. Currently loaded decisions can be inspected with **sYmbol.ECA.BINary.view**.

- Blue indicates mapped entry.
- Orange indicates unmapped entry.

sYmbol.ECA.BINary.FilterType Filter entries by decision type

[build 134348 - DVD 09/2021]

Format:	**sYmbol.ECA.BINary.FilterType** *<type>*
<type>:	**ALL** | **IFTHEN** | **FOR** | **DOWHILE** | **WHILE** | **SWITCH** **ASSIGN** | **NESTEDASSIGN** | **TERNARY** | **ARGUMENT**

Filters all entries by decision type. Currently loaded decisions can be inspected with **sYmbol.ECA.BINary.view**.

Format: **sYmbol.ECA.BINary.PROCESS**

The command **sYmbol.ECA.BINary.PROCESS** is required to have complete and accurate coverage information also regarding code paths that are not covered in the analyzed program run (and thus not represented in the analyzed trace data).

The command performs a *static analysis* of *all program code* (based on the loaded code segments) in order to detect the *total number* of *conditional instructions* (e.g. EQ.MOV, NE.MOV,...) or *conditional branches* (BEQ, BNE, ...) present in the program code.

The type of analysis performed depends on the features supported by the active trace protocol. For ETM *conditional instructions* are detected whereas for PTM only *conditional branches* are detected (because the PTM protocol does not output data regarding conditional instructions).

Executing the command enables the following columns in the **COVerage.ListFunc** window:

- ETM: the **conds** column displays the percentage of *fully covered conditional* ***instructions*** (covered conditional instructions / total number of conditional instructions).
- PTM: the **branches** column displays the percentage of *fully covered conditional* ***branches*** (covered conditional branches / total number of conditional branches).
- The **never** column displays the number of uncovered (not executed) conditional instructions (ETM) respectively conditional branches (PTM).

A hyphen (-) in one of these columns indicates that a function does not include conditional instructions (ETM) or conditional branches (PTM).

sYmbol.ECA.BINary.SetCONDitionOffset Set condition offset

[build 134102 - DVD 09/2021]

Format: **sYmbol.ECA.BINary.SetCONDitionOffset** *<source>* [*<dec_index>*] *<index>* *<address>*
sYmbol.ECA.SetConditionOffset (deprecated)

Sets the address offset of a condition in relation to its decision. Currently loaded decisions and conditions can be inspected with **sYmbol.ECA.BINary.view**.

Example:

```
; set offset of condition 0 of decision in line 171 to 0x8
sYmbol.ECA.BINary.SetConditionOffset \"..\coverage.c"\171 0. 0x8

; set offset of condition 0 of second decision in line 327 to 0x4C
sYmbol.ECA.BINary.SetConditionOffset \"..\coverage.c"\327 1. 0. 0x4C
```

sYmbol.ECA.BINary.SetDecisionState Disable/Enable decision evaluation

[build 134102 - DVD 09/2021]

Format: **sYmbol.ECA.BINary.SetDecisionState** *<source>* [*<dec_index>*] *<address>* **ON** | **OFF**
sYmbol.ECA.SetDecisionState (deprecated)

Disable or enable a decision for evaluation during code coverage. When a decision is disabled it is ignored when measuring code coverage with the following metrics: *Decision, Condition, MCDC.*

The current status of all decisions can be viewed with **sYmbol.ECA.BINary.view**.

Example:

```
; Disable decision in line 171
sYmbol.ECA.BINary.SetDecisionState \"..\coverage.c"\171 OFF

; Enable second decision in line 327
sYmbol.ECA.BINary.SetDecisionState \"..\coverage.c"\327 1. ON
```

Format:	**sYmbol.ECA.BINary.view** [*/<option>*] **sYmbol.ECA.ViewDecisions** (deprecated)
<option>:	**FilterMapped** | **FilterType** | **ExpandAll** | **StripPATH**

Show all loaded decisions together with the mappings to object code.

FilterMapped Filter by mapping status (refer to **sYmbol.ECA.BINary.FilterMapped**)

FilterType Filter by decision type (refer to **sYmbol.ECA.BINary.FilterType**)

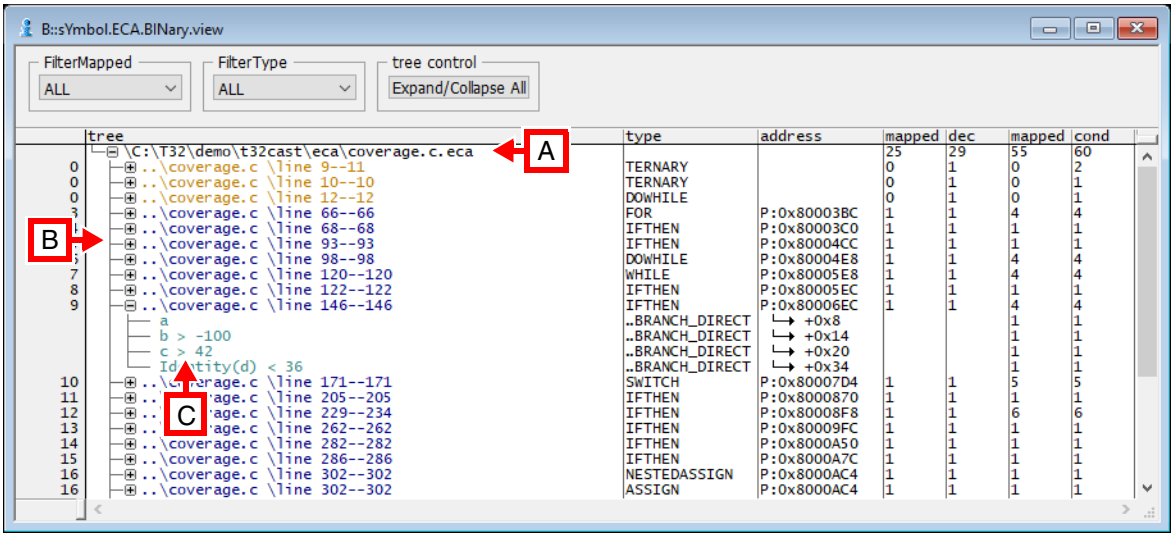
ExpandAll Expand all tree items by default

StripPATH Strip all directory paths from file names

A Path of ECA file containing decisions

B Source location of the decisions

C Spelling of the condition



tree Source path of the loaded decision. Opening the decision with the '+' button shows the spelling of the conditions.

type	**Decision**: Shows the HLL statement type
	Condition: Shows the object code implementation
address	**Decision**: First address of the object code implementation
	Condition: Offset of the condition implementation in relation to the decision address
mapped dec	Mapped and overall number of decisions in this item
mapped cond	Mapped and overall number of conditions in this item

sYmbol.ECA.Delete — Delete loaded ECA data

Format: **sYmbol.ECA.Delete**

Deletes all loaded ECA data and clears the **sYmbol.ECA.List** window.

See also

- sYmbol.ECA

sYmbol.ECA.Init — Clear gathered ECA data

[build 142398 - DVD 02/2022]

Format: **sYmbol.ECA.Init**

Clears data gathered by **sYmbol.ECA** commands.

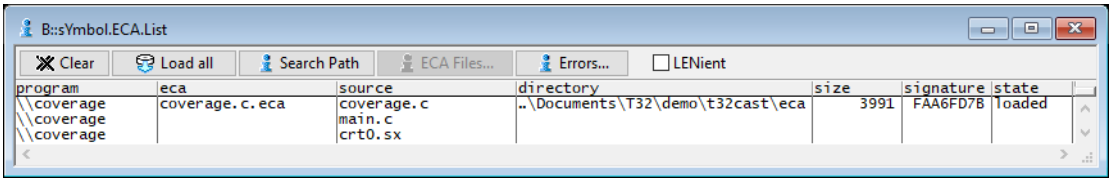
See also

- sYmbol.ECA

Format:	**sYmbol.ECA.List** [**/ERRORS**]

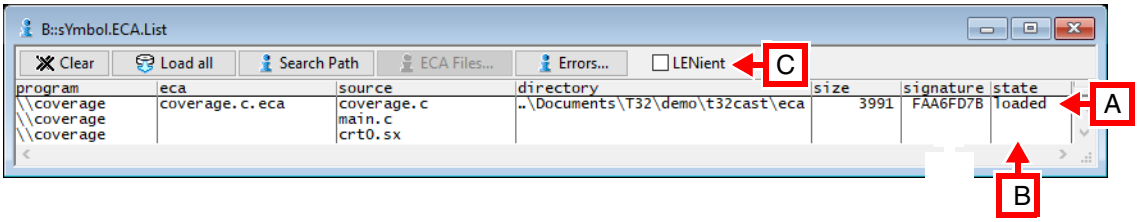
Lists details about the loaded .eca files.

The option **/ERRORS** advises TRACE32 PowerView to only display the .eca files that were loaded with an error.



source	List of all source files from the TRACE32 symbol database. The source file names are part of the debug information loaded with the program.

program	Name of the program that includes the object code generated for the source file.
eca	Name of the loaded .eca file.
directory	Directory containing the source file and the loaded .eca file.
size	Size of the loaded .eca file in bytes.
signature	Checksum signature of the loaded .eca file as a hex number.
state	The state **loaded** indicates that the ECA file was loaded successfully. The state **error** indicates one of the following: • .eca file not found. • .eca file contains invalid data. The state **n/a** indicates that TRACE32 does not support .eca files for the file type. E.g. no .eca data are supported for .asm files.



A **state** column => **loaded**: Double-clicking the row opens the ECA file in the TRACE32 **EDIT** window. The ECA file opens in an external editor if you have configured one with the **SETUP.EDITEXT** command.

B **state** column => (empty): Double-clicking a row loads the ECA file, if available.

C Check box allows to set the **LENient** option for loading operations.

Clear	Deletes all previously loaded ECA data and clears the **sYmbol.ECA.List** window.
Touch all	Loads the .eca file for all source files. (command **sYmbol.ECA.LOADALL /SkipErrors**)
Search Path	Lists the search paths specified for the source files (command **sYmbol.SourcePATH.List**). TRACE32 expects the .eca files in the same directory as their source files.
ECA Files…	Displays full **sYmbol.ECA.List** window. The button is only active in the **sYmbol.ECA.List /ERRORS** window.
Errors…	Opens the **sYmbol.ECA.List /ERRORS** window, displaying only .eca files tagged with **error**.

Example: This script loads the .eca data for the module `\coverage`.

```
;defines directory as base for relative source paths
sYmbol.SourcePATH.SetBaseDir "J:/user1/projects/sources"
;load program
Data.LOAD.Elf "coverage.elf" /RelPath
;load ECA file for the module \coverage
sYmbol.ECA.LOAD \coverage
sYmbol.ECA.List
```

See also

- sYmbol.ECA

Format:	**sYmbol.ECA.LOAD** *<module>* [*/<option>*]
<option>:	**SkipErrors** | **LENient** | **SetBaseDir**

Loads the ECA data pertaining to the specified *<module>*.

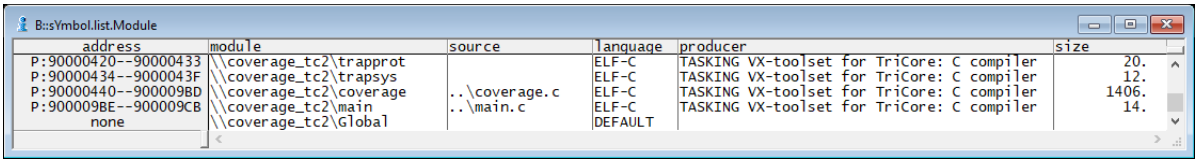
SkipErrors Ensures that warnings are issued instead of error messages. For scripts, error messages cause the script to stop. Warnings keep the script running.

LENient Allows loading of ECA files with minor errors as invalid file version or checksum mismatch.

SetBaseDir Forces the search of matching ECA files relative to the specified base directory.

```
;load ECA file for the module \coverage
sYmbol.ECA.LOAD \coverage
```

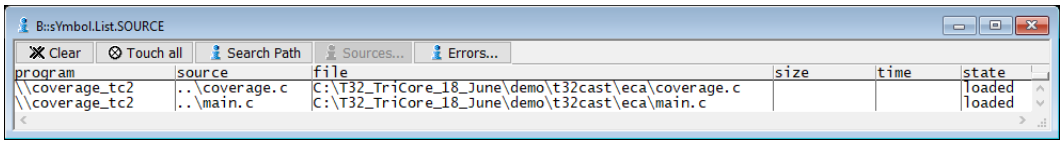
The **sYmbol.List.Module** command lists all modules from the TRACE32 symbol database.



address	module	source	language	producer	size
P:90000420--90000433	\\coverage_tc2\trapprot		ELF-C	TASKING VX-toolset for TriCore: C compiler	20.
P:90000434--9000043F	\\coverage_tc2\trapsys		ELF-C	TASKING VX-toolset for TriCore: C compiler	12.
P:90000440--900009BD	\\coverage_tc2\coverage	..\coverage.c	ELF-C	TASKING VX-toolset for TriCore: C compiler	1406.
P:900009BE--900009CB	\\coverage_tc2\main	..\main.c	ELF-C	TASKING VX-toolset for TriCore: C compiler	14.
none	\\coverage_tc2\Global		DEFAULT		

The column **source** shows the name of the corresponding source file.

After the source file is loaded, the column **file** in the **sYmbol.List.SOURCE** window shows the full source path.



program	source	file	size	time	state
\\coverage_tc2	..\coverage.c	C:\T32_TriCore_18_June\demo\t32cast\eca\coverage.c			loaded
\\coverage_tc2	..\main.c	C:\T32_TriCore_18_June\demo\t32cast\eca\main.c			loaded

TRACE32 searches for the .eca file under this source path.

An error message is displayed when the .eca file is not found or contains invalid data.

See also

- sYmbol.ECA

▲ 'Release Information' in 'Legacy Release History'

Format:	**sYmbol.ECA.LOADALL** [*/<option>*]
<option>:	**SkipErrors** | **LENient** | **SetBaseDir**

Loads the ECA files for all modules listed in the TRACE32 symbol database.

SkipErrors	Ensures that warnings are issued instead of error messages. For scripts, error messages cause the script to stop. Warnings keep the script running.
LENient	Allows loading of ECA files with minor errors as invalid file version or checksum mismatch.
SetBaseDir	Forces the search of matching ECA files relative to the specified base directory.

Example: This script shows how to load all ECA data for the program `my_demo.elf`.

```
;load the elf file
Data.LOAD.elf my_demo.elf

;load ECA data for all modules
sYmbol.ECA.LOADALL /SkipErrors
```

See also

- sYmbol.ECA

▲ 'Release Information' in 'Legacy Release History'

Format:	**sYmbol.FILTER.ADD.SOURCE** *<filter_name> <list_of_sources>*
<list_of_ sources>	*<source0>* [*<source1>* …*<source9>*]

Several source files are combined under a filter name. The filter can then be used in commands as a representative of these source files. The syntax of the pathname is oriented towards the **source** column in the **sYmbol.Browse.SOURCE** window.

```
sYmbol.Browse.SOURCE

sYmbol.FILTER.ADD.SOURCE jd_files \
\"D:/work/demo/mpc5xxx/mpc5646c_jpeg/jdapistd.c" \
\"D:/work/demo/mpc5xxx/mpc5646c_jpeg/jdcolor.c" \
\"D:/work/demo/mpc5xxx/mpc5646c_jpeg/jdmainct.c"

COVerage.ListFunc.preset jd_files

; Add a further source file
sYmbol.FILTER.ADD.SOURCE jd_files \
\"D:/work/demo/mpc5xxx/mpc5646c_jpeg/jdhuff.c"
```

sYmbol.FILTER.ADD.sYmbol Add symbols to filter

Format:	**sYmbol.FILTER.ADD.sYmbol** *<filter_name> <list_of_symbols>*
<list_of_ symbols>	*<symbol0>* [*<symbol1>* …*<symbol9>*]

Several symbols are combined under a filter name. The filter can then be used in commands as a representative of the symbols.

The example below combines modules to a filter.

```
sYmbol.Browse.Module

sYmbol.FILTER.ADD.sYmbol jd_modules \jdcolor \jdmarker \jdtrans

COVerage.ListFunc.preset jd_modules

sYmbol.FILTER.ADD.sYmbol jd_modules \jdsample
```

sYmbol.FILTER.Delete — Delete filter

Format: **sYmbol.FILTER.Delete** *<filter_name>*

Delete specified filter.

Format:	**sYmbol.ForEach** "*<cmd>*" [*<name_pattern>* [*<type_pattern>*]]

Executes a PRACTICE command for each symbol matching the specified name and type patterns.

<cmd>	The command to be executed has to be specified with quotation marks. It may contain the characters '*****' or '**?**' as placeholders that are replaced by the complete name of a matching symbol.
<name_pattern> *<type_pattern>*	The patterns are case-insensitive. Therefore lower and upper case characters are not distinguished. The following wildcards can be used in pattern expressions:
'*****'	Matches any string, including empty strings. For the *<type_pattern>*, only symbols with HLL type information match.
'**?**'	Matches one (non-empty) character.
'**"**'	Can be used to input special characters like '*****' or '**?**'

Examples:

```
sYmbol.ForEach "Break.Set" *func*          ; will execute the command
                                           ; Break.Set <symbol>
                                           ; for all symbols containing
                                           ;'func'

sYmbol.ForEach                             ; execute the command
"Break.Set Var.END(""*"") /Charly" * *     ;   Break.Set
                                           ;Var.END(<symbol>) /Charly
                                           ; which sets a "Charly   :
                                           ; breakpoint" to the
                                           ; last address of each HLL
                                           ;function or variable
```

For more examples on wildcards, see command **sYmbol.name**.

See also

■ sYmbol ❑ sYmbol.MATCHES()

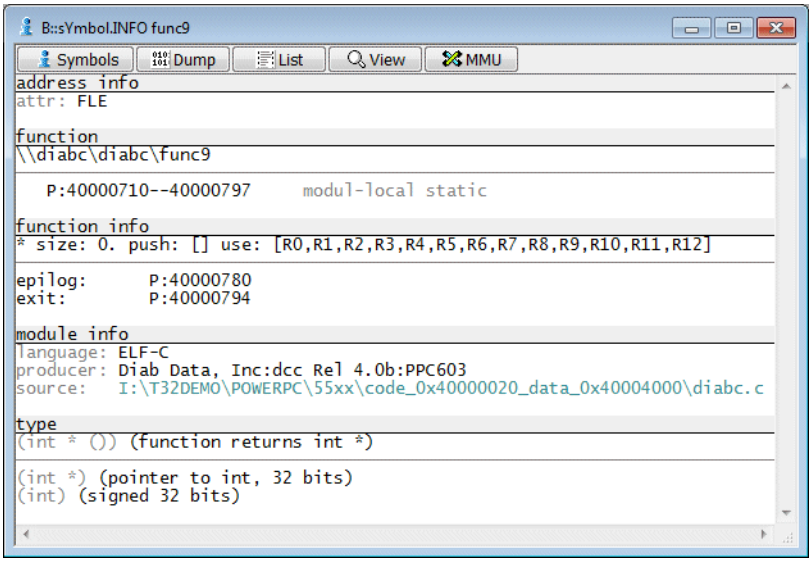
Format: **sYmbol.INFO** *<symbol>* | *<address>* [**/Track**]

Displays symbolic address, location, scope and layout of the specified debug *<symbol>*. If an *<address>* is specified, the details about the debug symbol located at *<address>* are displayed.

The option **/Track** enables the address tracking. See **example 2**.

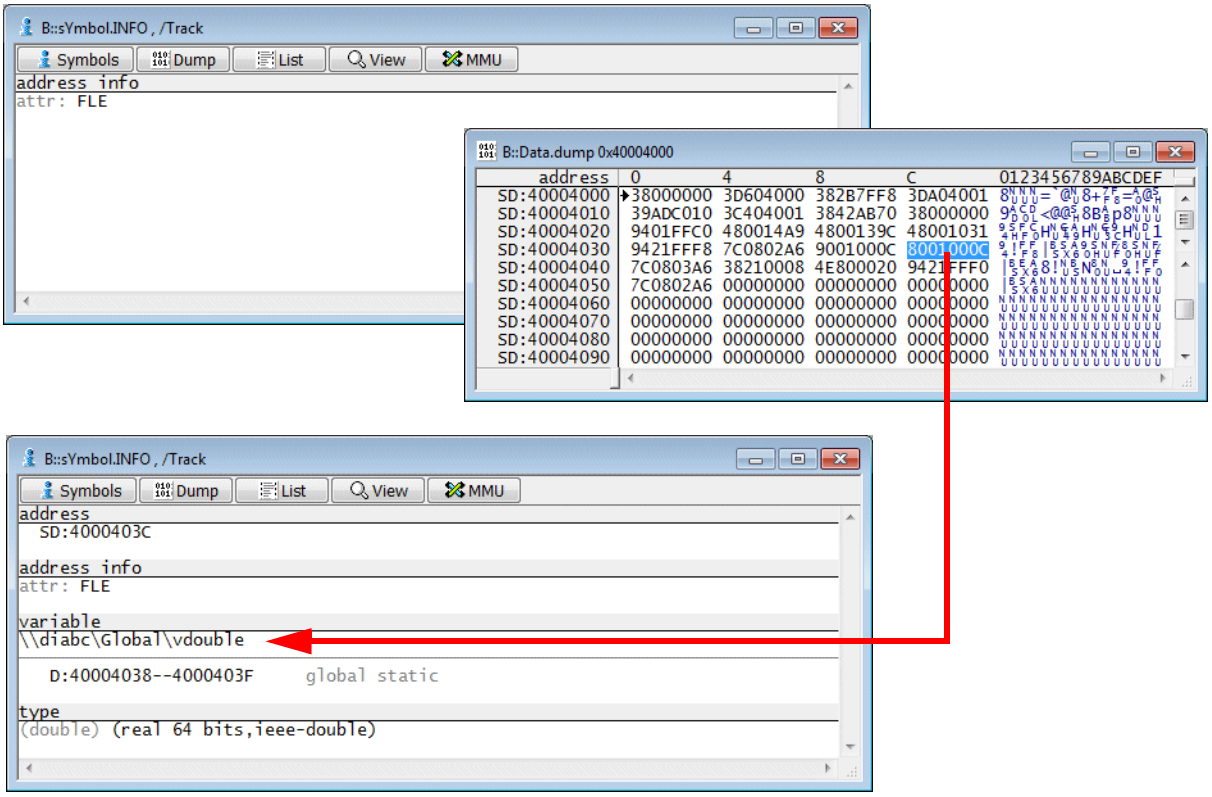
Example 1:

```
sYmbol.INFO func9            ; display detailed debug information for
                             ; the function func9
```

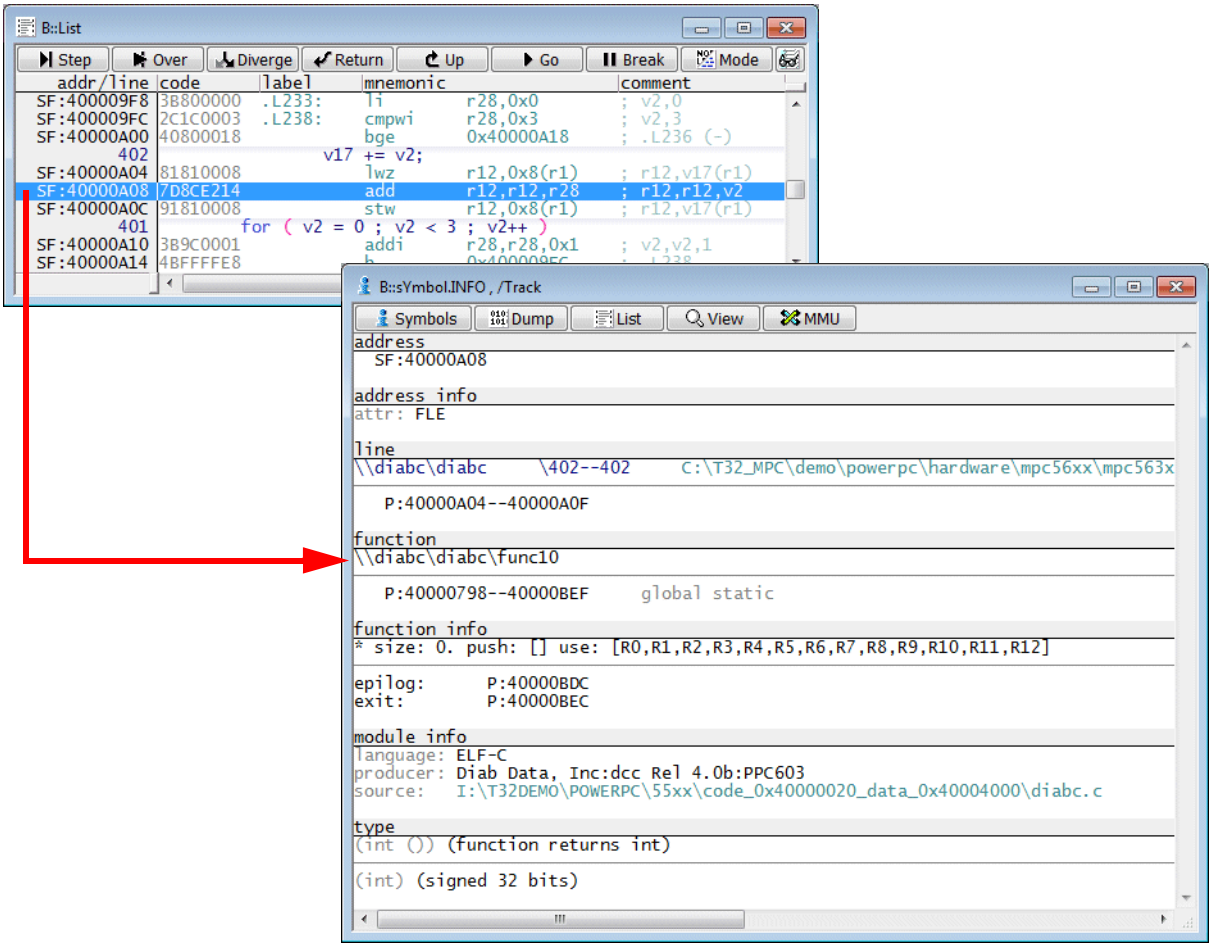


Example 2:

```
sYmbol.INFO , /Track          ; display a sYmbol.INFO window with address
                              ; tracking enabled

                              ; you have to use a ",", if you do not want
                              ; to specify the <symbol> parameter

Data.dump 0x40004000          ; display a hex dump starting at address
                              ; 0x40004000

; address tracking works as follows:
; as soon as you select an address in the Data.dump window, details about
; the symbol located at selected address are displayed
```



```
List.auto                       ; Analogous, if a line is selected in the
                                ; Source Listing all the details about the
                                ; related function are displayed
```



See also

- sYmbol
- sYmbol.Browse.name
- sYmbol.STATE
- Data.dump
- MMU.INFO
- Var.INFO

▲ 'The Symbol Database' in 'Training Source Level Debugging'

Format: **sYmbol.LANGUAGE** [*<language>*]

Selects the language and style, that is used for HLL expressions.

Example:

```
sYmbol.LANGUAGE MCC68K
```

See also

- sYmbol

sYmbol.List — Display list of all symbols

Format: **sYmbol.List** [*<address>*]

Displays the **sYmbol.List** window with a list of all symbols. The list is ordered by the symbols' addresses and scrolled so that *<address>* is shown at the top of the window.

The *<address>* can be entered as a literal (e.g. `P:0xFC004AB`) or using a symbol path (e.g. `\\sieve\page1\main`). When using wildcards, the symbol path needs to evaluate to a single symbol.

See also

- sYmbol.List.ATTRibute
- sYmbol.List.BUILTIN
- sYmbol.List.ColorDef
- sYmbol.List.Enum
- sYmbol.List.FRAME
- sYmbol.List.Function
- sYmbol.List.IMPORT
- sYmbol.List.InlineBlock
- sYmbol.List.InlineFunction
- sYmbol.List.LINE
- sYmbol.List.Local
- sYmbol.List.MACRO
- sYmbol.List.MAP
- sYmbol.List.Module
- sYmbol.List.PATCH
- sYmbol.List.Program
- sYmbol.List.REFerence
- sYmbol.List.SECtion
- sYmbol.List.SOURCE
- sYmbol.List.SourceFunction
- sYmbol.List.SOURCETREE
- sYmbol.List.STACK
- sYmbol.List.Static
- sYmbol.List.TREE
- sYmbol.List.Type
- sYmbol
- sYmbol.STATE

sYmbol.List.ATTRibute — Display memory attributes

Format: **sYmbol.List.ATTRibute** [*<address>*]

Displays memory attributes. Memory attributes can classify the code or execution model at a specific address. This information is highly compiler dependent.

See also

- sYmbol.List

sYmbol.List.BUILTIN — List built-in data types

Format: **sYmbol.List.BUILTIN**

Lists all built-in data types of the used programming language.

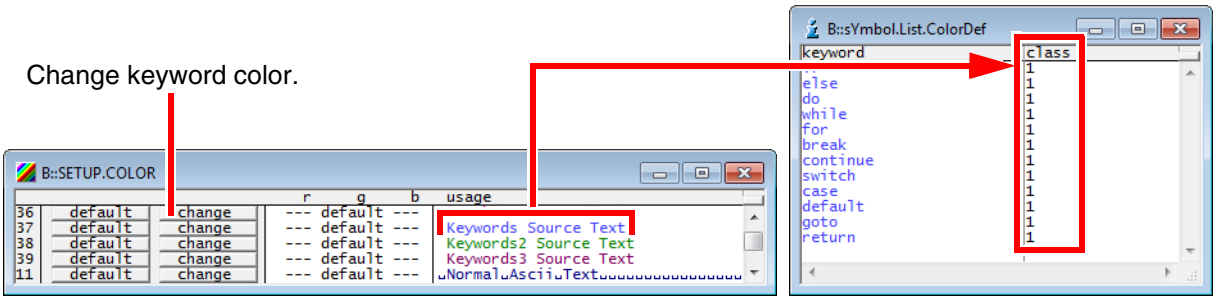
See also

- sYmbol.List

Format: **sYmbol.List.ColorDef**

Lists the color definition for the keywords of the HLL code displayed in the **Data.List** window (`if`, `else`, `while`, etc.). The **class** column in the **sYmbol.ListColorDef** window shows the currently assigned formatting class (= style in a word processing application such as OpenOffice.Org Writer).
By default, the keywords are assigned to the formatting class **1**, and its default color is blue.

By assigning keywords to class 2 or 3, you can format keywords green or purple. If you want to pick another color for the classes 2 and 3, then click the **change** button in the **SETUP.COLOR** window.



Example 1: This script shows how to change the color of the `for` keyword. To try this script, copy it to a `test.cmm` file, and then step through it in TRACE32 (See "**How to...**").

```
sYmbol.List.ColorDef      ;Display the keywords, their colors, and
                          ;the classes to which the keywords are assigned

SETUP.COLOR               ;Display the current color settings

sYmbol.ColorDef "for" 2.      ;Assign the keyword 'for' to class 2 =>
                              ;'for' turns green

sYmbol.ColorDef "for" 3.      ;Assign the keyword 'for' to class 3 =>
                              ;'for' turns purple

SETUP.COLOR 39. 255. 128. 0. ;Change the color of class 3 to orange

SETUP.COLOR 39.               ;Restore the default color of class 3 again

sYmbol.ColorDef "for" 1.      ;Apply class 1 to the 'for' keyword again
```

Example 2: A PRACTICE script that adds more keywords to the **sYmbol.List.ColorDef** window is included in your TRACE32 installation. To access the script, run this command:
`B::CD.PSTEP ~~/demo/practice/colors/syntaxcolor.cmm`

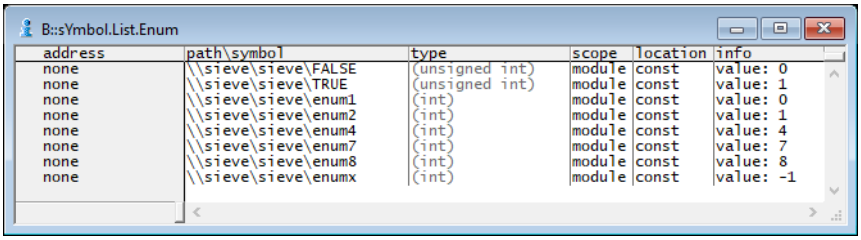
See also

■ sYmbol.List ■ sYmbol.ColorDef ■ SETUP.COLOR

▲ 'PowerView - Screen Display' in 'PowerView User's Guide'

Format:	**sYmbol.List.Enum**

Lists all enumeration constants with the related information.

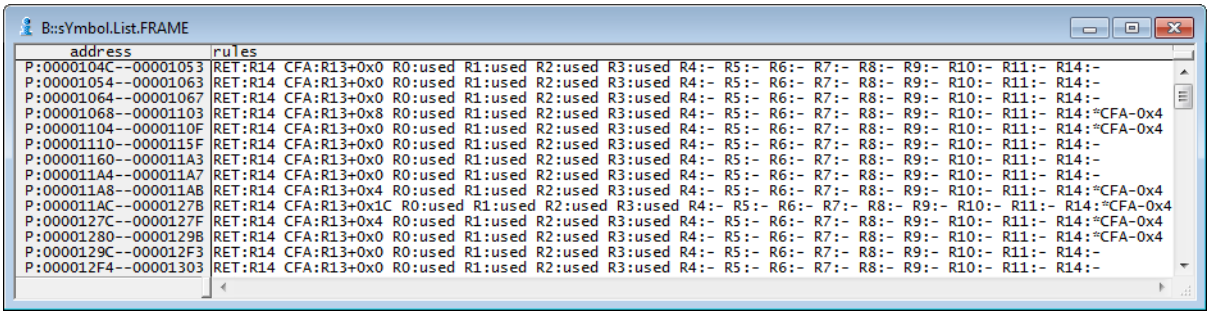


See also

- sYmbol.List

Format: **sYmbol.List.FRAME** [*<address>*]

Lists the location and further related information about the frames. In the **sYmbol.List.FRAME** window, each entry tells the debugger for a certain program range where the registers are saved, e.g. relative to the current stack pointer (SP).



Description of Columns in the sYmbol.List.FRAME Window

address	Address range of a single frame
rules	Rules used by TRACE32 PowerView to recover the previous stack frames.

Description of Values in the “rules” Column

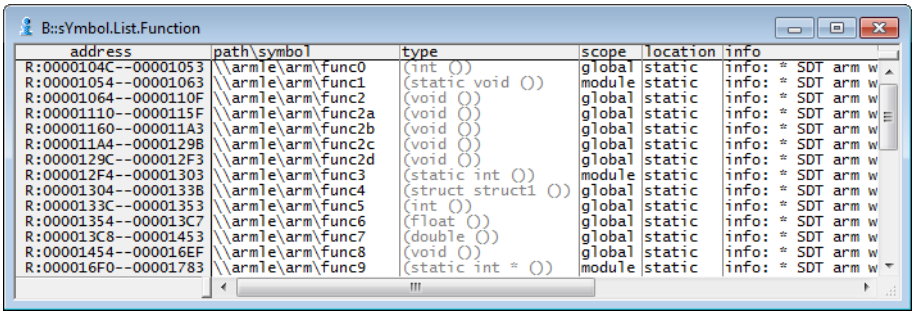
RET	Location of the return value, e.g. a register
R0 to **R14**	Register names (architecture-specific)
CFA	Canonical frame address
*<register>***:used**	Registers which cannot be recovered
*<register>***:-**	Registers with valid content
CFA-<*offset*> or ***CFA+***<*offset*>	Address where the register content can be recovered from, e.g. `*CFA-0x4`

See also

- sYmbol.List
- Frame

Format: **sYmbol.List.Function** [*<range>* | *<address>*]

Lists the location and further related information about the loaded functions.



address	path\symbol	type	scope	location	info
R:0000104C--00001053	\\armle\arm\func0	(int ())	global	static	info: * SDT arm w
R:00001054--00001063	\\armle\arm\func1	(static void ())	module	static	info: * SDT arm w
R:00001064--0000110F	\\armle\arm\func2	(void ())	global	static	info: * SDT arm w
R:00001110--0000115F	\\armle\arm\func2a	(void ())	global	static	info: * SDT arm w
R:00001160--000011A3	\\armle\arm\func2b	(void ())	global	static	info: * SDT arm w
R:000011A4--0000129B	\\armle\arm\func2c	(void ())	global	static	info: * SDT arm w
R:0000129C--000012F3	\\armle\arm\func2d	(void ())	global	static	info: * SDT arm w
R:000012F4--00001303	\\armle\arm\func3	(static int ())	module	static	info: * SDT arm w
R:00001304--0000133B	\\armle\arm\func4	(struct struct1 ())	global	static	info: * SDT arm w
R:0000133C--00001353	\\armle\arm\func5	(int ())	global	static	info: * SDT arm w
R:00001354--000013C7	\\armle\arm\func6	(float ())	global	static	info: * SDT arm w
R:000013C8--00001453	\\armle\arm\func7	(double ())	global	static	info: * SDT arm w
R:00001454--000016EF	\\armle\arm\func8	(void ())	global	static	info: * SDT arm w
R:000016F0--00001783	\\armle\arm\func9	(static int * ())	module	static	info: * SDT arm w

See also

- sYmbol.List

sYmbol.List.IMPORT List imported symbols

Format: **sYmbol.List.IMPORT**

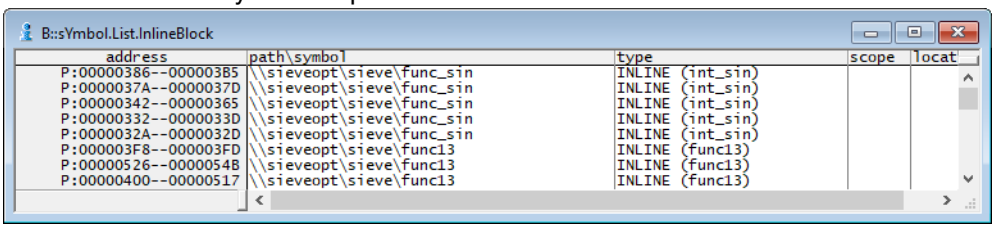
Lists the symbols that are loaded by imported DLLs (required e.g. for Symbian or Windows CE).

See also

- sYmbol.List

Format: **sYmbol.List.InlineBlock**

When compiling with optimization the compiler may insert functions or parts of a function directly instead of adding a call to the function. This command lists all parts of the code where function parts have been inlined by the compiler.



address	path\symbol	type	scope	locat
P:00000386--000003B5	\\sieveopt\sieve\func_sin	INLINE (int_sin)		
P:0000037A--0000037D	\\sieveopt\sieve\func_sin	INLINE (int_sin)		
P:00000342--00000365	\\sieveopt\sieve\func_sin	INLINE (int_sin)		
P:00000332--0000033D	\\sieveopt\sieve\func_sin	INLINE (int_sin)		
P:0000032A--0000032D	\\sieveopt\sieve\func_sin	INLINE (int_sin)		
P:000003F8--000003FD	\\sieveopt\sieve\func13	INLINE (func13)		
P:00000526--0000054B	\\sieveopt\sieve\func13	INLINE (func13)		
P:00000400--00000517	\\sieveopt\sieve\func13	INLINE (func13)		

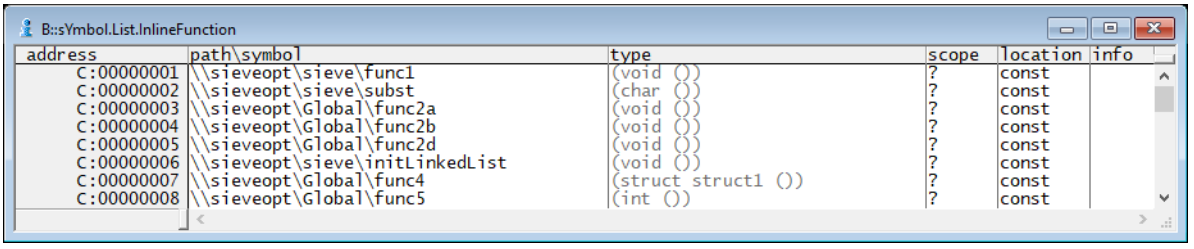
See also

- sYmbol.List

sYmbol.List.InlineFunction List inlined functions

Format: **sYmbol.List.InlineFunction**

Lists the location and further related information about the loaded inline functions.



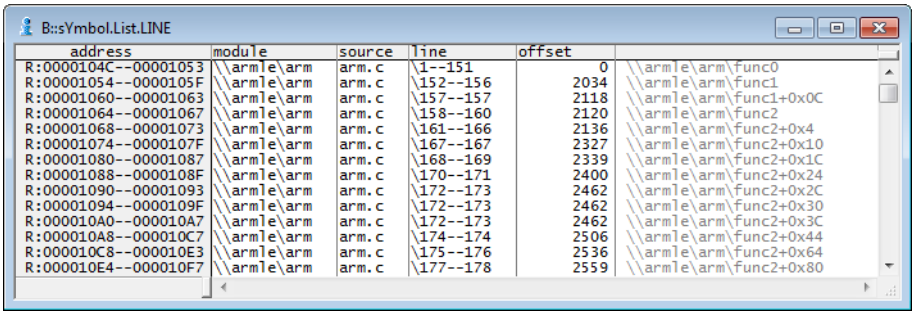
address	path\symbol	type	scope	location	info
C:00000001	\\sieveopt\sieve\func1	(void ())	?	const	
C:00000002	\\sieveopt\sieve\subst	(char ())	?	const	
C:00000003	\\sieveopt\Global\func2a	(void ())	?	const	
C:00000004	\\sieveopt\Global\func2b	(void ())	?	const	
C:00000005	\\sieveopt\Global\func2d	(void ())	?	const	
C:00000006	\\sieveopt\sieve\initLinkedList	(void ())	?	const	
C:00000007	\\sieveopt\Global\func4	(struct struct1 ())	?	const	
C:00000008	\\sieveopt\Global\func5	(int ())	?	const	

See also

- sYmbol.List

Format: **sYmbol.List.LINE** [*<address>*]

Displays the location and further related information about the loaded lines.



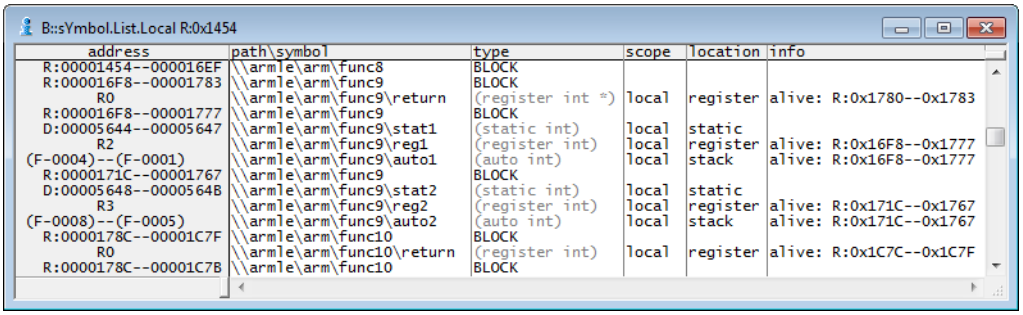
address	module	source	line	offset	
R:0000104C--00001053	\\armle\arm	arm.c	\1--151	0	\\armle\arm\func0
R:00001054--0000105F	\\armle\arm	arm.c	\152--156	2034	\\armle\arm\func1
R:00001060--00001063	\\armle\arm	arm.c	\157--157	2118	\\armle\arm\func1+0x0C
R:00001064--00001067	\\armle\arm	arm.c	\158--160	2120	\\armle\arm\func2
R:00001068--00001073	\\armle\arm	arm.c	\161--166	2136	\\armle\arm\func2+0x4
R:00001074--0000107F	\\armle\arm	arm.c	\167--167	2327	\\armle\arm\func2+0x10
R:00001080--00001087	\\armle\arm	arm.c	\168--169	2339	\\armle\arm\func2+0x1C
R:00001088--0000108F	\\armle\arm	arm.c	\170--171	2400	\\armle\arm\func2+0x24
R:00001090--00001093	\\armle\arm	arm.c	\172--173	2462	\\armle\arm\func2+0x2C
R:00001094--0000109F	\\armle\arm	arm.c	\172--173	2462	\\armle\arm\func2+0x30
R:000010A0--000010A7	\\armle\arm	arm.c	\172--173	2462	\\armle\arm\func2+0x3C
R:000010A8--000010C7	\\armle\arm	arm.c	\174--174	2506	\\armle\arm\func2+0x44
R:000010C8--000010E3	\\armle\arm	arm.c	\175--176	2536	\\armle\arm\func2+0x64
R:000010E4--000010F7	\\armle\arm	arm.c	\177--178	2559	\\armle\arm\func2+0x80

See also

- sYmbol.List

Format: **sYmbol.List.Local** [*<range>* | *<address>*]

Displays all symbols local to functions and blocks.



address	path\symbol	type	scope	location	info
R:00001454--000016EF	\\armle\arm\func8	BLOCK			
R:000016F8--00001783	\\armle\arm\func9	BLOCK			
R0	\\armle\arm\func9\return	(register int *)	local	register	alive: R:0x1780--0x1783
R:000016F8--00001777	\\armle\arm\func9	BLOCK			
D:00005644--00005647	\\armle\arm\func9\stat1	(static int)	local	static	
R2	\\armle\arm\func9\reg1	(register int)	local	register	alive: R:0x16F8--0x1777
(F-0004)--(F-0001)	\\armle\arm\func9\auto1	(auto int)	local	stack	alive: R:0x16F8--0x1777
R:0000171C--00001767	\\armle\arm\func9	BLOCK			
D:00005648--0000564B	\\armle\arm\func9\stat2	(static int)	local	static	
R3	\\armle\arm\func9\reg2	(register int)	local	register	alive: R:0x171C--0x1767
(F-0008)--(F-0005)	\\armle\arm\func9\auto2	(auto int)	local	stack	alive: R:0x171C--0x1767
R:0000178C--00001C7F	\\armle\arm\func10	BLOCK			
R0	\\armle\arm\func10\return	(register int)	local	register	alive: R:0x1C7C--0x1C7F
R:0000178C--00001C7B	\\armle\arm\func10	BLOCK			

See also

- sYmbol.List

sYmbol.List.MACRO List all C macros

Format: **sYmbol.List.MACRO**

List all C macros. C macros can either be loaded with **Data.LOAD** *<file>* **/MACRO** or they can be created with the command **sYmbol.Create.MACRO**.

See also

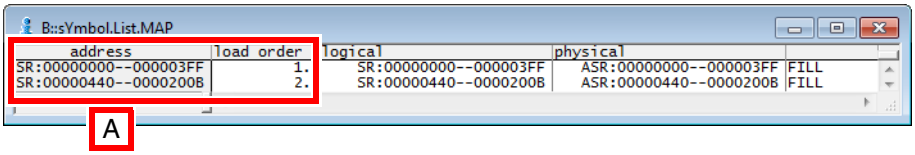
- sYmbol.List

Format: **sYmbol.List.MAP** [*<address>*]

Displays address ranges where code was saved during download and the order in which the code was saved. Can be used to find out “where the code has gone”.

Example:

```
;<your_code>
SYStem.Up                                          ;connect to target
Data.LOAD.Elf  sieve_flash_thumb_ii_v7m.elf        ;load application to target

sYmbol.List.MAP                                    ;let's find out
                                                   ;"where the code has gone"
```



A The loaded *.elf file contains two section, and the code has been loaded to these two address ranges.

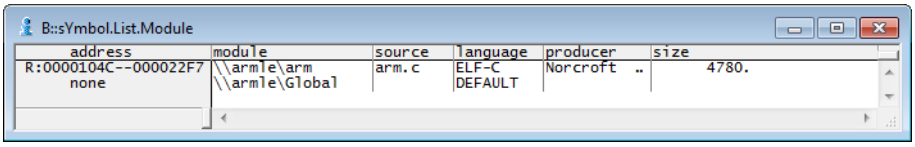
See also

■ sYmbol.List ❏ sYmbol.List.MAP.COUNT() ❏ sYmbol.List.MAP.RANGE()

sYmbol.List.Module Display modules

Format: **sYmbol.List.Module** [*<address>*]

Displays information about the loaded models, e.g. the location or the loaded source file.



See also

■ sYmbol.List

Format: **sYmbol.List.PATCH** [*<address>*]

Is a alias for **sYmbol.PATCH.List**.

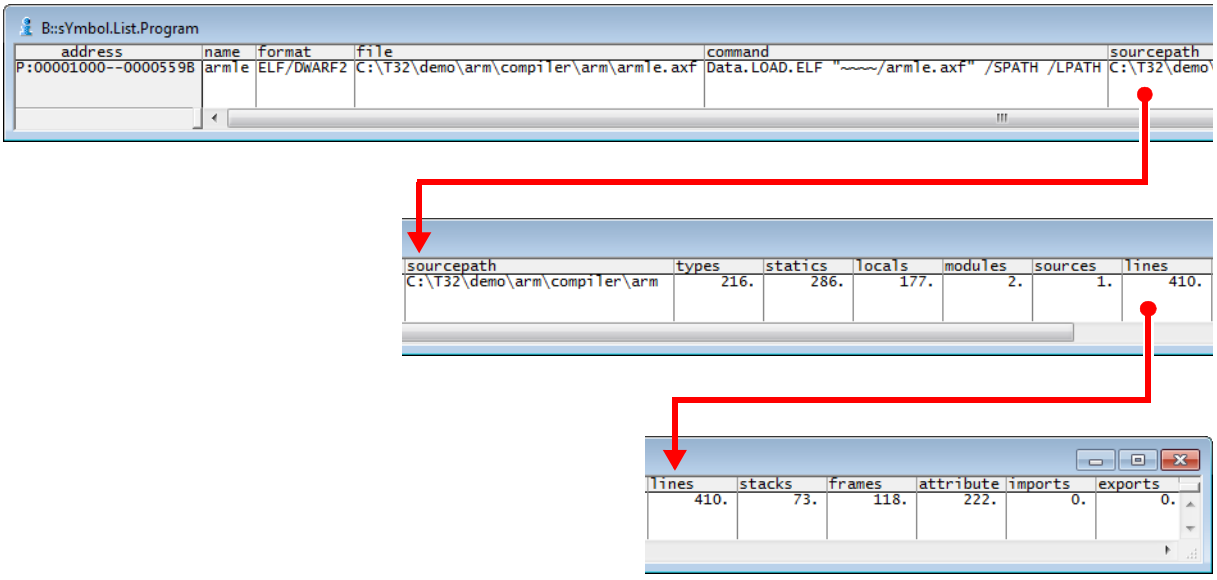
See also

- sYmbol.List

sYmbol.List.Program Display programs

Format: **sYmbol.List.Program**

Displays the location and further related information about the loaded programs.



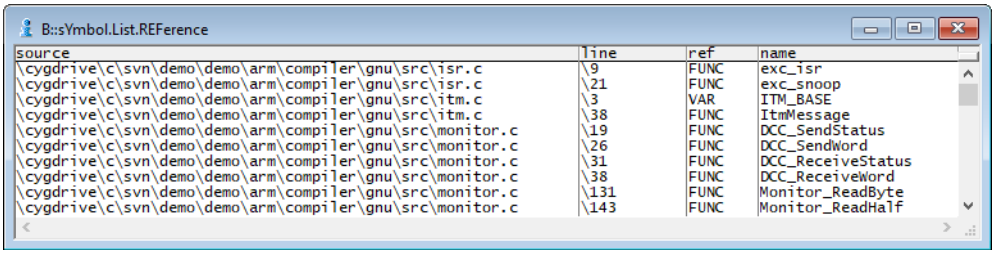
See also

- sYmbol.List
- sYmbol.LIST.PROGRAM()

Format: **sYmbol.List.REFerence**

Displays DWARF declaration info. THe ELF file ha to loaded with **/REFerence** option:

```
Data.LOAD.ELF <elf_file> /REFerence
```

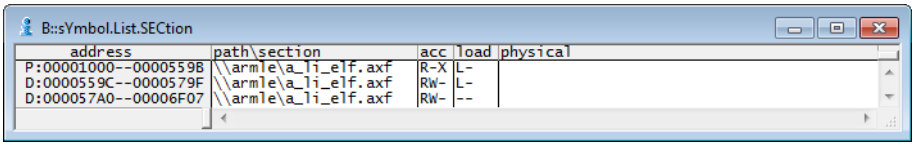


See also

- sYmbol.List

Format: **sYmbol.List.SECtion** [*<address>*]

Opens the **sYmbol.List.SECtion** window, displaying the logical address ranges, section names, and access rights for the sections. Physical address ranges are also displayed, provided the file type contains any.



Description of Columns in the sYmbol.List.SECtions Window

address	Logical address range of a section.
path\section	Section names in source files.
acc	Access rights: • **R**: Read access • **W**: Write access • **X**: Section can execute code
load	• **L**: Section is loaded by the debugger. • **0**: Section is set to zero by the debugger.
physical	Physical address range of a section - only for certain file types and architectures.

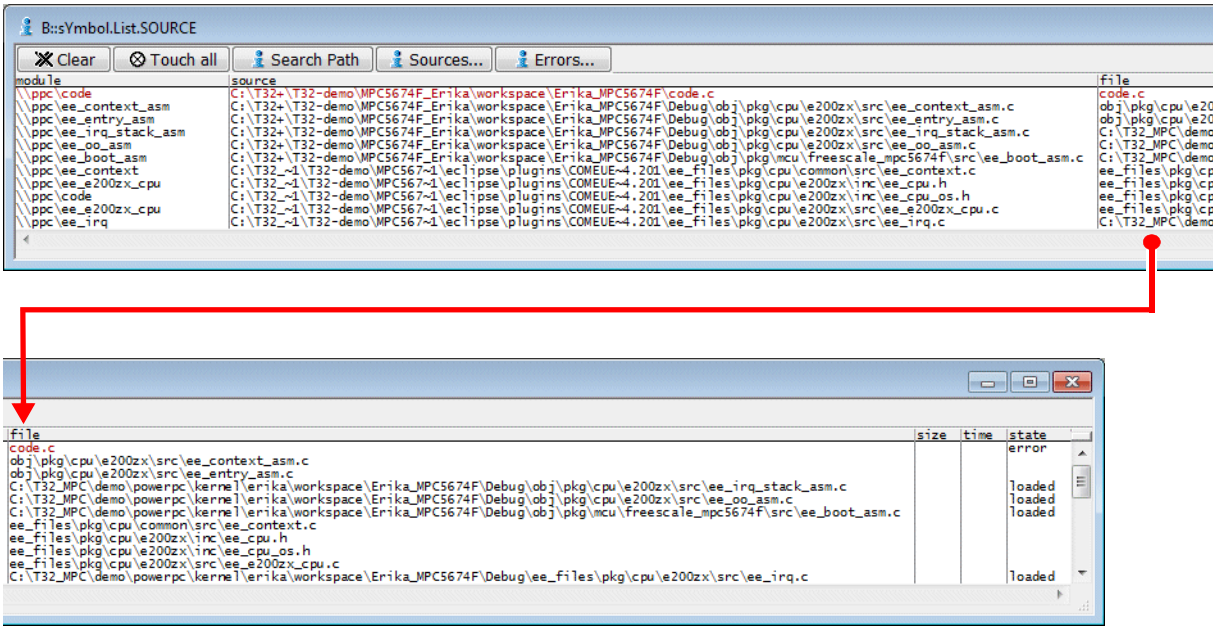
See also

■ sYmbol.List
❑ sYmbol.SECADDRESS()
❑ sYmbol.SECEND()
❑ sYmbol.SECNAME()
❑ sYmbol.SECPRANGE()
❑ sYmbol.SECRANGE()

[Example]

Format: **sYmbol.List.SOURCE** [**/ERRORS**]

If a files with debug information is loaded (**Data.LOAD.<file_format>**), this file also provides the paths for the HLL (C/C++/JAVA etc.) source files. The command **sYmbol.List.SOURCE** lists the file names and paths in the source column.



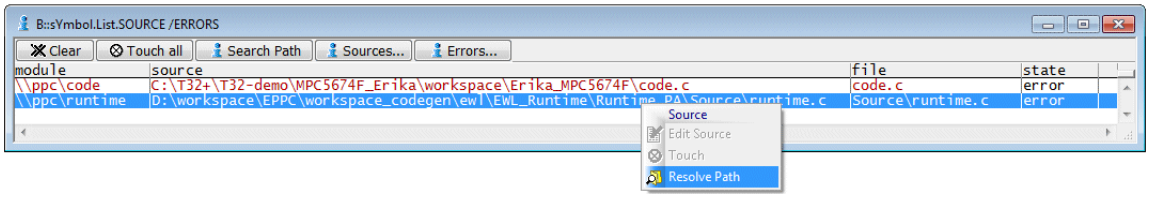
Description of Toolbar Buttons in the sYmbol.List.SOURCE Window

Clear	Invalidates the state column for all source files and invalidates the search results displayed in the file column (command **sYmbol.SourceRELOAD**).
Touch All	By default an HLL source file is only loaded by TRACE32 when the contents of the HLL source file is required during debugging. This button advises TRACE32 to load all source files (command **sYmbol.SourceLOAD**).
Search Path	Displays details on source search paths (command **sYmbol.SourcePATH.List**).
Errors	Display only modules tagged with error in the **state** column.

module	Path of the compiled file as it is maintained by TRACE32.
source	Source path for C/C++/JAVA source file after the completion of the **Data.LOAD.<file_format>** command.
file	Source path from which the C/C++/JAVA source file was actually loaded. Required adjustments of the source path can be performed with the help of the **sYmbol.SourcePATH** command group.
size	Size information as provided by the loaded file.
time	Time information as provided by the loaded file.
state	The state *loaded* indicates that the C/C++/JAVA source file was loaded successfully. The state *error* indicates that the C/C++/JAVA source file could not be loaded. Modules tagged with *error* are printed in red.

Example:

```
sYmbol.List.SOURCE /ERRORS        // Advise TRACE32 PowerView to display
                                  // only modules tagged with error.
```



Resolve Path in the **Source** context menu opens a dialog where you can choose the correct path for the selected module/source. TRACE32 adds the result to the source search paths. The result can be inspected via the **sYmbol.SourcePATH.List** command. The procedure is as follows:

- Absolute paths are fixed with the help of the command **sYmbol.SourcePATH.Translate**.
- Relative paths are fixed with the help of the command **sYmbol.SourcePATH.SetBaseDir**.

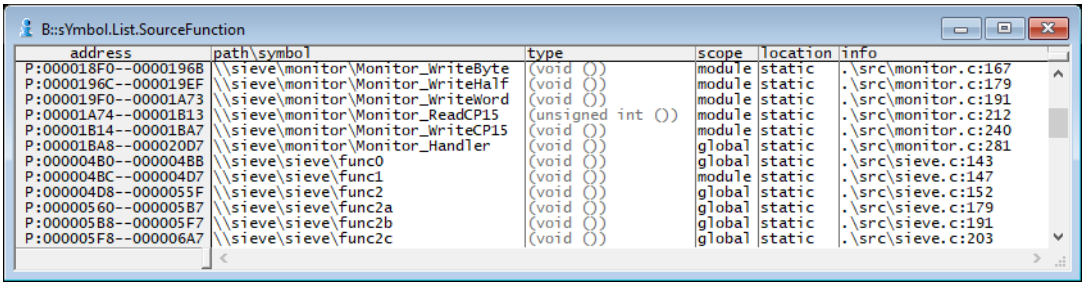
See also

■ sYmbol.List ■ sYmbol.ECA ❑ sYmbol.LIST.SOURCE()

▲ 'Release Information' in 'Legacy Release History'

Format: **sYmbol.List.SourceFunction** [*<range>* | *<address>*]

Lists the location and source file information about the loaded functions.



B::sYmbol.List.SourceFunction

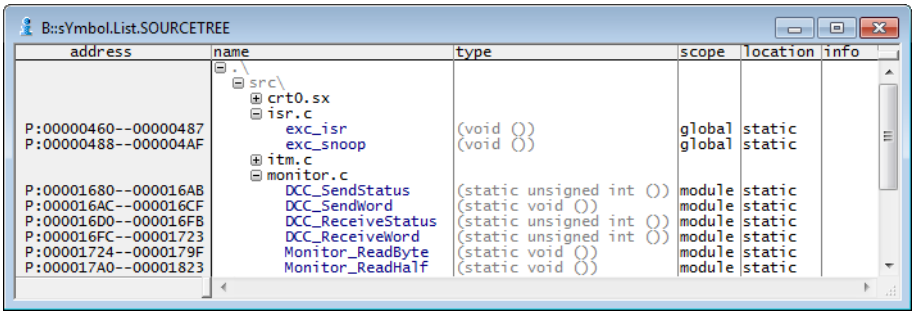
address	path\symbol	type	scope	location	info
P:000018F0--00001968	\\sieve\monitor\Monitor_WriteByte	(void ())	module	static	.\src\monitor.c:167
P:0000196C--000019EF	\\sieve\monitor\Monitor_WriteHalf	(void ())	module	static	.\src\monitor.c:179
P:000019F0--00001A73	\\sieve\monitor\Monitor_WriteWord	(void ())	module	static	.\src\monitor.c:191
P:00001A74--00001B13	\\sieve\monitor\Monitor_ReadCP15	(unsigned int ())	module	static	.\src\monitor.c:212
P:00001B14--00001BA7	\\sieve\monitor\Monitor_WriteCP15	(void ())	module	static	.\src\monitor.c:240
P:00001BA8--000020D7	\\sieve\monitor\Monitor_Handler	(void ())	global	static	.\src\monitor.c:281
P:000004B0--000004BB	\\sieve\sieve\func0	(void ())	global	static	.\src\sieve.c:143
P:000004BC--000004D7	\\sieve\sieve\func1	(void ())	module	static	.\src\sieve.c:147
P:000004D8--0000055F	\\sieve\sieve\func2	(void ())	global	static	.\src\sieve.c:152
P:00000560--000005B7	\\sieve\sieve\func2a	(void ())	global	static	.\src\sieve.c:179
P:000005B8--000005F7	\\sieve\sieve\func2b	(void ())	global	static	.\src\sieve.c:191
P:000005F8--000006A7	\\sieve\sieve\func2c	(void ())	global	static	.\src\sieve.c:203

See also

- sYmbol.List

Format: **sYmbol.List.SOURCETREE**

Displays the hierarchy of the source files in a tree structure.



See also

- sYmbol.List

sYmbol.List.STACK Display virtual stack

Format: **sYmbol.List.STACK** [*<address>*]

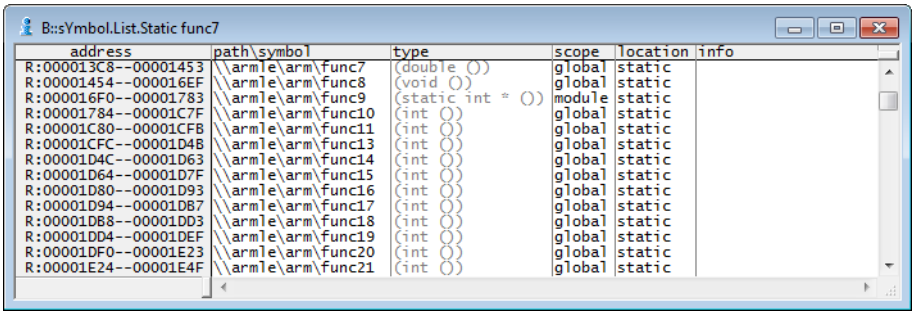
Displays information about virtual stack pointers. This information is highly compiler dependent.

See also

- sYmbol.List

Format: **sYmbol.List.Static** [*<range>* | *<address>*]

Displays all symbols with a fixed address.



address	path\symbol	type	scope	location	info
R:000013C8--00001453	\\armle\arm\func7	(double ())	global	static	
R:00001454--000016EF	\\armle\arm\func8	(void ())	global	static	
R:000016F0--00001783	\\armle\arm\func9	(static int * ())	module	static	
R:00001784--00001C7F	\\armle\arm\func10	(int ())	global	static	
R:00001C80--00001CFB	\\armle\arm\func11	(int ())	global	static	
R:00001CFC--00001D4B	\\armle\arm\func13	(int ())	global	static	
R:00001D4C--00001D63	\\armle\arm\func14	(int ())	global	static	
R:00001D64--00001D7F	\\armle\arm\func15	(int ())	global	static	
R:00001D80--00001D93	\\armle\arm\func16	(int ())	global	static	
R:00001D94--00001DB7	\\armle\arm\func17	(int ())	global	static	
R:00001DB8--00001DD3	\\armle\arm\func18	(int ())	global	static	
R:00001DD4--00001DEF	\\armle\arm\func19	(int ())	global	static	
R:00001DF0--00001E23	\\armle\arm\func20	(int ())	global	static	
R:00001E24--00001E4F	\\armle\arm\func21	(int ())	global	static	

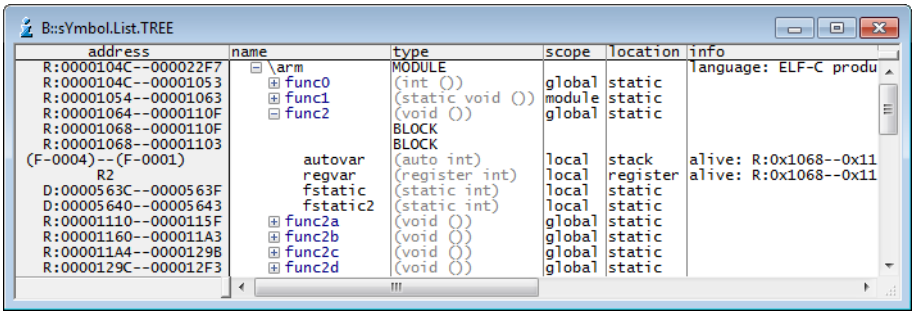
See also

- sYmbol.List

sYmbol.List.TREE Display symbols in tree form

Format: **sYmbol.List.TREE**

Displays modules, symbols, and variables in a tree structure.



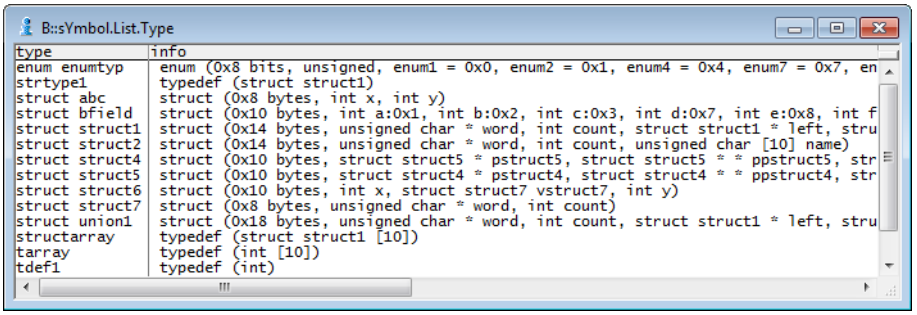
address	name	type	scope	location	info
R:0000104C--000022F7	⊟ \arm	MODULE			language: ELF-C produ
R:0000104C--00001053	⊞ func0	(int ())	global	static	
R:00001054--00001063	⊞ func1	(static void ())	module	static	
R:00001064--0000110F	⊟ func2	(void ())	global	static	
R:00001068--0000110F		BLOCK			
R:00001068--00001103		BLOCK			
(F-0004)--(F-0001)	autovar	(auto int)	local	stack	alive: R:0x1068--0x11
R2	regvar	(register int)	local	register	alive: R:0x1068--0x11
D:0000563C--0000563F	fstatic	(static int)	local	static	
D:00005640--00005643	fstatic2	(static int)	local	static	
R:00001110--0000115F	⊞ func2a	(void ())	global	static	
R:00001160--000011A3	⊞ func2b	(void ())	global	static	
R:000011A4--0000129B	⊞ func2c	(void ())	global	static	
R:0000129C--000012F3	⊞ func2d	(void ())	global	static	

See also

- sYmbol.List

Format: **sYmbol.List.Type** [**/Unnamed**]

Displays all data types used by the compiler.



Unnamed Displays also unnamed types, e.g. "char *".

See also

- sYmbol.List

Using the **sYmbol.LSTLOAD** command group, you can load various formats of assembler list files for source text debugging on assembler level.

See also

- sYmbol.LSTLOAD.GHILLS
- sYmbol.LSTLOAD.IAR
- sYmbol.LSTLOAD.INTEL
- sYmbol.LSTLOAD.KEIL
- sYmbol.LSTLOAD.MRI68K
- sYmbol
- sYmbol.LSTLOAD.HPASM
- sYmbol.LSTLOAD.INT68K
- sYmbol.LSTLOAD.INTEL2
- sYmbol.LSTLOAD.MicroWare
- sYmbol.LSTLOAD.OAK

sYmbol.LSTLOAD.GHILLS Load GHILLS assembler source file

Format: **sYmbol.LSTLOAD.GHILLS** *<module>*|*<program>* *<file>* [*<base_address>*]

Loading of a GHILLS assembler list file for source text debugging on assembler level. If the base address of the module doesn't fit, the base address will be given as an argument.

See also

- sYmbol.LSTLOAD

sYmbol.LSTLOAD.HPASM Load HP assembler source file

Format: **sYmbol.LSTLOAD.HPASM** *<module>*|*<program>* *<file>* [*<base>*]

Format: **sYmbol.LSTLOAD.HPASM2** *<module>*|*<program>* *<file>* [*<base>*]

Loading of an HP assembler list file for source text debugging on assembler level. If the base address of the module doesn't fit, the base address will be given as an argument. If a program name is given, the module entry will be generated from the file name of the list file. The different commands load different HP assembler list file formats.

The debugging can be controlled by the following assembler comments:

; T32-ORG

To mark lines including ORG statements.

; T32-OFF

To switch of the source text debugging. The debugging must be switched of for lines containing data statements or definitions (i.e. lines which address column not containing a program address). Include files, which shall not be displayed, must be switched off also.

NOTE:	The source line numbers will not match in this case, as the relation to the original source is lost.

;T32-ON

Reactivation of the debugging function.

```
Data.LOAD.HP sps                          ; load the module and symbols
sYmbol.LSTLOAD.HPASM \SPS1 sps1.lst       ; load the source lines for
sYmbol.LSTLOAD.HPASM \SPS2 sps2.lst       ; module 1
                                          ; load the source lines for
                                          ; module 2
```

See also

- sYmbol.LSTLOAD

Format:	**sYmbol.LSTLOAD.IAR** *<module>*|*<program>* *<file>* [*<base_address>*]

Loading of a IAR assembler list file for source text debugging on assembler level. If the base address of the module doesn't fit, the base address will be given as an argument.

The first comment line of the file (beginning with '*') must start in the **first column** of the source text! The debugging can be controlled by the following assembler comments:

*T32-ORG

To mark lines including ORG statements.

*T32-OFF

To switch of the source text debugging. The debugging must be switched of for lines containing data statements or definitions (i.e. lines which address column not containing a program address). Include files, which shall not be displayed, must be switched off also.

NOTE:	The source line numbers will not match in this case, as the relation to the original source is lost.

*T32-ON

Reactivation of the debugging function.

See also

- sYmbol.LSTLOAD

Format: **sYmbol.LSTLOAD.INT68K** *<module>|<program> <file>* [*<base_address>*]

Loading of a Intermetrics assembler list file for source text debugging on assembler level. If the base address of the module doesn't fit, the base address will be given as an argument.

The debugging can be controlled by the following assembler comments:

*T32-ORG

To mark lines including ORG statements.

*T32-OFF

To switch of the source text debugging. The debugging must be switched of for lines containing data statements or definitions (i.e. lines which address column not containing a program address).

*T32-ON

Reactivation of the debugging function.

See also

- sYmbol.LSTLOAD

sYmbol.LSTLOAD.INTEL Load INTEL assembler source file

Format: **sYmbol.LSTLOAD.INTEL** *<module>|<program> <file>* [*<base_address>*]

Loading of a INTEL assembler list file for source text debugging on assembler level. If the base address of the module doesn't fit, the base address will be given as an argument.

See also

- sYmbol.LSTLOAD

sYmbol.LSTLOAD.INTEL2 Load INTEL assembler source file

Format: **sYmbol.LSTLOAD.INTEL2** *<module>*|*<program>* *<file>* [*<base_address>*]

Loading of a INTEL multi-segment assembler list file for source text debugging on assembler level. If the base address of the module doesn't fit, the base address will be given as an argument. This

See also

- sYmbol.LSTLOAD

sYmbol.LSTLOAD.KEIL Load Keil assembler source file

Format: **sYmbol.LSTLOAD.KEIL** *<module>* *<file>* [*<base>*]

Loading of an KEIL (8051) assembler list file for source text debugging on assembler level. The base address is optional, it is used when the address sections are unknown.

See also

- sYmbol.LSTLOAD

sYmbol.LSTLOAD.MicroWare Load MICROWARE assembler source file

Format: **sYmbol.LSTLOAD.MicroWare** *<module>*|*<program>* *<file>* [*<base>*]

Loading of a MICROWARE assembler list file for source text debugging on assembler level. If the base address of the module doesn't fit, the base address will be given as an argument. If a program name is given, the module entry will be generated from the file name of the list file.

Example:

```
Data.LOAD.ROF sps /MAP                                ; load the module and
sYmbol.LSTload.mw \\SPS sps1.lst 0x1000               ; symbols
                                                      ; load the source
sYmbol.LSTload.MicroWare \\SPS sps2.lst 0x1200        ; lines for module 1
                                                      ; load the source
                                                      ; lines for module 2
```

See also

- sYmbol.LSTLOAD

Format: **sYmbol.LSTLOAD.MRI68K** *<module>*|*<program>* *<file>* [*<base_address>*]

Loading of a MICROTEC assembler list file for source text debugging on assembler level. If the base address of the module doesn't fit, the base address will be given as an argument.

The first comment line of the file (beginning with '*') must start in the **first column** of the source text! The debugging can be controlled by the following assembler comments:

*T32-ORG

To mark lines including ORG statements.

*T32-OFF

To switch of the source text debugging. The debugging must be switched of for lines containing data statements or definitions (i.e. lines which address column not containing a program address).

*T32-ON

Reactivation of the debugging function.

See also

- sYmbol.LSTLOAD

sYmbol.LSTLOAD.OAK Load OAK assembler source file

Format: **sYmbol.LSTLOAD.OAK** *<module>*|*<program>* *<file>* [*<base>*]

Loading of a OAK assembler list file for source text debugging on assembler level.

See also

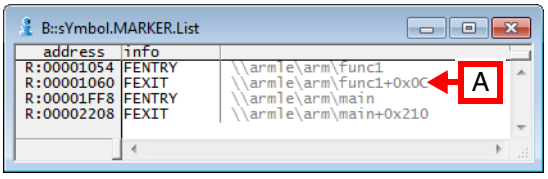
- sYmbol.LSTLOAD

The **sYmbol.MARKER** commands are intended for very advanced users only. The commands are used for fine-tuning the nesting function run-time analysis, typically in conjunction with the **Trace.STATistic.Func** command. Markers can be used to handle special cases for nested trace statistics. Please contact Lauterbach support before using the **sYmbol.MARKER** commands.

The **sYmbol.MARKER** commands let you create markers for symbols, display them in a list window, delete individual markers, and reset all markers. The following examples are just intended to illustrate these actions.

Example 1:

```
;Display the marker list window
sYmbol.MARKER.List

;Create function entry markers for the functions func1, main
sYmbol.MARKER.Create FENTRY func1
sYmbol.MARKER.Create FENTRY main

;Create function exit markers
sYmbol.MARKER.Create FEXIT sYmbol.EXIT(func1)
sYmbol.MARKER.Create FEXIT sYmbol.EXIT(main)
```



A Double-click a line to open a **List.auto** window, displaying the location of a marker. Note that the marker itself is not visible in the **List.auto** window.

Example 2:

```
;Delete an individual function entry marker
sYmbol.MARKER.Delete func1

;Delete an individual function exit marker
sYmbol.MARKER.Delete sYmbol.EXIT(main)

;Delete all markers
sYmbol.MARKER.RESet
```

See also

- sYmbol
- sYmbol.MARKER.Create
- sYmbol.MARKER.Delete
- sYmbol.MARKER.List
- sYmbol.MARKER.RESet
- sYmbol.MARKER.TOUCH

▲ 'Release Information' in 'Legacy Release History'

Format:	**sYmbol.MARKER.Create** *<type> <instruction_address>* **sYmbol.CREATE.MARKER** (deprecated) **sYmbol.NEW.MARKER** (deprecated)
<type>:	**KENTRY** | **KEXIT** | **KBACKDOOR** | **KBEGIN** | **KEND** | **KFROM** | **KTO** | **KLEAVE** | **FENTRY** | **KFENTRY** | **IFENTRY** | **ILEAVE** | **FEXIT** | **FEXITINIT** | **FEXITDOUBLE** | **FEXITCLEANUP** | **FBACKDOOR** | **KFBACKDOOR** | **CLEANUP** | **CLEANUP2** | **IGNORE** | **IGNOREFROM** | **IGNORETO** | **CALL** | **JUMP** | **BYJUMP** | **TASKSWITCH** | **CORRELATE**

Nesting function run-time analysis commands like**Trace.STATistic.Func** process the trace information to reconstruct the function call hierarchy. The focus is put on the transitions between functions. The following events are of interest:

- Function entries/exits
- Task switches
- Entries/exits of interrupt service routines
- Entries/exits of TRAP handlers

Optimization of the OS and the compiler as well as the technology used for the trace generation may disturb the reconstruction of the call hierarchy. As a result, nesting function run-time analysis fails. Markers are a mean to feed TRACE32 with additional information that help to pass blocking points in the analysis.

```
sYmbol.MARKER.Create KENTRY os_prologue    ; mark the address os_prologue
                                           ; as kernel entry point

sYmbol.MARKER.Create KEXIT os_epilogue     ; mark the address os_epilogue
                                           ; as kernel exit point

sYmbol.MARKER.List                         ; list all markers
```

The command **sYmbol.MARKER.List** provides a list of all created markers.

KENTRY/KEXIT/KBACKDOOR Marker

A detailed description of the usage of the markers is given at the command description of **Trace.STATistic.TASKKernel** and **Trace.STATistic.TASKFunc**.

```
sYmbol.MARKER.Create KENTRY os_prologue          ; mark the address
                                                 ; os_prologue
                                                 ; as kernel entry point

sYmbol.MARKER.Create KEXIT os_epilogue           ; mark the address
                                                 ; os_epilogue
                                                 ; as kernel exit point

sYmbol.MARKER.List                               ; list all markers
```

KBEGIN/KEND Marker

Mark *<address>* as kernel event. These markers work the same way as **KENTRY** and **KEXIT** but are not nested, i.e. a **KEND** marker closes all previously opened **KBEGIN** markers.

FENTRY/FEXIT/FBACKDOOR/FEXITDOUBLE/FEXITINT Marker

FENTRY *<address>*	Mark *<address>* as function entry.
FEXIT *<address>*	Mark *<address>* as function exit.
FBACKDOOR *<address>*	Mark *<address>* as function entry. TRACE32 ignores this function entry in the trace evaluation if a prior function entry was detected.
FEXITDOUBLE *<address>*	Mark *<address>* as function exit where a function exits two function levels.
FEXITINT *<address>*	Mark *<address>* as interrupt exit/return event.

A detailed description of the usage of the markers is given at the command description of **Trace.STATistic.Func**.

Purpose: Solve issues of trace export technology.

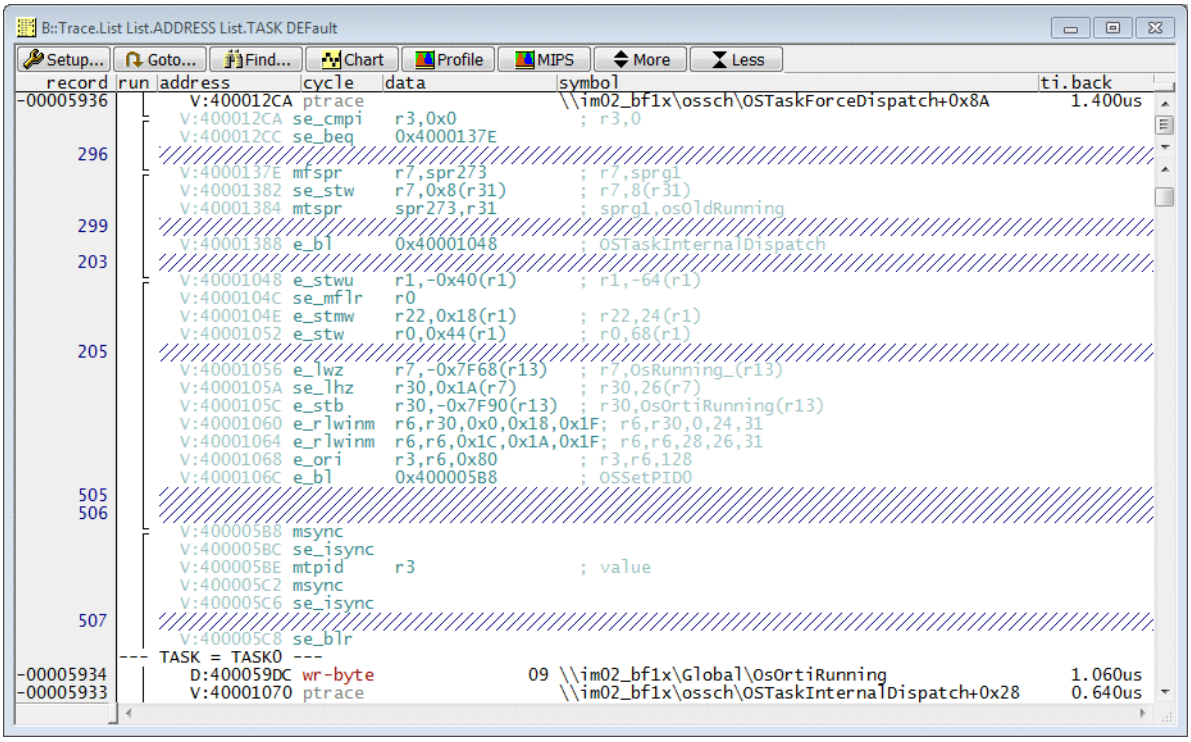
CORRELATE markers allows to assign read/write accesses to instructions.

If trace information is exported for all executed instructions but only for selected read/write accesses, an exact assignment of an read/write access to the load/store operation is not possible in most cases. The read/write access is displayed in the Trace Listing in red before the next exported instruction information (ptrace).

This behavior may disturb the reconstruction of the call hierarchy in the following case: A task switch occurs (write access to variable holding the task ID) and then a function is called, but in the Trace Listing the task switch is displayed after the function call. As a result the function is hooked into the wrong call tree.

More than one **CORRELATE** marker is possible as long as its address is unique between two ptrace packets.

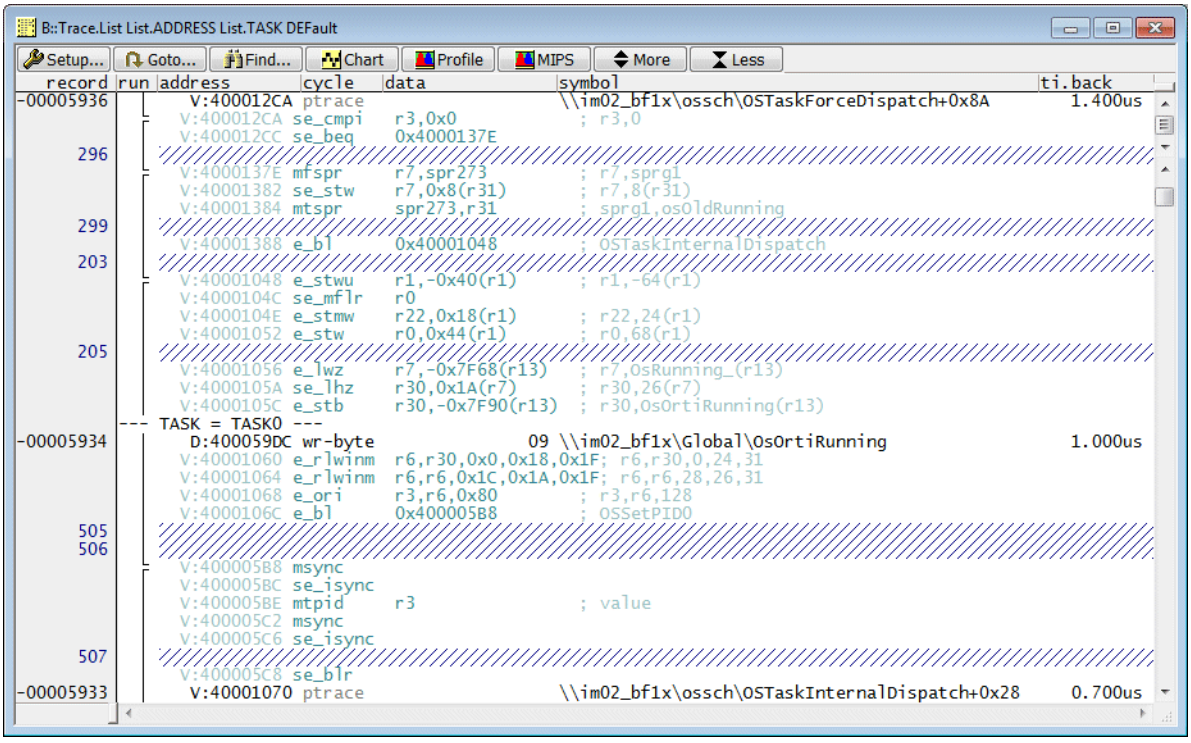
In the example below, the write access to the task identifier (TASK.CONFIG(magic)) and all instructions are exported via a Nexus port (MPC5646).




```
...

NEXUS.BTM ON
NEXUS.HTM ON
Break.Set TASK.CONFIG(magic) /Write /TraceData

...
```

For the reconstruction of the call hierarchy and an accurate timing the write access of the task ID has to be assigned exactly to the corresponding instruction. For this purpose a **CORRELATE** marker can be used.

```
sYmbol.MARKER.Create CORRELATE V:4000105C
```



IGNORE / IGNOREFROM / IGNORETO / IGNOREALLFUNC

IGNORE *<address>*	TRACE32 ignores all instructions with the specified *<address>*, for nesting function run-time analysis.
IGNOREFROM *<start_address>* **IGNORETO** *<end_address>*	TRACE32 ignores all instructions between *<start_address>* and *<end_address>,* for nesting function run-time analysis.
IGNOREALLFUNC	TRACE32 ignores all function entries and all function exits, for nesting function run-time analysis.

See also

■ sYmbol.MARKER

▲ 'Release Information' in 'Legacy Release History'

sYmbol.MARKER.Delete — Delete a marker

Format: **sYmbol.MARKER.Delete** *<address>*

Deletes the specified marker. To delete all markers, use **sYmbol.MARKER.RESet**.

See also

- sYmbol.MARKER

sYmbol.MARKER.List — Displays the marker list

Format: **sYmbol.MARKER.List** [*<address>*]
sYmbol.List.MARKER [*<address>*] (deprecated)

Opens the **sYmbol.MARKER.List** window, displaying the list of markers created with **sYmbol.MARKER.Create**.

A detailed description of the usage of the markers is given at the command description of **Trace.STATistic.TASKKernel** and **Trace.STATistic.TASKFunc**.

See also

- sYmbol.MARKER

sYmbol.MARKER.RESet — Erase all markers

Format: **sYmbol.MARKER.RESet**

Removes all markers created with **sYmbol.MARKER.Create**.

See also

- sYmbol.MARKER

Format: **sYmbol.MARKER.TOUCH** [**ON** | **OFF**]

Default: ON

Enables/disables the re-processing of the function nesting analysis results after **sYmbol.MARKER.Create** commands. This command can be used in order to speed up the marker processing in TRACE32 in case a large number of markers is created.

Example:

```
sYmbol.MARKER.TOUCH OFF
;<group of sYmbol.MARKER.Create commands>
sYmbol.MARKER.TOUCH ON
```

See also

- sYmbol.MARKER

sYmbol.MATCH Symbol search mode

Format: **sYmbol.MATCH** [**Exact** | **Best** | **Choose**]

Defines the behavior when a symbol is not unique.

Exact	Refuses any symbols that are not unique. This adjustment is useful for regression test and automatic batch scripts.
Best	Open browser window to choose symbol when there is no best match. This is the default.
Choose	Opens a symbol browser to choose from one of the symbols. This is useful for choosing between different overloaded methods in C++.

See also

- sYmbol
- Data.Find

Format: **sYmbol.MEMory**

Displays a summary of memory used by the different components of the symbol table. The results are written to the **AREA A000** (display with **AREA** command).

See also

- sYmbol

Format: **sYmbol.Modify**

This command group allows to modify the symbol table or add additional information to existing symbols and types. See also **sYmbol.RELOCate**.

See also

- sYmbol.Modify.Access
- sYmbol.Modify.AddressToRange
- sYmbol.Modify.ATTRibute
- sYmbol.Modify.NAME
- sYmbol.Modify.RangeToAddress
- sYmbol.Modify.SOURCE
- sYmbol.Modify.StaticCOPY
- sYmbol.Modify.TYPE
- sYmbol.Modify.ADDRess
- sYmbol.Modify.AlienFunction
- sYmbol.Modify.CutFunction
- sYmbol.Modify.NAMES
- sYmbol.Modify.RangeToFunction
- sYmbol.Modify.SplitFunction
- sYmbol.Modify.StaticToStack
- sYmbol

▲ 'Release Information' in 'Legacy Release History'

sYmbol.Modify.Access Modify access of symbols

Format: **sYmbol.Modify.Access** *<class>*: [*<symbol_path>*|*<range>*]

Modifies the memory access class of symbols. The symbol path limits the modification to special symbols of a module or a program. If an address range is given, only the symbols in this range will be modified. The command is useful in combination with the automatic symbol relocation feature, when constants are placed in ROM.

Examples:

```
sYmbol.Modify.Access d:0x1000--0x1fff      ; all symbols in the range get
                                           ; the memory access class d:

sYmbol.Modify.Access p:                    ; all symbols in the 'const'
sYmbol.SECRANGE(const)                     ; section get the memory
                                           ; access class p:
```

See also

- sYmbol.Modify.ADDRess
- sYmbol.Modify.AlienFunction
- sYmbol.Modify
- sYmbol.Modify.NAME
- sYmbol.Modify.RangeToAddress
- sYmbol.Modify.SOURCE
- sYmbol.Modify.StaticCOPY
- sYmbol.Modify.TYPE
- sYmbol.Modify.AddressToRange
- sYmbol.Modify.ATTRibute
- sYmbol.Modify.CutFunction
- sYmbol.Modify.NAMES
- sYmbol.Modify.RangeToFunction
- sYmbol.Modify.SplitFunction
- sYmbol.Modify.StaticToStack

Format: **sYmbol.Modify.ADDRess** *<symbol> <address>|<range>*

Modifies the start address or address range of a symbol, module, program or function.

Example:

```
; assign new range to module
sYmbol.Modify.ADDRess \mymodule 0x1000--0x1fff
```

See also

- sYmbol.Modify.Access
- sYmbol.Modify.AddressToRange
- sYmbol.Modify.AlienFunction
- sYmbol.Modify.ATTRibute
- sYmbol.Modify
- sYmbol.Modify.CutFunction
- sYmbol.Modify.NAME
- sYmbol.Modify.NAMES
- sYmbol.Modify.RangeToAddress
- sYmbol.Modify.RangeToFunction
- sYmbol.Modify.SOURCE
- sYmbol.Modify.SplitFunction
- sYmbol.Modify.StaticCOPY
- sYmbol.Modify.StaticToStack
- sYmbol.Modify.TYPE

sYmbol.Modify.AddressToRange Modify address of symbols

Format: **sYmbol.Modify.AddressToRange** *<symbol>* |*<address>*

Extends a single address label into a symbol with an address range. The address range starts at the symbol address and ends at the address of the next symbol minus 1. This command is the opposite of **sYmbol.Modify.RangeToAddress**.

Example:

```
sYmbol.Modify.AddressToRange mylabel
```

See also

- sYmbol.Modify.Access
- sYmbol.Modify.ADDRess
- sYmbol.Modify
- sYmbol.Modify.SOURCE

Format: **sYmbol.Modify.AlienFunction** *<symbol>* |*<range>*

Disables frame information for a selected function.

See also

- sYmbol.Modify.Access
- sYmbol.Modify.ADDRess
- sYmbol.Modify
- sYmbol.Modify.SOURCE

sYmbol.Modify.ATTRibute Modify memory attribute

Format: **sYmbol.Modify.ATTRibute** *<attribute> <symbol>*|*<range>*

Modifies the attribute of the given memory range

Example:

```
; change the memory attribute for the range 0x400--0x4FF to DATA
sYmbol.Modify.ATTRibute DATA 0x400--0x4FF
```

See also

- sYmbol.Modify.Access
- sYmbol.Modify.ADDRess
- sYmbol.Modify
- sYmbol.Modify.SOURCE

sYmbol.Modify.CutFunction Reduce function address information

Format: **sYmbol.Modify.CutFunction** *<range>* | *<address>*

Reduces the address range information for the defined functions to a single address. This command is used only in very special cases.

Example:

```
sYmbol.List.Function
sYmbol.Modify.CutFunction 0x104c++0xff
```

See also

■ sYmbol.Modify ■ sYmbol.Modify.Access ■ sYmbol.Modify.ADDRess ■ sYmbol.Modify.SOURCE

▲ 'Release Information' in 'Legacy Release History'

sYmbol.Modify.NAME Rename symbol

Format: **sYmbol.Modify.NAME** *<symbol_name> <new_name>*

Renames symbol. If multiple symbols with the given name are available, an error "ambiguous symbol" is returned. Use in this case **sYmbol.Modify.NAMES**.

Example:

```
; renames 'vtriplearray' to 'tt'
sYmbol.Modify.NAME vtripplearray tt
```

See also

■ sYmbol.Modify ■ sYmbol.Modify.Access ■ sYmbol.Modify.ADDRess ■ sYmbol.Modify.SOURCE

sYmbol.Modify.NAMES Rename symbols

Format: **sYmbol.Modify.NAMES** *<symbol_name> <new_name>*

Renames all symbols having the name *<symbol_name>*, except for function locals.

If you need to rename a lot of symbols, consider using **sYmbol.DEOBFUSCATE** as it will be much faster.

See also

■ sYmbol.Modify ■ sYmbol.Modify.Access ■ sYmbol.Modify.ADDRess ■ sYmbol.Modify.SOURCE
■ sYmbol.DEOBFUSCATE

Format: **sYmbol.Modify.AddressToRange** *<symbol>* |*<address>*

Changes an symbol with an address range into a single address label. This command is the opposite of **sYmbol.Modify.AddressToRange**.

See also

- sYmbol.Modify
- sYmbol.Modify.Access
- sYmbol.Modify.ADDRess
- sYmbol.Modify.SOURCE

sYmbol.Modify.RangeToFunction Modify address range into function

Format: **sYmbol.Modify.RangeToFunction** *<symbol>* |*<range>*

Modifies address range into function.

Example: assembly functions are often represented in the debugging information by the compiler as a single address label. As a consequence, these assembly functions won't be included in the function run-time analysis windows. The commands **sYmbol.Modify.AddressToRange** and **sYmbol.Modify.RangeToFunction** can be used together to change these single address labels into functions.

```
sYmbol.Modify.AddressToRange  _divsi3
sYmbol.Modify.RangeToFunction _divsi3
```

See also

- sYmbol.Modify
- sYmbol.Modify.Access
- sYmbol.Modify.ADDRess
- sYmbol.Modify.SOURCE

sYmbol.Modify.SOURCE Define source file

Format: **sYmbol.Modify.SOURCE** *<module> <file>*

Defines the source file name for a given module. The command can be used when the names or directories of source files have been changed after compilation.

Example:

```
; use source file mod2.c for module 'mod1'
sYmbol.Modify.SOURCE \mod1 ..\src\mod2.c
```

See also

- sYmbol.Modify.SplitFunction
- sYmbol.Modify.StaticToStack
- sYmbol.Modify.Access
- sYmbol.Modify.AddressToRange
- sYmbol.Modify.ATTRibute
- sYmbol.Modify.NAME
- sYmbol.Modify.RangeToAddress
- sYmbol.Modify.TYPE
- sYmbol.Modify.StaticCOPY
- sYmbol.Modify
- sYmbol.Modify.ADDRess
- sYmbol.Modify.AlienFunction
- sYmbol.Modify.CutFunction
- sYmbol.Modify.NAMES
- sYmbol.Modify.RangeToFunction

sYmbol.Modify.SplitFunction — Split function

Format: **sYmbol.Modify.SplitFunction** *<label>*

Makes two functions out of one function. Takes a label inside the function as a parameter. The second function starts at this label and has the name of the label.

See also

- sYmbol.Modify.SOURCE
- sYmbol.Modify
- sYmbol.Modify.Access
- sYmbol.Modify.ADDRess

sYmbol.Modify.StaticCOPY — Create static copy of local stack variables

Format: **sYmbol.Modify.StaticCOPY** *<module>* *<address>* *<address>* [*<reg>*]

Creates static copy of local stack variables.

See also

- sYmbol.Modify.SOURCE
- sYmbol.Modify
- sYmbol.Modify.Access
- sYmbol.Modify.ADDRess

Format: **sYmbol.Modify.StaticToStack** *<reg> <address>* [*<symbol* | *address range>*]

Changes static variables into global stack variables.

See also

■ sYmbol.Modify.SOURCE ■ sYmbol.Modify ■ sYmbol.Modify.Access ■ sYmbol.Modify.ADDRess

sYmbol.Modify.TYPE Modify type of symbols

Format: **sYmbol.Modify.TYPE** *<symbol> <type>*

Changes the symbol type.

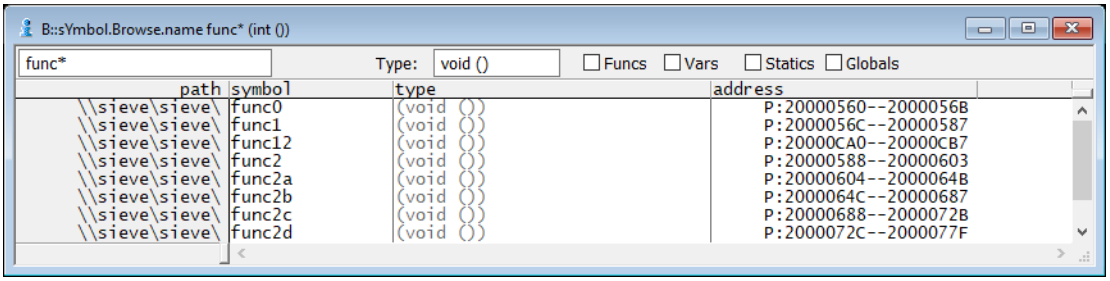
See also

■ sYmbol.Modify ■ sYmbol.Modify.Access ■ sYmbol.Modify.ADDRess ■ sYmbol.Modify.SOURCE

▲ 'Release Information' in 'Legacy Release History'

Format:	**sYmbol.name** [*<name_pattern>* [*<type_pattern>*] [**/***<option>*]
<option>:	**Click** *<cmd>* **Delete**

Displays symbols sorted alphabetically.



Lower and upper case characters are not distinguished. For mangled C++ symbols the search order is based on the function signatures. A complex search function is implemented to find symbol name very fast, if the complete name will be not known. The search patterns are:

'*'	Matches any string, empty strings too.
'?'	Matches any character, but not an empty character.
'"'	Can be used to input special characters like '*' or '?'

If the wildcard '*' is defined for the *type_pattern*, only symbols with HLL type information are extracted. The C++ demangler for the symbols is used, if the pattern contains the characters '(' or ':'.

Examples:

```
sYmbol                          ; displays all symbols

sYmbol *\*                      ; displays all local symbols

sYmbol \*\*                     ; displays all local symbols of global
                                ; functions and module local symbols

sYmbol \mcc\*                   ; displays all symbols local to module
                                ; 'mcc'

sYmbol func9\*                  ; displays all symbols local to
                                ; function 'func9'

sYmbol i                        ; displays all symbols with the name 'i'

sYmbol \mcc\*\i                 ; displays all local symbols in module
                                ; 'mcc' with the name 'i'
```

```
sYmbol \m*\f*\i*                ; displays all local symbols with the
                                ; symbol name beginning with 'i' in all
                                ; functions with function names
                                ; beginning with 'f' in all modules
                                ; beginning with 'm'

sYmbol * *                      ; displays all symbols with HLL type
                                ; information

sYmbol * *ptr                   ; displays all symbols, which have an
                                ; HLL type
                                ; that ends with 'ptr', e.g. 'intptr'

sYmbol * char *                 ; displays all symbols, which have an
                                ; HLL type
                                ; that begins with the text 'char ',
                                ; e.g. 'char *', 'char [10]', 'char &'

sYmbol * char "*"               ; displays all symbols with HLL type of
                                ; 'char *'

sYmbol * *"*"*                  ; displays all symbols with type names,
                                ; that contain a '*'

sYmbol ops::operator*           ; displays all operators defined for
                                ; the C++ class 'ops'

sYmbol operator*                ; will search for all symbols,
                                ; beginning with the string 'operator'
                                ; NOTE: the demangler is not active, so
                                ; no operators of C++ classes are
                                ; listed!

sYmbol *::operator*(int)        ; display all operator of all classes,
                                ; that have only one argument of type
                                ; 'int'
```

The **Click** option can define a command, that can be executed by a short click with the left mouse button. The characters '*' or '?' can be used as placeholder for the complete name of the symbol. Using the '*' will force the command to be executed without further interaction and without leaving the window. The character '?' will cause the cursor to leave the window and build a command line, that can be modified before entering. The option **Delete** deletes the window after the selection has been made.

Examples: See also **sYmbol.ForEach**.

```
sYmbol * /Click "Break.Set"       ; will execute the command
                                  ; Break.Set <symbol>

sYmbol * /Click "Break.Set *      ; will execute the command
/Alpha"                           ; Break.Set <symbol> /Alpha

sYmbol * /Click "Var.View ?"      ; will build a command line
                                  ; Var.View <symbol>
                                  ; and leave the symbol window
```

The address based softkeys are available by pressing the left mouse button. Short clicking the left button can execute the command defined by the option **Click**. The default is the command **Data.List**. Pressing one of the softkeys leaves the window, and builds a command line according to the softkey and symbol.

See also

- sYmbol

sYmbol.NAMESPACES — Search symbol in C++ namespace

Format: **sYmbol.NAMESPACES** [*<namespace>*]

This command configures the debugger to search in the specified C++ namespaces for a debug symbol.

If the debug symbol cannot be found in the global namespace and the debug symbol is referred without scope operator (e.g. inside a `namespace {}` section or after a `using` *<namespace>* declaration, the debugger will search in the namespaces specified by this command.

Example:

```
sYmbol.NAMESPACES std             ; search debug symbols in namespace std if
                                  ; debug symbol not found in current
                                  ; context
```

See also

- sYmbol

▲ 'Release Information' in 'Legacy Release History'

Format:	**sYmbol.NEW** *<name> <address>* | *<range>*

The **sYmbol.NEW** command group allows to create new symbols or modify existing user-defined symbols. The command **sYmbol.CREATE** has the same functionality, but executes faster when multiple symbols are created.

See also

- sYmbol.NEW.ATTRibute
- sYmbol.NEW.Function
- sYmbol.NEW.Label
- sYmbol.NEW.LocalVar
- sYmbol.NEW.MACRO
- sYmbol.NEW.Module
- sYmbol.NEW.Var
- sYmbol
- sYmbol.CREATE
- sYmbol.CREATE.RESet
- sYmbol.Delete

▲ 'Release Information' in 'Legacy Release History'

sYmbol.NEW.ATTRibute Create user-defined memory attribute

[Example]

Format:	**sYmbol.NEW.ATTRibute** *<attribute> <start_address* | *addressrange>*
<attribute>:	**DEFault** *<architecture_specific_attributes>*

Creates a user-defined memory attribute, e.g. for program code, data code, access width, etc.
Memory attributes tell TRACE32 how to interpret memory content. If attributes are missing in the debug information of your symbol file, e.g. an ELF file, you can create the attributes with **sYmbol.NEW.ATTRibute**.

DEFault	Memory content is interpreted based on the current processor state.
<architecture_ specific_attributes>	The softkeys below the TRACE32 command line display the available memory attributes. • For a selection of memory attributes for various architectures, see below. • For more information about available memory attributes, refer to the design manual of the respective architecture.

Selection of Memory Attributes for Various Architectures

Memory attributes for the ARM architecture:

ARM	Code of A32, ARM 32-bit instruction set
THUMB	Code of T32, Thumb/Thumb-2/ThumbEE instruction set

AARCH64	Code of A64, ARM 64-bit instruction set
DATA	Data

Memory attributes for the ARC architecture:

CODE	Program code
DATA.Byte	8-bit data
DATA.Word	16-bit data
DATA.Long	32-bit data

Memory attributes for the PowerPC architecture:

FLE	Code of standard PowerPC instruction set
VLE	Code of Variable Length Encoding
DATA	Data

Memory attributes for the TI-TMS320C55x architecture:

BYTE	Tells TRACE32 to interpret code in byte-pointer mode. Corresponds to **SYStem.Option.ByteMode BYTE** for the specified *<address_range>*.
WORD	Tells TRACE32 to interpret code in word-pointer mode.

Memory attributes for the Intel® x86 architecture:

USE16	16-bit mode
USE32	32-bit mode
USE64	64-bit mode

NOTE:	The Intel® Processor Trace does not include any information whether it is in 16, 32, or 64 bit mode. Using the above memory attributes, you can tell TRACE32 how to disassemble correctly.

Example:

```
;open window, displaying the memory attributes per address range
sYmbol.List.ATTRibute

;create an attribute for a data address range without DATA attribute
sYmbol.NEW.ATTRibute DATA D:10004138--10004193

;display all available information about an address including its attr.
sYmbol.INFO               D:10004138

;this code is now interpreted as data
List.Mix                  D:10004138
```

See also

- sYmbol.NEW

▲ 'Release Information' in 'Legacy Release History'

sYmbol.NEW.Function — Create user-defined function

Format: **sYmbol.NEW.Function** *<name> <addressrange>*

Creates a new function. The function has no parameters or local variables. It can only be used to define a range for a piece of code (e.g. for performance analysis).

Example:

```
sYmbol.NEW.Function myfunc mylabel1--(mylabel2-1)
```

See also

- sYmbol.NEW
- sYmbol.CREATE.Function

Format: **sYmbol.NEW.Label** *<name> <address>*

Creates a new label. A label is a symbol without type information that refers to a single memory location.

Example:

```
sYmbol.CREATE.Label mylab1 0x1000     ; creates "mylab1" at 1000
sYmbol.CREATE.Label mylab2 0x1010     ; creates "mylab2" at 1010
sYmbol.CREATE.Done                    ; make labels available to program

sYmbol.NEW.Label mylab3 0x1020        ; "mylab3" is available immediately
```

See also

- sYmbol.NEW
- sYmbol.CREATE.Label

Format: **sYmbol.NEW.LocalVar** *<function> <var> <address>* | *<addressrange> <type>*

Creates a user-defined local variable in a user-defined function.

See also

■ sYmbol.NEW

sYmbol.NEW.MACRO Create user-defined macro

Format: **sYmbol.NEW.MACRO** *<name> <contents>*

Creates a new macro. The macro can be used like a C-preprocessor macro. Parameters can be supplied in the same way.

Example:

```
; creation and usage of macro MY_NEXT(<arg>)
sYmbol.NEW.MACRO MY_NEXT(p) ((p)->next)
Var.View MY_NEXT(myvar)
```

See also

■ sYmbol.NEW ■ sYmbol.CREATE.MACRO

▲ 'Release Information' in 'Legacy Release History'

sYmbol.NEW.Module Create user-defined module

Format: **sYmbol.NEW.Module** *<name> <addressrange>*

Defines a new module.

Example:

```
sYmbol.NEW.Module \\new 0x2000--0x2fff
sYmbol.Browse.Module
```

See also

■ sYmbol.NEW ■ sYmbol.CREATE.Module

sYmbol.NEW.Var — Create user-defined variable

Format: **sYmbol.NEW.Var** *<variable_name> <address>* | *<addressrange> <type>*

Creates a user-defined variable.

Examples:

```
sYmbol.List.Type /Unnamed                  ; list all types

sYmbol.NEW.Var my_char 0x1000 char         ; create variable

sYmbol.INFO    my_char                     ; display all information
                                           ; about the created variable
```

```
sYmbol.List.Type /Unnamed

sYmbol.NEW.Var my_abc       D:0xa000  struct abc

sYmbol.INFO    my_abc       // structure my_abc of type abc


sYmbol.NEW.Var MyCharArray  D:0x1200  char[50]

sYmbol.INFO    MyCharArray  // character array with 50 elements


sYmbol.NEW.Var MyPtrArray   D:0x1400  unsigned short *[25]

sYmbol.INFO    MyPtrArray   // unsigned short pointer array with 25 el.
```

See also

■ sYmbol.NEW ■ sYmbol.CREATE.Var

▲ 'Release Information' in 'Legacy Release History'

Using the **sYmbol.OVERLAY** command group, TRACE32 can be configured to debug targets that execute and switch between code overlays.

To enable overlay support, use **SYStem.Option.OVERLAY**.

Code overlays are characterized by utilizing the *same address range* in the target for executing *different code* at *different times*. This requires switching between different code segments in physical memory at run-time. As a result, multiple program symbols can refer to the same address range and may refer to program code that currently is **not** present in physical memory. This requires configuration of TRACE32.

See also

- sYmbol.OVERLAY.AutoID
- sYmbol.OVERLAY.Create
- sYmbol.OVERLAY.DETECT
- sYmbol.OVERLAY.FRIEND
- sYmbol.OVERLAY.List
- sYmbol.OVERLAY.RESet
- sYmbol

sYmbol.OVERLAY.AutoID Automatically determine overlay IDs

Format: **sYmbol.OVERLAY.AutoID** [**OVS:** | **VM:**]

Calculates a unique identifier for each overlay currently present in the system.

OVS: (default) Read the overlay code from the overlay storage area (OVS).

VM: To increase detection speed, TRACE32 can read the overlay code from the debugger VM:. This requires that the code was loaded to the execution area (**/CODESEC**) inside the segmented (**/OVERLAY**) debugger virtual memory (**/VM**) with a command like
Data.LOAD.Elf <file> /OVERLAY /CODESEC /NosYmbol /VM

To detect which overlay is currently active (i.e. present in the execution area), the debugger uses unique identifiers based on the overlays' contents. The command **sYmbol.OVERLAY.AutoID** calculates these identifiers for all currently declared overlay section. **Therefore before using it, all code overlay sections have to be known to TRACE32** (through debug information or by explicit declaration) and the **application code has to be present in memory**.

The unique identifier is often called "magic ID" (making reference to the arbitrary value) and is comprised of a "magic" *ID value* present on a corresponding *ID address*. It is found by comparing the contents of the overlay sections and searching for a pair that uniquely identifies each of them. By default the algorithm reads the overlays from the storage areas. To speed up the process, copy the program to the debugger VM: and use the option VM: (see there for details).

There are two ways for TRACE32 to know about the target program's overlays:

- In case of "Relocation-based Code Overlay Support", TRACE32 reads information about overlay sections from the ELF file. This requires special build settings and using the option /overlay with **Data.LOAD.Elf <file> /OVERLAY**
- When using "File-based Code Overlay Support", you have to manually declare all sections and source files (more generally: all DWARF-modules) before loading your ELF file. The declaration is done with the command **sYmbol.OVERLAY.Create**.

NOTE:	To avoid problems with software breakpoints, **sYmbol.OVERLAY.AutoID** only uses ID addresses that do not correspond to HLL lines in the segment.

NOTE:	OVS stands for "OVerlay Storage area". Besides being a parameter, OVS: is also a memory class specifier for accessing the overlay sections at their so-called *storage area*: the address it is stored at before being copied to an *execution area* (the address at which the overlay is executed).

See also

- sYmbol.OVERLAY

Format: **sYmbol.OVERLAY.Create** *<execution_addr_range | overlay_segment_id>*, [*<id_address>*], [*<id_value>*], *<elf_section_name>*, [*<dwarf_module>*], [*<storage_address>*]

Declares a code overlay section and its corresponding modules.

Typically this command is only used for “File-based Code Overlay Support” i.e. when the overlays are contained in different executable files (e.g. ELF files). In this case you have to **declare all sections and source files** (more generally: all DWARF-modules) **before loading the executable files** so that the load command (e.g. via **Data.LOAD.Elf <file> /OVERLAY**) can copy the object code to the corresponding OVS: memory.

In case of “Relocation-based Code Overlay Support”, manual declaration of the sections is not required, because they are declared automatically based on information contained in the ELF file when it is loaded using the option **/OVERLAY** (**Data.LOAD.Elf <file> /OVERLAY**). Despite this **sYmbol.OVERLAY.Create** can be useful e.g. in order to *define an overlay segment ID* for all code sections.

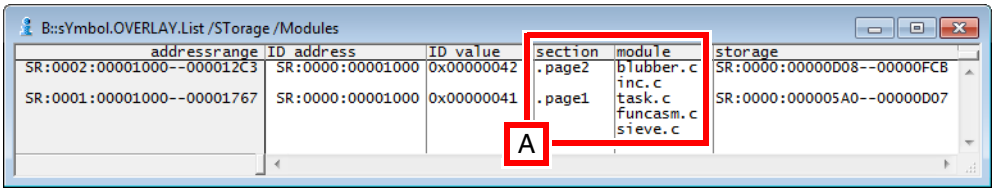
<execution_addr_range> or *<overlay_segment_id>*	Address range where the code overlay section gets executed. You have to specifies also one unique segment ID for all sections which belong to one overlay page (overlay pages overlap each other). e.g. `P:0x42:0x1000-1fff` In most cases it is enough just to specify the segment ID (here 0x42), since the debugger can normally find the execution addresses in the ELF section table by using the *<elf_section_name>.*
<id_address>, *<id_value>*	The (*<id_address>* x *<id_value>*) pair specifies a “magic” ID that uniquely identifies the overlay section when it is present at its execution address. For details regarding the ID see **sYmbol.OVERLAY.AutoID** which allows auto-detecting the ID.
<elf_section_name>	Unique name for the overlay code section as used in your ELF file. e.g. `".page1"` The section names are normally defined in your linker script used for building your ELF file. In TRACE32 you can view the sections of a loaded ELF with command **sYmbol.List.SECtion**. From a system shell (cmd.exe / bshell) you can view the available section names e.g. with the GNU command `readelf -S <ElfFile>` When using overlay sections from different ELF files you can prefix the section name with the ELF file name e.g. `"//myprog/.page1"` **NOTE**: By running the **sYmbol.OVERLAY.Create** command with the same arguments again except for a new *<id_value>*, you can assign more than one ID to the same *<elf_section_name>*. See example 4.

<dwarf_module> (source file)	Required only for “File-based Code Overlay Support” to tell the debugger which source files belong to which overlay section (this can only be detected from the ELF when it contains relocation information). *<dwarf_module>* is usually the name of a source file (e.g. a C-/C++ file). You can omit this parameter, if your ELF file was linked with compiler support for code overlays e.g. “`-Wl,--emit-relocs`” (GCC) or “`--emit-debug-overlay-section`” (ARM RealView). **NOTE**: By running the **sYmbol.OVERLAY.Create** command with the same arguments again except for a new *<dwarf_module>*, you can assign more than one module to the same *<elf_section_name>*. See example 1.
<storage_address>	Specifies the start of the address range where the code section is stored before it gets copied to its execution memory space. You can usually omit this parameter, as the *<storage_address>* is normally auto-detected when loading you ELF file.

Examples

Example 1: File-based code overlay support (single-ELF)

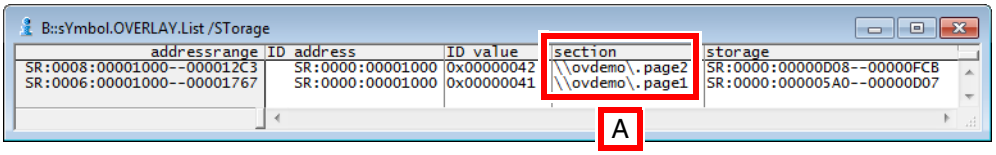
```
sYmbol.RESet
SYStem.Option.OVERLAY ON
sYmbol.OVERLAY.Create 1,,,".page1","task.c"
sYmbol.OVERLAY.Create 1,,,".page1","funcasm.c"
sYmbol.OVERLAY.Create 1,,,".page1","sieve.c"
sYmbol.OVERLAY.Create 2,,,".page2","blubber.c"
sYmbol.OVERLAY.Create 2,,,".page2","inc.c"
Data.LOAD.Elf ovdemo.elf /OVERLAY /NoClear /Include /NOFRAME
sYmbol.OVERLAY.AutoID
sYmbol.OVERLAY.List /STorage /Modules
```



A Modules per code overlay section

Example 2: Relocation-based code overlay support (single-ELF)

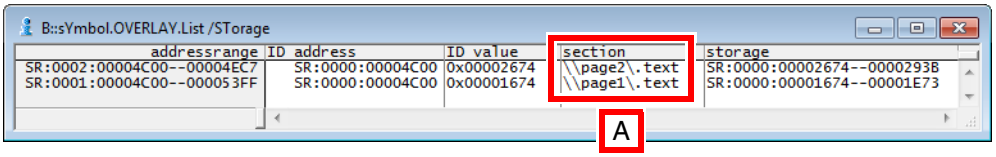
```
sYmbol.RESet
SYStem.Option.OVERLAY ON
Data.LOAD.Elf ovdemo.elf /OVERLAY /Include
sYmbol.OVERLAY.AutoID
sYmbol.OVERLAY.List /STorage
```



A The file ovdemo.elf has two code overlay sections named `.page1` and `.page2`

Example 3: Relocation-based multi-ELF code overlay support

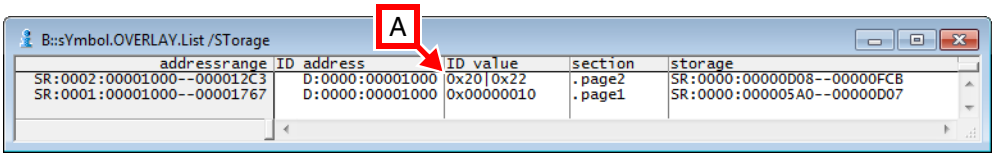
```
sYmbol.RESet
SYStem.Option.OVERLAY ON
sYmbol.OVERLAY.Create 1,,,"\\page1\.text"
sYmbol.OVERLAY.Create 2,,,"\\page2\.text"
Data.LOAD.Elf page1.elf  /NoClear /NoRegister /OVERLAY
Data.LOAD.Elf page2.elf  /NoClear /NoRegister /OVERLAY
sYmbol.OVERLAY.AutoID
sYmbol.OVERLAY.List /STorage
```



A The code overlays in the two *.elf files (page1.elf and page2.elf) have the same section name: `.text`

Example 4: Relocation-based code overlay support (single-ELF) with more than one ID per ELF section

```
sYmbol.RESet
SYStem.Option.OVERLAY ON
sYmbol.OVERLAY.Create 1,D:0x1000,0x10,".page1"

;assign the ID 0x20 to the elf section named ".page2"
sYmbol.OVERLAY.Create 2,D:0x1000,0x20,".page2"

;additionally assign the ID 0x22 to the same elf section ".page2"
sYmbol.OVERLAY.Create 2,D:0x1000,0x22,".page2"

Data.LOAD.Elf ovdemo.elf /OVERLAY /Include /NoClear
sYmbol.OVERLAY.List /STorage
```



A The code overlay section `.page2` has two IDs: `0x20` and `0x22`.

See also

- sYmbol.OVERLAY

Format: **sYmbol.OVERLAY.DETECT** [**ON** | **OFF**]

Default: ON

Executing **sYmbol.OVERLAY.DETECT ON** performs an immediate update of the status (active vs. not active) of all registered code overlays. The detection mechanism uses the ID address and ID value shown in **sYmbol.OVERLAY.List**.

The optional parameter controls the automatic update of the status of overlay pages when the target executes code that may have changed it.

To use the command, first enable overlays via **SYStem.Option.OVERLAY**.

See also

- sYmbol.OVERLAY

sYmbol.OVERLAY.FRIEND Declare a friend overlay segment

[build no. 46380 - DVD 08/2013]

Format: **sYmbol.OVERLAY.FRIEND** *<original_overlay_id> <friend_overlay_id>*

NOTE: Only relevant for decoding ARM ETM trace data in the context of overlays.

The command is relevant for tracing the switches between overlays using ARM ETM.

For an *original overlay segment,* the command declares (or deletes) the so-called "*friend" overlay segment.* The friend overlay segment (a better term would be *subsequent overlay*) is a segment that usually is executed *after* the original segment. Declaring a friend overlay gives the debugger a hint which allows to improve the accuracy of decoding trace data corresponding to the switch between the segments. See the box "background" on the following page for more information.

For each overlay one friend overlay can be declared. For deleting the friend overlay use the command with a friend ID of 0.

In addition to "normal" overlay segments, friend overlays can also be declared for the "common area" of all ("permanent") non-overlay code by using the segment id 0.

The configuration of overlays segments and their respective friend overlays is displayed by **sYmbol.OVERLAY.List /FRiend**..

<original_overlay_id>	ID of the original overlay segment (16-bit integer) If *segment* is zero, a friend segment will be assigned for the global memory space.
<friend_overlay_id>	ID of the friend overlay segment i.e. typically the subsequent overlay segment (16-bit integer) If *friend* is zero, the friend will deleted.

NOTE:	To have an effect, the command needs to be executed before activating RTS via **RTS.ON**.

Background Information

If the trace decoder encounters an opcode on an address not contained in the current overlay segment this causes a problem. Therefore - when a friend overlay is declared - the trace decoder also checks the friend overlay for this address. If the address is found, the opcode is considered to be part of the friend overlay otherwise as part of the “common area” and thus as not belonging to an overlay.

The previous case can occur when the target switches to a new overlay segment. Switches between overlays are typically reported by an ownership trace message which is created by a special opcode writing to a dedicated register (ownership register).

If additional opcodes are executed in the context of the *old* overlay segment (e.g. opcodes residing on an address of the old overlay segment) the ownership message appears “too early” causing problems decoding the trace data of subsequent opcodes (e.g. RTS return-from-subroutine). If the opcode is executed in the context of the *new* overlay segment, the message is sent “too late” because the opcode was executed before the ownership trace message was created.

The special case where the subsequent overlay *does* include the address in question but contains a *different opcode* on the address cannot be handled correctly. It may cause a flow error which however in practice is rather infrequent.

See also

- sYmbol.OVERLAY

Format: **sYmbol.OVERLAY.List** [**/Modules** | **/STorage** | **/FRriend**]

Shows the declared code overlays and the corresponding symbol information set with **sYmbol.OVERLAY.Create** and/or **sYmbol.OVERLAY.AutoID**. The code overlays currently present in memory (“active code overlays”) are highlighted.

Modules	Shows the DWARF modules related to the overlay section. This is only useful in case of “File-based Code Overlay Support “, since the column is empty in case of “Relocation-based Code Overlay Support”.
STorage	Shows the memory region from where the code overlays should be loaded.
FRiend	Shows the friends of each memory segment. See **sYmbol.OVERLAY.FRIEND**

See also

- sYmbol.OVERLAY

sYmbol.OVERLAY.RESet Reset overlay declarations

Format: **sYmbol.OVERLAY.RESet**

Clears the complete table of declared overlay sections.
The table of declared overlay sections can be shown with **sYmbol.OVERLAY.List**. Entries can be added with **sYmbol.OVERLAY.Create**.

See also

- sYmbol.OVERLAY

The Greenhills compiler can add extra assembler instructions to the code, e.g. to function entries and function exits. This instrumentation code generates SFT software trace messages during program execution.

TRACE32 can extract the symbol information about the extra assembler instructions from the loaded application file. Using the **sYmbol.PATCH** command group, you can list the extracted symbol information, as well as enable and disable it.

For PRACTICE demo scripts (*.cmm), see ~~/demo/rh850/etc/sft_trace/

See also

- sYmbol.PATCH.DISable
- sYmbol.PATCH.ENable
- sYmbol.PATCH.List
- sYmbol

sYmbol.PATCH.DISable Disable instrumentation code

Format: **sYmbol.PATCH.List** [*<address>* | *<range>*]

Disables instrumentation code at the specified *<address>* or within the specified address *<range>*. Executing the command without an argument disables all instrumentation codes.

The **sYmbol.PATCH.List** window displays an overview of all symbols in TRACE32 representing the enabled and disabled instrumentation codes.

Example: See **sYmbol.PATCH.List**.

See also

- sYmbol.PATCH

sYmbol.PATCH.ENable Enable instrumentation code

Format: **sYmbol.PATCH.ENable** [*<address>* | *<range>*]

Enables instrumentation code at the specified *<address>* or within the specified address *<range>*. Executing the command without an argument enables all instrumentation codes.

The **sYmbol.PATCH.List** window displays an overview of all symbols in TRACE32 representing the enabled and disabled instrumentation codes.

Example: See **sYmbol.PATCH.List**.

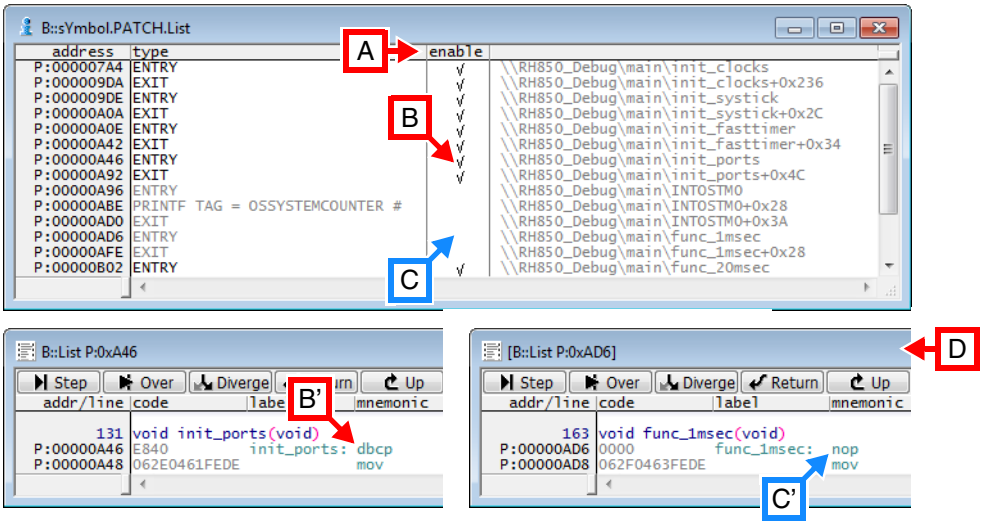
See also

- sYmbol.PATCH

sYmbol.PATCH.List — Display STF-symbol information

Format: **sYmbol.PATCH.List** [*<address>*]
sYmbol.List.PATCH [*<address>*] (alias)

Lists the extracted symbol information of the instrumentation code in the **sYmbol.PATCH.List** window.



A The **enable** column displays the status of the instrumentation codes. Clicking a cell in the **enable** column enables or disables the instrumentation codes:

B A checkmark indicates that the original instrumentation code is active, see [**B'**].

C No checkmark indicates that the original instrumentation code is patched, e.g. by `NOP` instructions, see [**C'**].

D Double-clicking in the **sYmbol.PATCH.List** window opens a corresponding **List** window.

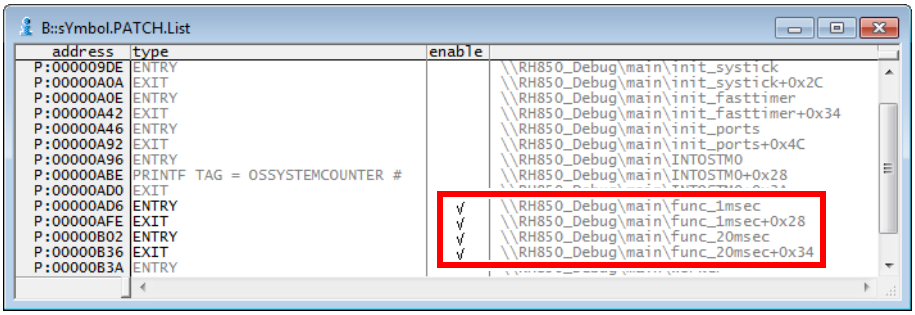
Example 1: This script deactivates function entries and exits within a specified range.

```
sYmbol.PATCH.List
;                       |----------<range>-------------|
sYmbol.PATCH.DISable INTOSTM0--sYmbol.END(func_1msec)
```

Example 2: This script uses the **sYmbol.ForEach** command to enable and disable symbol groups that match the desired name pattern.

```
sYmbol.PATCH.List

;1st step: disable all functions
sYmbol.ForEach "sYmbol.PATCH.DISable sYmbol.RANGE(""*"")" ** /Function

;2nd step: enable the functions that match the name pattern, here *sec*
sYmbol.ForEach "sYmbol.PATCH.ENable sYmbol.RANGE(""*"")" *sec* /Function
```

Result of example 2:



See also

- sYmbol.PATCH

sYmbol.POINTER — Define special register

Format: **sYmbol.POINTER** [*<framepointer>*] [*<staticpointer>*]

Determination of frame pointer and static pointer registers. The frame pointer addresses the variables located on the stack, the static pointer addresses the static variables with position independent data only. During loading an HLL program the registers are automatically preset with the values according to the compilers.

See also

- sYmbol

sYmbol.POSTFIX — Set symbol postfix

Format: **sYmbol.POSTFIX** [*<character>*]

Allows to define a postfix character. If for a symbol name used in a PRACTICE command no applicable symbol is found in the debug information, the postfix character is appended to the symbol name and the search is repeated.

The use of a postfix makes sense when using a compiler, which appends a special sign behind every symbol (for example MarkWilliams C).

See also

- sYmbol.PREFIX
- sYmbol

sYmbol.PREFIX — Set symbol prefix

Format: **sYmbol.PREFIX** [*<character>*]

A sign may be defined as a prefix. If during entry of a symbol no applicable drag-in can be found, the prefix will be appended in front of the symbol and the search will begin once more. The use of a prefix makes useful when using a compiler, which adds a special sign in front of every symbol (for example Microtec Pascal/C).

See also

- sYmbol.POSTFIX
- sYmbol

Format: **sYmbol.RELOCate** *<class>*:*<offset>*] [*<symbol_path>*|*<range>*]

The command group **sYmbol.RELOCate** is outdated (excluding the command **sYmbol.RELOCate.shift**) and is nowadays only used for OS9-aware debugging (**"OS Awareness Manual OS-9"** (rtos_os9.pdf)).

The command **Data.LOAD.Elf <file> /RELOC …** provides greater flexibility when symbols need to be relocated.

See also

- sYmbol.RELOCate.Auto
- sYmbol.RELOCate.Base
- sYmbol.RELOCate.List
- sYmbol.RELOCate.Magic
- sYmbol.RELOCate.Passive
- sYmbol.RELOCate.shift
- sYmbol

▲ 'Release Information' in 'Legacy Release History'

sYmbol.RELOCate.Auto Control automatic relocation

Format: **sYmbol.RELOCate.Auto** [**ON** | **OFF**]

The command **sYmbol.RELOCate.Auto** is outdated and is nowadays only used for OS9-aware debugging. Please refer to **"OS Awareness Manual OS-9"** (rtos_os9.pdf) for more information on this command.

See also

- sYmbol.RELOCate
- sYmbol.RELOCate.Base
- sYmbol.RELOCate.List
- sYmbol.RELOCate.Magic
- sYmbol.RELOCate.Passive
- sYmbol.RELOCate.shift

sYmbol.RELOCate.Base — Define base address

Format: **sYmbol.RELOCate.Base** *<class>*:*<base>*] [*<symbol_path>*|*<range>*]

The command **sYmbol.RELOCate.Base** is outdated and is nowadays only used for OS9-aware debugging. Please refer to **"OS Awareness Manual OS-9"** (rtos_os9.pdf) for more information on this command.

See also

- sYmbol.RELOCate
- sYmbol.RELOCate.Auto
- sYmbol.RELOCate.List
- sYmbol.RELOCate.Magic
- sYmbol.RELOCate.Passive
- sYmbol.RELOCate.shift

sYmbol.RELOCate.List — List relocation info

Format: **sYmbol.RELOCate.List**

The command **sYmbol.RELOCate.List** is outdated and is nowadays only used for OS9-aware debugging. Please refer to **"OS Awareness Manual OS-9"** (rtos_os9.pdf) for more information on this command.

See also

- sYmbol.RELOCate
- sYmbol.RELOCate.Auto
- sYmbol.RELOCate.Base
- sYmbol.RELOCate.Magic
- sYmbol.RELOCate.Passive
- sYmbol.RELOCate.shift

sYmbol.RELOCate.Magic — Define program magic number

Format: **sYmbol.RELOCate.Magic** *<program_magic>*] [*<symbol_path>*|*<range>*]

The command **sYmbol.RELOCate.Magic** is outdated and is nowadays only used for OS9-aware debugging. Please refer to **"OS Awareness Manual OS-9"** (rtos_os9.pdf) for more information on this command.

See also

- sYmbol.RELOCate
- sYmbol.RELOCate.Auto
- sYmbol.RELOCate.Base
- sYmbol.RELOCate.List
- sYmbol.RELOCate.Passive
- sYmbol.RELOCate.shift

Format: **sYmbol.RELOCate.Passive** *<class>*:*<base>*

The command **sYmbol.RELOCate.Passive** is outdated and nowadays only used for OS9-aware debugging. Please refer to **"OS Awareness Manual OS-9"** (rtos_os9.pdf) for more information on this command.

See also

- sYmbol.RELOCate
- sYmbol.RELOCate.Auto
- sYmbol.RELOCate.Base
- sYmbol.RELOCate.List
- sYmbol.RELOCate.Magic
- sYmbol.RELOCate.shift

sYmbol.RELOCate.shift Relocate symbols

Format: **sYmbol.RELOCate.shift** *<class>*:*<offset>* [*<symbol_path>*|*<range>*]

Manually relocates symbols. The symbol path limits the relocation to special symbols of a module or a program. If an address range is given, only the symbols in this range will be relocated. Relocation is always relative to the current address of the symbol. When the memory access classes of some symbols are wrong, they can be changed by the **sYmbol.Modify.Access** command.

Examples:

```
; relocate all program symbols by 12240H
sYmbol.RELOCate.shift P:0x12240
```

```
; relocate all data symbols of module 'main'
sYmbol.RELOCate.shift D:0x1000 \main
```

```
; relocate all data symbols in the given range
sYmbol.RELOCate.shift D:0x1000 0x40000--0x4ffff
```

See also

- sYmbol.RELOCate
- sYmbol.RELOCate.Auto
- sYmbol.RELOCate.Base
- sYmbol.RELOCate.List
- sYmbol.RELOCate.Magic
- sYmbol.RELOCate.Passive

▲ 'Release Information' in 'Legacy Release History'

Format:	**sYmbol.RESet**

All symbols and search paths for source files are cleared.

See also

- sYmbol

Format:	**sYmbol.SourceBeautify** [**ON** | **OFF**]

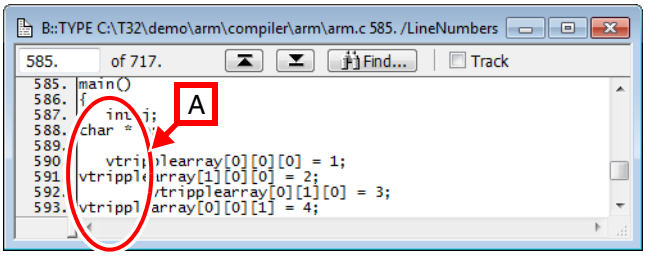
ON Beautifies the indentations of HLL lines displayed in the **List** windows. The source file itself is not touched.

OFF Displays the HLL lines as formatted in the source file.

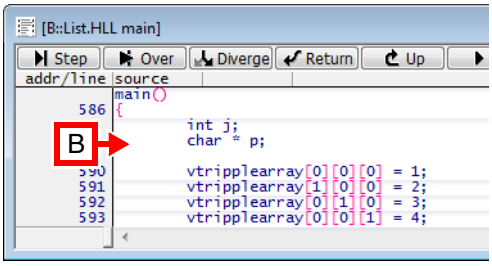
NOTE: The command takes only effect if it is set to **ON** or **OFF** *before* executing the **Data.LOAD.<file_format>** command.

Example:

```
sYmbol.SourceBeautify ON

;load ELF file plus associated source file. For demo purposes, the *.c
;file contains some malformatted HLL lines.
Data.LOAD.ELF armle.axf /StripPATH /LowerPATH

List.HLL main ;refer to [B]
```



A Source file (*.c) with indentation issues.



B Indentation issues fixed in TRACE32.

See also

- sYmbol

Format:	**sYmbol.SourceCONVert** *<mode>*
<mode>:	**OFF** | **EUC-JP**

Converts the HLL source information from EUC (Extended UNIX Code) to JP for Windows.

See also

■ sYmbol

▲ 'Release Information' in 'Legacy Release History'

Format: **sYmbol.SourceLOAD** [*<module>* [*<file>*]]

By default an HLL source file is only loaded by TRACE32 when the contents of the HLL source file is required during debugging. The command **sYmbol.SourceLOAD** loads the HLL source file for the defined module on user request. The HLL source line information from the absolute object file must be loaded before using this command. If the command **sYmbol.SourceLOAD** is used without any parameter, all HLL source files are loaded.

The command **sYmbol.SourceLOAD** allows also the specification of a new HLL source file instead of the one listed in **sYmbol.List.SOURCE**. This can be useful, if the name or directory of the source file has been changed after compilation.

Examples:

```
; load all source files
Data.LOAD.COFF arm.abs
sYmbol.SourceLOAD
```

```
; load the source file for the module \\thumble\arm
Data.LOAD.COFF arm.abs
sYmbol.List.SOURCE
sYmbol.SourceLOAD \\thumble\arm
```

```
; load the source file NewArm.C for the module \\thumble\arm
Data.LOAD.COFF arm.abs
sYmbol.SourceLoad \\thumble\arm G:\ARM\etc\Test\NewArm.C
```

See also

- sYmbol

Format: **sYmbol.SourcePATH** [**+** | **-** | **--** | *<directory>*] … (deprecated)

Adds or removes directories to the path used for searching the source files accessed by TRACE32. The current search order can be displayed by the command **sYmbol.SourcePATH.List**. The list can be saved with the **STOre** command and the **SPATH** item.

+	Use the '+' to add a directory to the path.
-	Use the '-' sign to remove a path from the list.
--	Two minus signs '--' clear the whole list like **sYmbol.RESet**.

Examples:

```
sYmbol.SourcePATH + c:\source\proj_1           ; add search directories
sYmbol.SourcePATH + c:\mike\source\proj_1
…
sYmbol.SourcePATH - c:\source\proj_1           ; remove search directory
```

See also

- sYmbol.SourcePATH.Delete
- sYmbol.SourcePATH.List
- sYmbol.SourcePATH.Set
- sYmbol.SourcePATH.SetCache
- sYmbol.SourcePATH.SetCachedDirCache
- sYmbol.SourcePATH.SetDir
- sYmbol.SourcePATH.SetMasterDir
- sYmbol.SourcePATH.SetRecurseDirCache
- sYmbol.SourcePATH.Translate
- sYmbol.SourcePATH.UP
- sYmbol
- sYmbol.SourcePATH.DOWN
- sYmbol.SourcePATH.RESet
- sYmbol.SourcePATH.SetBaseDir
- sYmbol.SourcePATH.SetCachedDir
- sYmbol.SourcePATH.SetCachedDirIgnoreCache
- sYmbol.SourcePATH.SetDynamicDir
- sYmbol.SourcePATH.SetRecurseDir
- sYmbol.SourcePATH.SetRecurseDirIgnoreCase
- sYmbol.SourcePATH.TranslateSUBpath
- sYmbol.SourcePATH.Verbose

sYmbol.SourcePATH.Delete Delete path from search list

Format: **sYmbol.SourcePATH.Delete** *<directory>*

Removes the specified directory from the search path.

See also

- sYmbol.SourcePATH

Format: **sYmbol.SourcePATH.DOWN** *<directory>*

Internal TRACE32 command. The specified directory becomes the last in the defined search order.

See also

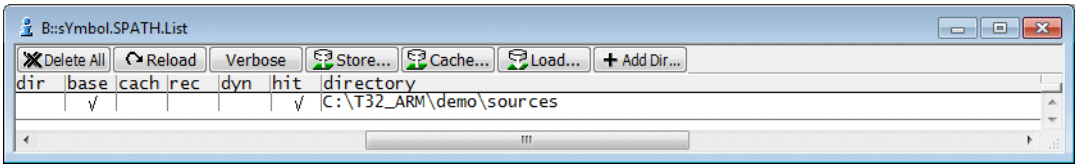
- sYmbol.SourcePATH

sYmbol.SourcePATH.List List source search paths

[Examples]

Format: **sYmbol.SourcePATH.List**
sYmbol.List.SPATH (deprecated)

Lists defined search paths and their attributes.

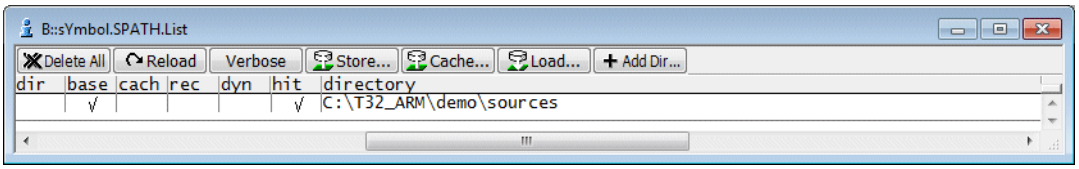


Description of Toolbar Buttons in the sYmbol.SourcePATH.List Window

Delete All	Reset all source path settings. (command **sYmbol.SourcePATH.RESet**)
Reload	Reload all loaded source files. (command **sYmbol.SourceRELOAD**)
Verbose	Enable/disable search details in the TRACE32 Message Area. (command **sYmbol.SourcePATH.Verbose ON | OFF**)
Store…	Save source path search setting to *<file>*. (command **STOre** *<file>* **SPATH**)
Cache…	Save source path search setting plus list of all cached files to *<file>*. (Command **STOre** *<file>* **SPATHCACHE**)
Load…	Load source path settings from *<file>*. (command **DO** *<file>*)
AddDir	Add directory as base directory and as direct directory to search path list. (command **sYmbol.SourcePATH** *<dir>*)

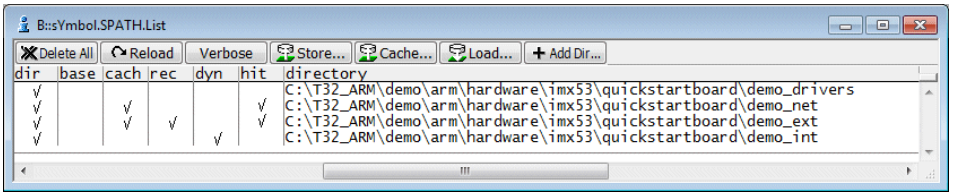
Example for a base directory:

```
; Define directory as base for relative paths
sYmbol.SourcePATH.SetBaseDir C:\T32_ARM\demo\sources
```



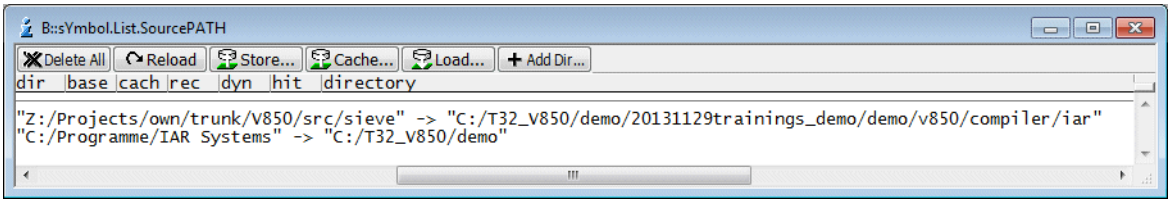
Example for direct directories:

```
; directory is direct search path
sYmbol.SourcePATH.SetDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_drivers

; directory is direct search path, all source files found in the defined
; directory are cached by TRACE32
sYmbol.SourcePATH.SetCachedDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_net

; directory is direct search path, the directory and all its
; sub-directories are used as search path
sYmbol.SourcePATH.SetRecurseDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_ext

; directory is a direct search path, if the source file was found in
; this directory, this directory will become the first to be searched
; in
sYmbol.SourcePATH.SetDynamicDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_int
```



Example for translated paths:

```
sYmbol.SourcePATH.Translate "Z:/Projects/own/trunk/V850/src/sieve"
"C:/T32_V850/demo/20131129trainings_demo/demo/v850/compiler/iar"

sYmbol.SourcePATH.Translate "C:/Programme/IAR Systems"
"C:/T32_V850/demo"

sYmbol.List.SourcePATH
```



See also

- sYmbol.SourcePATH
- ▲ 'Release Information' in 'Legacy Release History'

sYmbol.SourcePATH.RESet — Reset search path configuration

Format: **sYmbol.SourcePATH.RESet**

Resets the search path configuration.

See also

- sYmbol.SourcePATH

Format: **sYmbol.SourcePATH.Set** *<directory>*

This command combines the commands:

- **sYmbol.SourcePATH.SetDir**
- **sYmbol.SourcePATH.SetBaseDir**

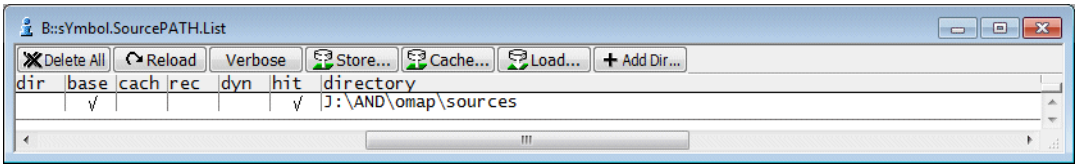
See also

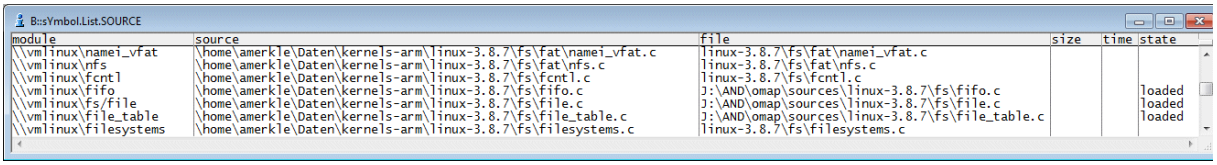
- sYmbol.SourcePATH

Format: **sYmbol.SourcePATH.SetBaseDir** *<directory>*

Defines directory as base for relative paths.

```
; load object file vmlinux and cut the following from the source paths:
; start of source path til end of "kernels-arm"
Data.LOAD.Elf ~~~~/vmlinux /StripPART "kernels-arm"

sYmbol.SourcePATH.SetBaseDir J:\AND\omap\sources

sYmbol.SourcePATH.List

sYmbol.List.SOURCE
```





source	Source path provided by executable.
file	Source path as modified by the **Data.LOAD** command or source path from which the file was loaded.

See also

- sYmbol.SourcePATH

▲ 'Release Information' in 'Legacy Release History'

Format: **sYmbol.SourcePATH.SetCache** *<file>*

Internal TRACE32 software command, not of interest for TRACE32 users.

See also

- sYmbol.SourcePATH

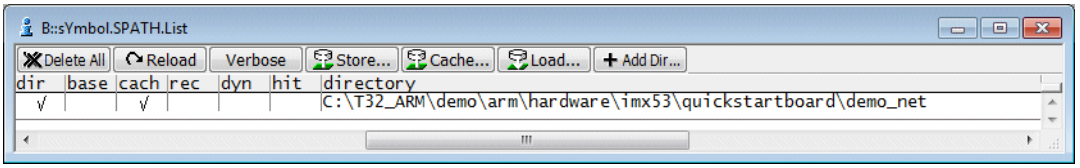
sYmbol.SourcePATH.SetCachedDir Cache direct search path directory

Format: **sYmbol.SourcePATH.SetCachedDir** {*<directory>*}

All source files found in the defined directory are cached by TRACE32.

Example:

```
sYmbol.SourcePATH.SetCachedDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_net
```




```
STOre CacheCon SPATHCACHE        ; generate a script for fast recaching
```

See also

- sYmbol.SourcePATH

Format: **sYmbol.SourcePATH.SetCachedDirCache** *<directory>* …

Internal TRACE32 software command, not of interest for TRACE32 users.

See also

- sYmbol.SourcePATH

sYmbol.SourcePATH.SetCachedDirIgnoreCache Cache direct search path

Format: **sYmbol.SourcePATH.SetCachedDirIgnoreCase** {*<directory>*}

All source files found in the defined directory are cached by TRACE32 ignoring lowercase/uppercase.

See also

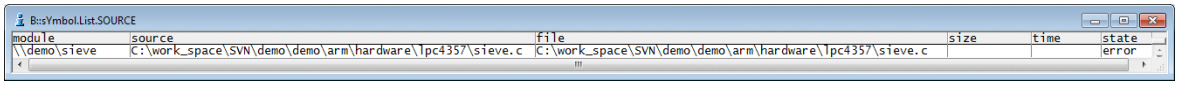
- sYmbol.SourcePATH

Format: **sYmbol.SourcePATH.SetDir** *<directory>*

The source files are directly searched in the defined directories.

Examples:

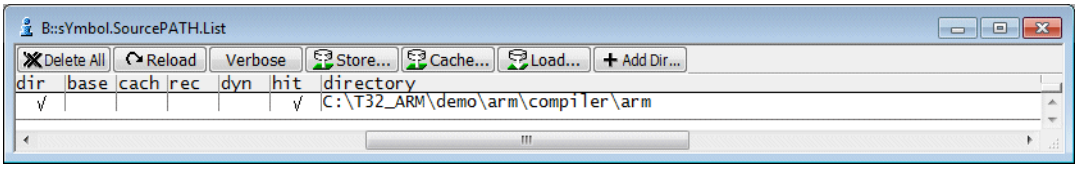
```
Data.LOAD.Elf armle.axf                 ; load elf file

sYmbol.List.SOURCE                      ; display path information for
                                        ; source files
```

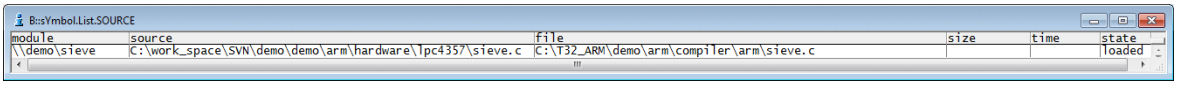


Source path provided by Elf file

error indicates that the source file was not found under the provided path

```
; define directory as direct search path
sYmbol.SourcePATH.SetDir C:\T32_ARM\demo\arm\compiler\arm

sYmbol.SourcePATH.List                  ; display search path defined by
                                        ; user

sYmbol.List.SOURCE                      ; display path information for
                                        ; source files
```





Source path from which the file was loaded

See also

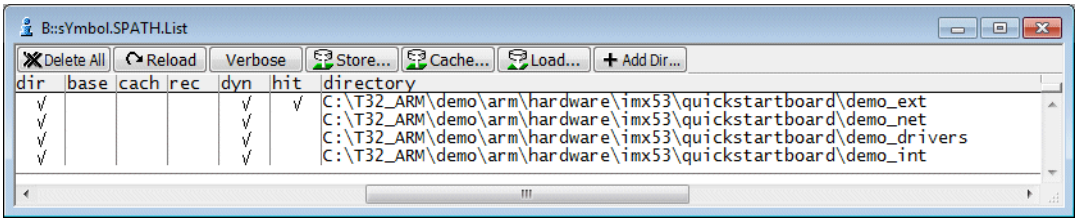
- sYmbol.SourcePATH

Format: **sYmbol.SourcePATH.SetDynamicDir** {*<directory>*}

The search order defined by this command is dynamically changed. The directory in which the last searched source file was found becomes the first directory in which the debugger searches for the next source file.

Example:

```
sYmbol.SourcePATH.SetDynamicDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_net

sYmbol.SourcePATH.SetDynamicDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_drivers

sYmbol.SourcePATH.SetDynamicDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_ext

sYmbol.SourcePATH.SetDynamicDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard\demo_int

sYmbol.SPATH.List
```



See also

- sYmbol.SourcePATH

Format:	**sYmbol.SourcePATH.SetMasterDir** *<directory>*

If the command **STOre** *<file>* **SPATHCACHE** is used, all file names are only saved relative to the defined directory.

Example:

```
Data.LOAD G:\AND\compiler\xc\bt800ip.iee

sYmbol.SourcePATH.SetCachedDir G:\AND\compiler\xc\System

sYmbol.SourcePATH.SetMasterDir G:\AND\compiler

STOre cache.cmm SPATHCACHE
```

```
// And Thu May 27 16:40:51 2004

B::

sYmbol.SourcePATH.SetCachedDirCache "xc\System"

sYmbol.SourcePATH.SetCache "xc\System"
(
     "ad_cond.c"
     "adsubs.c"
     "bt_27.c"
     "bt_27.h"
     "bt_28.c"
     "bt_flsh.c"
)

ENDDO
```

See also

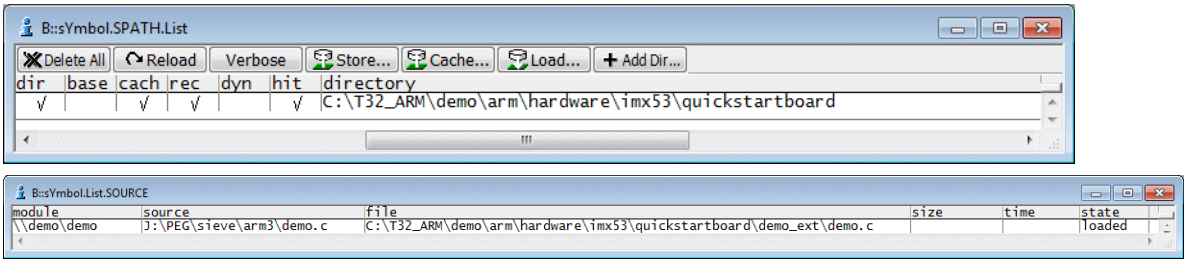
- sYmbol.SourcePATH

Format: **sYmbol.SourcePATH.SetRecurseDir** {*<directory>*}

Use the defined directory and all subdirectories as search path.

Example:

```
sYmbol.SourcePATH.SetRecurseDir
C:\T32_ARM\demo\arm\hardware\imx53\quickstartboard
```



See also

- sYmbol.SourcePATH

sYmbol.SourcePATH.SetRecurseDirCache Internal use only

Format: **sYmbol.SourcePATH.SetRecurseDirCache** *<directory>*…

Internal TRACE32 software command, not of interest for TRACE32 users.

See also

- sYmbol.SourcePATH

Format: **sYmbol.SourcePATH.SetRecurseDirIgnoreCase** {*<directory>*}

Use the defined directory and all subdirectories as search path. Lowercase/uppercase is ignored

See also

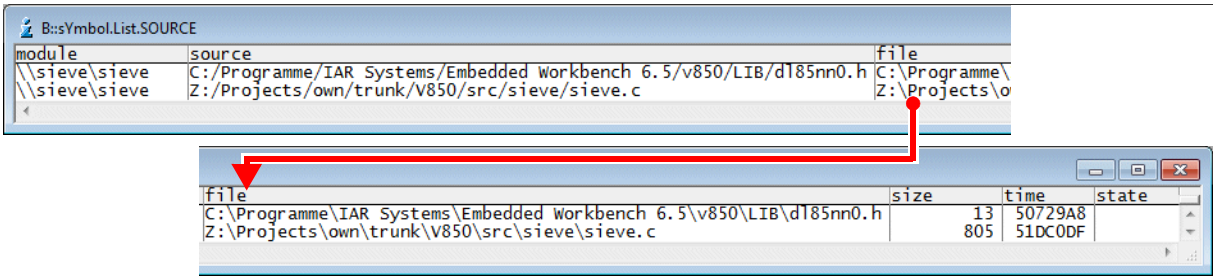
- sYmbol.SourcePATH

sYmbol.SourcePATH.Translate Replace part of the source path

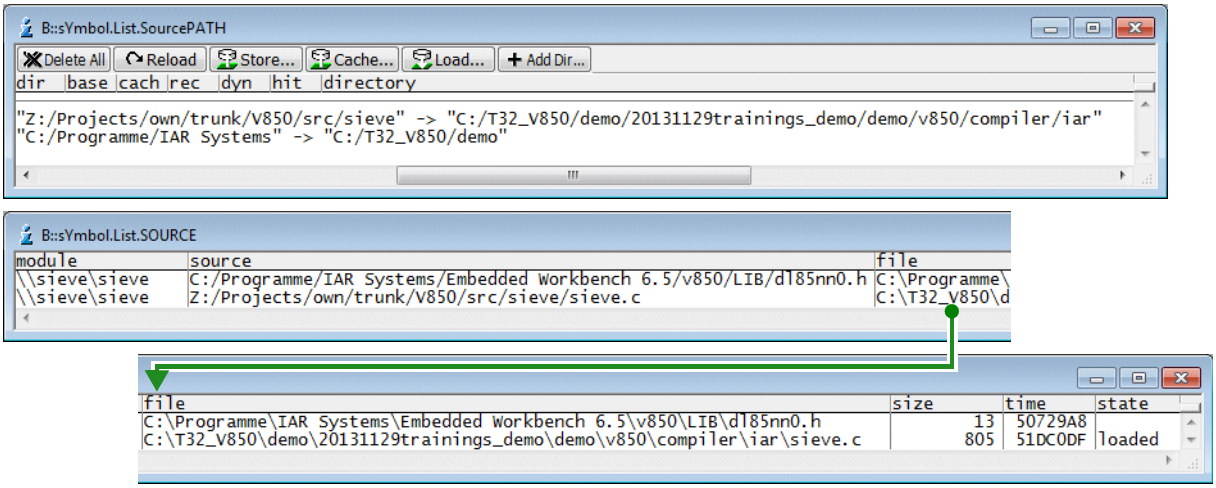
Format: **sYmbol.SourcePATH.Translate** *<original_path> <new_path>*

Replaces *<original_path>* in source path with *<new_path>*. Use case: The code was built on a remote machine. Thus the base path must be replaced.

Example:




```
Data.LOAD.Elf sieve.elf

sYmbol.List.SOURCE

sYmbol.SourcePATH.Translate "Z:/Projects/own/trunk/V850/src/sieve"
"C:/T32_V850/demo/20131129trainings_demo/demo/v850/compiler/iar"

sYmbol.SourcePATH.Translate "C:/Programme/IAR Systems"
"C:/T32_V850/demo"

sYmbol.List.SourcePATH
```



See also

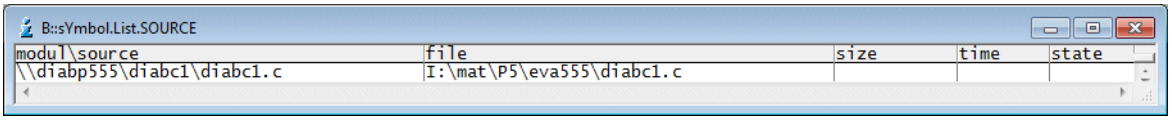
- sYmbol.SourcePATH

▲ 'Release Information' in 'Legacy Release History'

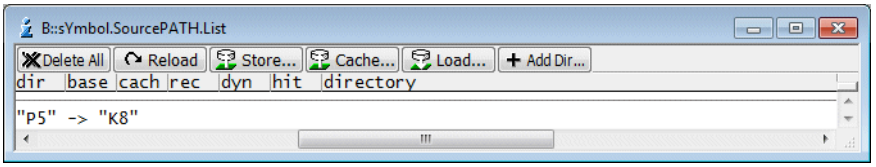
Format: **sYmbol.SourcePATH.TranslateSUBpath** *<original_sub_path>* *<new_sub_path>*

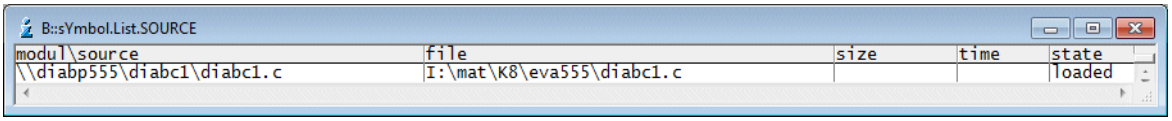
Replaces *<original_sub_path>* in source path with *<new_sub_path>*. Use case: Only a single folder is different.

Example:




```
sYmbol.SourcePATH.TranslateSUBpath "P5" "K8"
```





See also

- sYmbol.SourcePATH

sYmbol.SourcePATH.UP Move path up in the search order

Format: **sYmbol.SourcePATH.UP** *<directory>*

Internal TRACE32 command. The defined directory becomes the first in the search path order.

See also

- sYmbol.SourcePATH

Format:	**sYmbol.SourcePATH.Verbose ON** | **OFF**

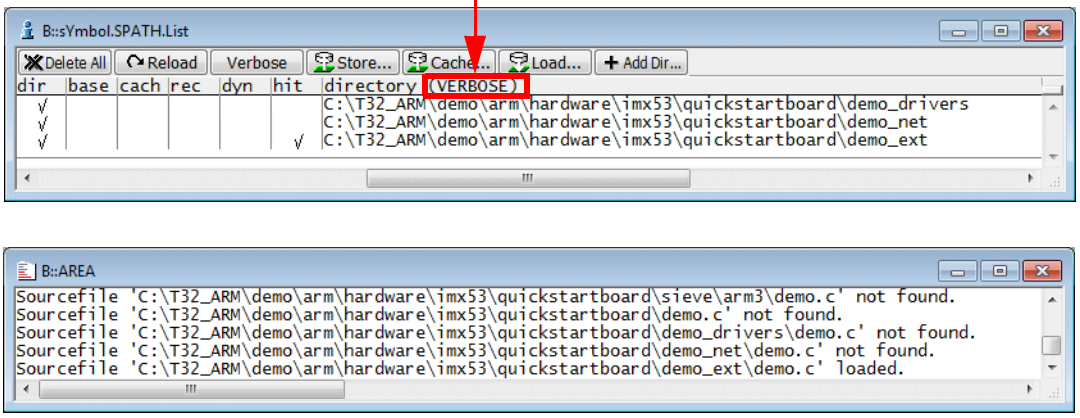
Default: OFF.

OFF	No details about the source file search are given.
ON	Details about the source file search are displayed in the TRACE32 message **AREA.view** window, if a source file is loaded by TRACE32.

Example:

```
AREA.view                                ; open TRACE32 message AREA window
                                         ; to display source file search
                                         ; details

sYmbol.SourcePATH.Verbose ON

List                                     ; display source listing
```

Verbose ON is indicated in the **sYmbol.SourcePATH.List** window



See also

- sYmbol.SourcePATH

Format: **sYmbol.SourceRELOAD**

Invalidates all loaded source files and marks them for reload. This can be useful when the source search path has been changed to reload the source modules that came from the old source path.

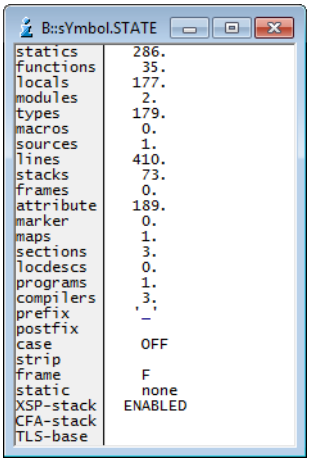
See also

■ sYmbol

sYmbol.STATE Display statistic

Format: **sYmbol.STATE**

Displays the size of the symbol tables and the global settings. See also **sYmbol.MEMory**.



See also

■ sYmbol ■ sYmbol.Browse.sYmbol ■ sYmbol.INFO ■ sYmbol.List
❑ sYmbol.STATE()

▲ 'The Symbol Database' in 'Training Source Level Debugging'

Format: **sYmbol.STRIP** [*<length>*]

Cuts symbols to the specified length. This option is useful, when the compiler has a limited symbol length.

Example:

```
sYmbol.STRIP 8.
Data.List Main_Function        ; will display 'Main_Fun'
```

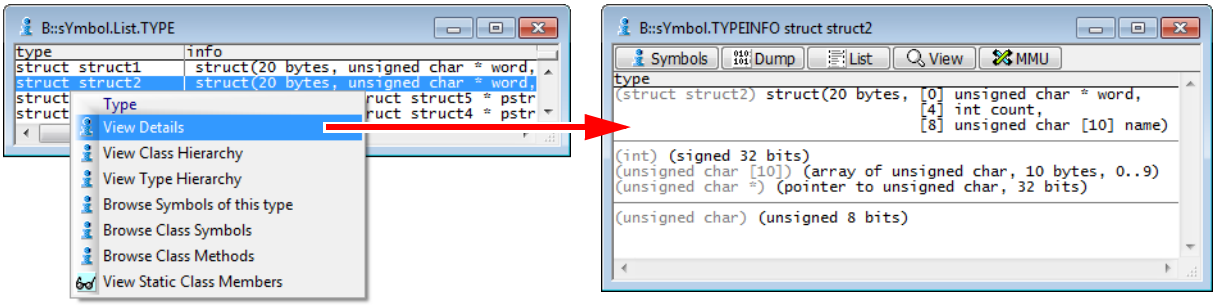
See also

- sYmbol

sYmbol.TYPEINFO Display information about a specific data type

Format: **sYmbol.TYPEINFO** *<data_type>*

Displays information about a specific data type. Alternatively, right-click a data type in a **sYmbol.List.Type** window, and then select **View Details**, or double-click a data type in that window.

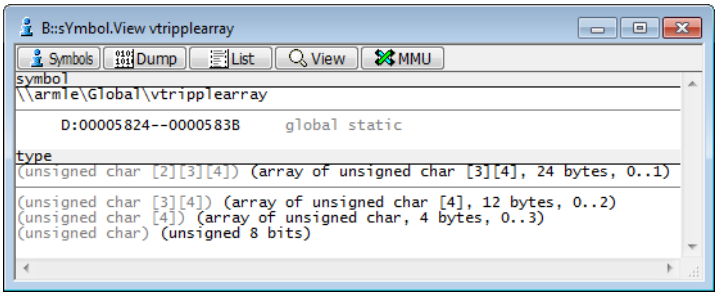


See also

- sYmbol

Format: **sYmbol.View** *<name>* [**/Track**]

Same as command **sYmbol.Info**.



See also

- sYmbol

SYnch Synchronization mechanisms between different TRACE32 systems

See also

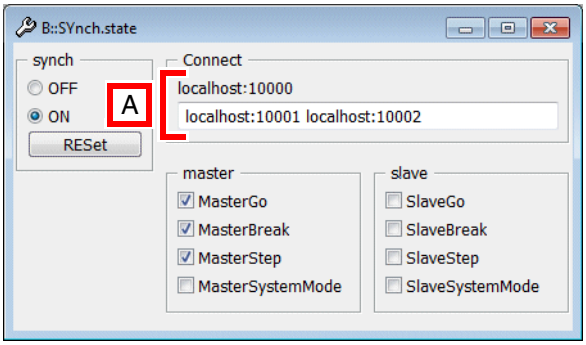
- SYnch.Connect
- SYnch.MasterBreak
- SYnch.MasterGo
- SYnch.MasterStep
- SYnch.MasterSystemMode
- SYnch.OFF
- SYnch.ON
- SYnch.RESet
- SYnch.SlaveBreak
- SYnch.SlaveGo
- SYnch.SlaveStep
- SYnch.SlaveSystemMode
- SYnch.state
- SYnch.XTrack
- TargetSystem
- InterCom

Overview SYnch

For AMP multicore debugging and multiprocessor debugging, two or more TRACE32 PowerView instances need to be started. The command group **SYnch** allows to establish a connection between different TRACE32 instances for the following purposes:

- To establish a start/stop synchronization between the cores/processors controlled by different TRACE32 instances.
- To allow concurrent assembler single steps between the cores/processors controlled by different TRACE32 instances.
- To allow synchronous system mode changes between the cores/processors controlled by different TRACE32 instances.
- To get a time synchronization between trace information in different TRACE32 instances. This requires that the trace information uses a common time base, e.g. global TRACE32 timestamp or global chip timestamps.

For configuration of the synchronization mechanisms, use the TRACE32 command line, a PRACTICE script (*.cmm), or the **SYnch.state** window. See also prerequisite [**A**] below.



A **Prerequisite**: You have set up an InterCom system using the **InterCom** commands, which allows to exchange data between different TRACE32 systems.

Format 1:	**SYnch.Connect** [*<instances>* …]
<instances>:	*<intercom_name>* | **ALL** | **OTHERS** | *<name_pattern>* | [*<host>***:**]*<port>*
Format 2:	**SYnch.Connect** [*<host>***:**]*<port>* …

Format 1: Establishes connections via the **InterCom** system to other TRACE32 PowerView instances that are connected to same PowerDebug hardware module or the same MCI Server (`PBI=MCISERVER` in the config.t32 file).

Format 2: Establishes connections to other TRACE32 instances by using the **InterCom** system.

Format 1 and Format 2: SYnch.ON is automatically set when the command **SYnch.Connect** establish the connections.

(without parameters) Format 1, Format 2	If the command is used without parameters, it disconnects the TRACE32 PowerView instances.
<intercom_name> Format 1	InterCom name of a TRACE32 instance. Names can be assigned to TRACE32 instances with the **InterCom.NAME** command. The **InterCom.execute** command supports the wildcards ***** and **?** in InterCom names.
<name_pattern> Format 1	The **SYnch.Connect** command supports the wildcards ***** and **?** in InterCom names. For example: `cluster1.*`
ALL Format 1	All known TRACE32 instances.
OTHERS Format 1	**ALL** except **SELF**.
*<host>***:***<port>* Format 1, Format 2	Name of the host and the port number.

Example 1 for Format 2: This script line connects two instances based on their host names and port numbers.

```
SYnch.Connect localhost:20001 localhost:20002
```

Example 2 for Format 1 and Format 2: This script line disconnects the TRACE32 instances.

```
SYnch.Connect
```

Example 3 for Format 1: All instances are connected except the one where this command is executed.

```
SYnch.Connect OTHERS
```

Example 4 for Format 1: The command **SYnch.Connect OTHERS** is executed on all TRACE32 instances.

```
InterCom.execute ALL SYnch.Connect OTHERS
```

See also

- SYnch
- SYnch.state
- InterCom.ENable
- InterCom.NAME

▲ 'Release Information' in 'Legacy Release History'

Format: **SYnch.MasterBreak** [**ON** | **OFF**]

Default: OFF

SYnch.MasterBreak and **SYnch.SlaveBreak** can be freely programmed for the connected TRACE32 instances. But the break switch/cross trigger unit in the multicore chip might not provide resources to program all links. TRACE32 adjust the programming of the links to the available resources in this case.

ON	Invite other TRACE32 instances to stop synchronously. Cores in a multicore chip can be stopped instruction-accurate if the chip provides a break switch/cross trigger unit. Otherwise software-controlled stop synchronization is used. Software-controlled synchronization stop the cores/processors one by one with a minimum delay of 1.ms.
OFF	No invitation for a synchronous stop is broadcast to other TRACE32 instances.

See also

- SYnch
- SYnch.state

Format: **SYnch.MasterGo** [**ON** | **OFF**]

OFF (default)	No invitation for a synchronous start is broadcast to other TRACE32 instances.
ON	Invite other TRACE32 instances to start synchronously. Cores in a multicore chip can start synchronously if this is supported by the chip. Otherwise software-controlled start synchronization is used. software-controlled synchronization starts the cores/processors one by one with a minimum delay of 1.ms.

See also

- SYnch
- SYnch.state

SYnch.MasterStep Invite other TRACE32 to Asm step synchronously

Format: **SYnch.MasterStep** [**ON** | **OFF**]

OFF (default)	No invitation for concurrent assembler single stepping is broadcast to other TRACE32 instances.
ON	Invite other TRACE32 instances to perform concurrent assembler single stepping. HLL single stepping is regarded as a synchronous start.

See also

- SYnch
- SYnch.state

Format: **SYnch.MasterSystemMode** [**ON** | **OFF**]

OFF (default)	No invitation for synchronous mode changing is broadcast to other TRACE32 instances.
ON	Invite other TRACE32 instances to perform system mode changes synchronously. System mode changes are typically performed by one of the following commands: **SYStem.Up**, **SYStem.Mode** *<mode>* commands and **SYStem.RESetTarget**.

See also

- SYnch
- SYnch.state

SYnch.OFF Disable connection mechanism

Format: **SYnch.OFF**

Disables the software component that allows a TRACE32 instance to connect to other instances.

See also

- SYnch
- SYnch.state

SYnch.ON Enable connection mechanism

Format: **SYnch.ON**

Enables the software component that allows a TRACE32 instance to connect to other instances.

See also

- SYnch
- SYnch.state

Format: **SYnch.RESet**

Resets the **SYnch** mechanism to its default settings.

See also

- SYnch
- SYnch.state

SYnch.SlaveBreak Synchronize with stop in connected TRACE32

Format: **SYnch.SlaveBreak** [**ON** | **OFF**]

OFF	Don't synchronize with the stop of the program execution in a connected TRACE32 instance.
ON	Synchronize with the stop of the program execution in a connected TRACE32 instance. Cores in a multicore chip can be stopped instruction-accurate if the chip provides a break switch/cross trigger unit. Otherwise software-controlled stop synchronization is used. Software-controlled synchronization stop the cores/processors one by one with a minimum delay of 1.ms.

See also

- SYnch
- SYnch.state

Format: **SYnch.SlaveGo** [**ON** | **OFF**]

OFF	Don't synchronize with the start of the program execution in a connected TRACE32 instance.
ON	Synchronize with the start of the program execution in a connected TRACE32 instance. Cores in a multicore chip can start synchronously if this is supported by the chip. Otherwise software-controlled start synchronization is used. software-controlled synchronization starts the cores/processors one by one with a minimum delay of 1.ms.

See also

- SYnch
- SYnch.state

SYnch.SlaveStep Synchronize with asm step in connected TRACE32

Format: **SYnch.SlaveStep** [**ON** | **OFF**]

OFF	Don't synchronize with assembler single steps in a connected TRACE32 instance.
ON	Synchronize with assembler single steps in a connected TRACE32 instance.

See also

- SYnch
- SYnch.state

Format:	**SYnch.SlaveSystemMode** [**ON** | **OFF**]

OFF	Don't synchronize with system mode changes in connected TRACE32 instances.
ON	Synchronize with system mode changes in connected TRACE32 instances.

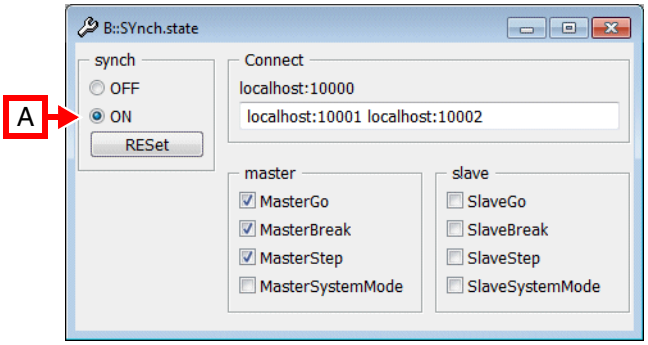
See also

- SYnch
- SYnch.state

SYnch.state Display current SYnch settings

Format:	**SYnch.state**

Displays the current setup of the **SYnch** mechanism.



A For descriptions of the commands in the **SYnch.state** window, please refer to the **SYnch.*** commands in this chapter. **Example**: For information about **ON**, see **SYnch.ON**.

See also

- SYnch
- SYnch.Connect
- SYnch.MasterBreak
- SYnch.MasterGo
- SYnch.MasterStep
- SYnch.MasterSystemMode
- SYnch.OFF
- SYnch.ON
- SYnch.RESet
- SYnch.SlaveBreak
- SYnch.SlaveGo
- SYnch.SlaveStep
- SYnch.SlaveSystemMode
- SYnch.XTrack

Format 1:	**SYnch.XTrack** [*<instances>* …]
<instances>:	*<intercom_name>* | **ALL** | **OTHERS** | *<name_pattern>*
Format 2:	**SYnch.XTrack** [*<host>***:**]*<port>* …

Establishes a time synchronization between trace information in different TRACE32 instances via the **InterCom** system. This requires that the trace information uses a common time base e.g. global TRACE32 time stamps or global chip timestamps.

Format 1: Establishes a time synchronization to other TRACE32 PowerView instances that are connected to same PowerDebug hardware module or the same MCI Server (`PBI=MCISERVER` in the config.t32 file).

Format 2: Establishes a time synchronization to other TRACE32 PowerView instances in general.

(without parameters) Format 1, Format 2	If the command is used without parameters, it disconnects the TRACE32 PowerView instances.
<intercom_name> Format 1	InterCom name of a TRACE32 instance. Names can be assigned to TRACE32 instances with the **InterCom.NAME** command. The **InterCom.execute** command supports the wildcards ***** and **?** in InterCom names.
<name_pattern> Format 1	The **SYnch.Connect** command supports of the wildcards ***** and **?** in InterCom names. For example: `cluster1.*`
ALL Format 1	All known TRACE32 instances.
OTHERS Format 1	**ALL** except **SELF**.
*<host>***:***<port>* Format 2	Name of the host and the port number.

Example 1 for Format 1:

```
; all instances are connected to each other
InterCom.execute ALL SYnch.XTrack OTHERS

; trace commands in one TRACE32 instance
Trace.List /Track
Trace.Chart.sYmbol /ZoomTrack
```

Example 2 for Format 2:

```
; connect the instance where SYnch.XTrack is executed with the other two
; instances 'localhost:20001' and 'localhost:20002'
SYnch.XTrack localhost:20001 localhost:20002

; trace commands in one TRACE32 instance
Trace.List /Track
Trace.Chart.sYmbol /ZoomTrack
```

See also

- SYnch
- SYnch.state

SYStem — System configuration

The **SYStem** commands are used for setting the operating modes of the system. In addition, they are used to define all those parameters which remain valid after stopping the emulation. The subcommands of the **SYStem** command group are highly target-dependent; for details, check the **Processor Architecture Manual** for your target system.

In general, the configuration commands (e.g. **SYStem.Option**) should be used before the emulation system is activated with the **SYStem.Mode** or **SYStem.Up** command. Changing configuration options while the system is up may cause unpredictable behavior.

SYStem.BdmClock — Select BDM clock

Format:	**SYStem.BdmClock** *<rate>* (deprecated) **Use SYStem.JtagClock instead.**
<rate>:	**2** | **4** | **8** | **16** | *<fixed>*
<fixed>:	**1000.** … **5000000.**

Either the divided CPU frequency is used as the BDM clock or a fixed clock rate. The fixed clock rate must be used if the operation frequency is very slow or if the clock line is not available. The default is a fixed rate of 1 MHz.

See also

- SYStem.state

Format: **SYStem.BREAKTIMEOUT** *<time>*

The **Break.direct** command performs a break request and waits for 3.s for the target to stop, otherwise an “emulation running” error is reported. The command **SYStem.BREAKTIMEOUT** can be use to specify a different timeout.

See also

- SYStem.state

Format: **SYStem.CADICommand** *<command>*

Sends the <command> as string to the target. <command> is accepted without ' " '. The command is send via CADI function 'CADIXfaceBypass()'. If an answer is provided, it will be displayed in **AREA.view** beginning with "Answer: ".

See also

- SYStem.state

Virtual targets only: CADI

The **SYStem.CADIconfig** command group is used to define CADI-specific setups for debugging and tracing.

See also

- SYStem.CADIconfig.ExecSwOnly
- SYStem.CADIconfig.SpecRegDefine
- SYStem.CADIconfig.Traceconfig
- SYStem.IRISconfig
- SYStem.CADIconfig.RemoteServer
- SYStem.CADIconfig.SpecRegsOnly
- SYStem.CADIconfig.TraceCore
- SYStem.state

SYStem.CADIconfig.ExecSwOnly Filter on executing software capability

Format: **SYStem.CADIconfig.ExecSwOnly ON | OFF**

Default = ON.

ON	TRACE32 connects just to CADI instances which can execute software (CADI internal flag .executesSoftware is set).
OFF	TRACE32 connects to any core or instance via CADI, regardless its capability of executing software.

See also

- SYStem.CADIconfig

SYStem.CADIconfig.RemoteServer Define connection to CADI server

Virtual targets only: CADI

Format: **SYStem.CADIconfig.RemoteServer** [*<ip>* *<port>*]

Informs TRACE32 how to connect to the CADI server for debugging purposes. If this command is omitted from your start-up script, then TRACE32 assumes that the virtual target (including the CADI server) and TRACE32 are running on the same machine.

Without arguments: Resets the connection to a configuration where TRACE32 and the virtual target are assumed to be running on the same machine (`localhost`).

With arguments: Defines a connection to the CADI server on a remote computer. Ensure that your CADI server allows remote connections.

<ip>	IP address or host name of the remote computer where the virtual target is running.
<port>	**Parameter Type**: Decimal value. TCP/IP port of the CADI server.

Figure 1 of 2: The red line illustrates the connection that is defined as a remote connection using the **SYStem.CADIconfig.RemoteServer** command.

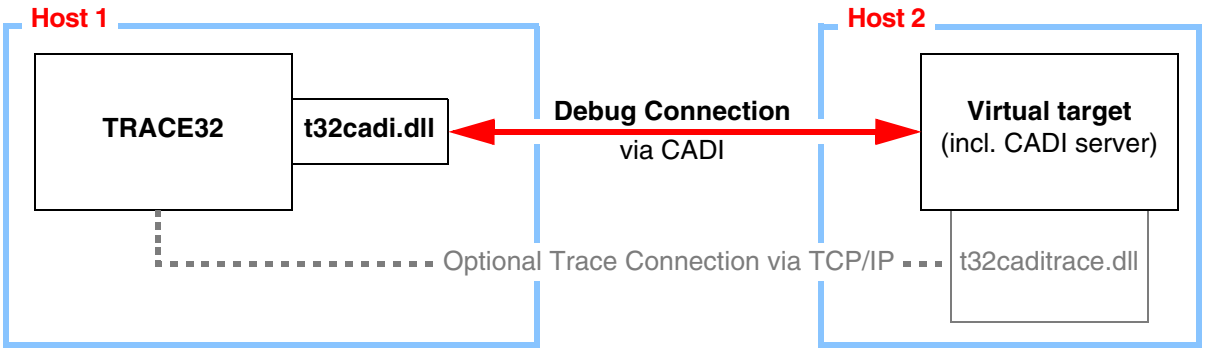
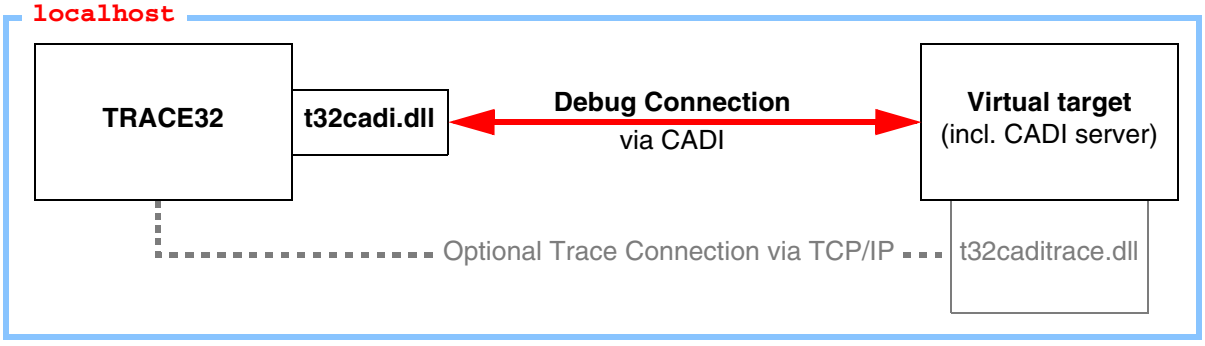


Figure 2 of 2: The red line illustrates the localhost connection that is defined using the **SYStem.CADIconfig.RemoteServer** command.



Examples:

```
SYStem.CADIconfig.RemoteServer

SYStem.CADIconfig.RemoteServer 192.168.178.2 7002.

SYStem.CADIconfig.RemoteServer RmtPC 7000.
```

See also

- SYStem.CADIconfig
- SYStem.CADIconfig.RemoteServer()

Format: **SYStem.CADIconfig.SpecRegDefine** {<offset> <Reg name>}

With **SYStem.CADIconfig.SpecRegDefine** a generic read and write access to registers which are not part of the regular CPU architecture register sets and its peripherals can be defined. The special defined register is searched from the complete CADI provided register list. **SYStem.CADIconfig.SpecRegDefine** without any parameter deletes the complete special register definition (=default). A maximum of six registers can be defined.

<offset> Address offset in hex format to access the register named with <Reg name>. The offset is add to the CADI base address for special registers defines (= DBG:0C0000000). Maximum offset value is 0x0FFFFF, higher values are masked with 0x0FFFFF.

<Reg name> Name of the special defined register as case sensitive string. Maximum string length is 27 characters.

See also

- SYStem.CADIconfig

SYStem.CADIconfig.SpecRegsOnly Use only special defined register set

Format: **SYStem.CADIconfig.SpecRegsOnly ON | OFF**

Default = OFF.

ON TRACE32 searches only for special defined registers (see **SYStem.CADIconfig.SpecRegDefine**)

OFF TRACE32 searches for regular register sets defined by **SYStem.CPU** selection and for special defined registers.

See also

- SYStem.CADIconfig

Virtual targets only: CADI

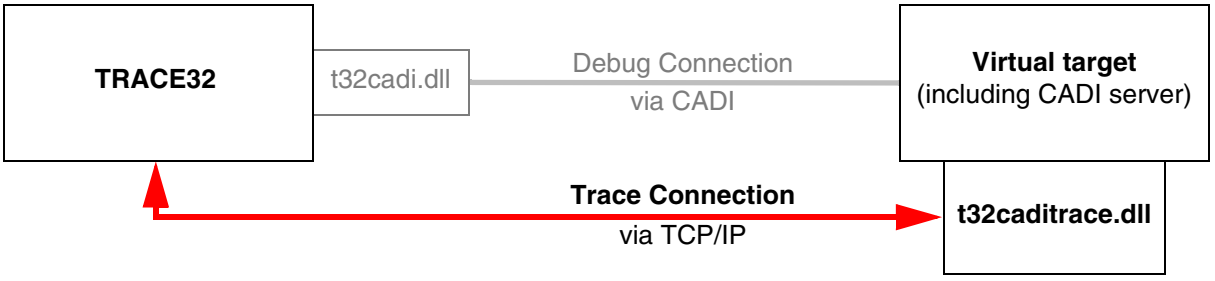
Format:	**SYStem.CADIconfig.Traceconfig** [*<ip>* *<port>*]

Without arguments: Defines a connection to the trace plug-in based on the default values. The file name of the trace plug-in is t32caditrace.dll / t32caditrace.so.

With arguments: Defines a user-defined connection to the trace plug-in.

<ip> (default: 127.0.0.1)	IP address of the host machine where the virtual target is running. IPv4 only. Host names are *not* allowed.
<port> (default: 21000.)	**Parameter Type**: Decimal value. TCP/IP port of the trace plug-in.

The red line illustrates the connection that is defined using the **SYStem.CADIconfig.Traceconfig** command.



See also

- SYStem.CADIconfig
- ❏ SYStem.CADIconfig.Traceconfig()
- ▲ 'Introduction' in 'Virtual Targets User's Guide'

SYStem.CADIconfig.TraceCore Define core for CADI trace

Format:	**SYStem.CADIconfig.TraceCore** *<Corenumber>*

Defines the core for which the CADI trace feature will be active in the case of SMP core setup. CADI trace allows just one core to be traced.

See also

- SYStem.CADIconfig

Format: **SYStem.CONFIG** *<parameter>*
SYStem.MultiCore (deprecated)

The commands of the **SYStem.CONFIG** command group describe the target configuration to the debugger.

<parameter> The supported parameters highly depend on the target processor architecture. Please refer to the description of the **SYStem.CONFIG** command in your **Processor Architecture Manual** for more information.

See also

■ SYStem.CONFIG.STM ■ SYStem.state

▲ 'Release Information' in 'Legacy Release History'

Format 1:	**SYStem.CONFIG.CORE** *<core | thread> <chip>* **SYStem.MultiCore.CORE** (deprecated)
Format 2: Virtual targets only	**SYStem.CONFIG.CORE** *<string> | <value>*

If the target provides a joint debug interface for several cores/chips it is necessary to inform the TRACE32 instance which core/chip it controls for debugging. This means, **SYStem.CONFIG.CORE** tells TRACE32 to which specified *<core>* and *<chip>* it has to connect when the **SYStem.Up** command is executed.

Most architectures have 1 *<chip>* with several *<cores>*. Architectures with 2 or more *<chips>* are relatively rare.

Next:

- Description of **Format 1 for Physical Targets** including example.
- Description of **Format 2 for Virtual Targets** including examples.

Format 1 for Physical Targets

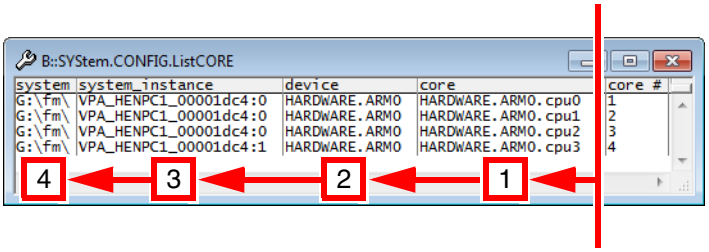
<core>	Specify the core within the chip that is controlled by the TRACE32 instance. The command **SYStem.CONFIG.CORE** *<core>* is mainly used, if the cores within a chip are not daisy-chained, or daisy-chained and interrelated. The *<core>* index is also used by the command **CORE.NUMber** as start value to set up an SMP system. See also **Example** for *<core>* and *<chip>*.
<chip>	Specify which cores belong to the same chip if several chips are daisy-chained. This allows the debugger to coordinate chip-wide resources e.g. chip reset, cross trigger matrix, shared trace port etc. Key for this coordination is that TRACE32 is aware of the chip.

<string>	Unique string identifying the core to which TRACE32 connects in a virtual target. The syntax rules for *<string>* differ for the MCD and the CADI interface: • See **MCD interface** • See **CADI interface** See also example for **<string>** in an SMP system. This simple example applies to the MCD and the CADI interface.
<value>	Core number identifying the core to which TRACE32 connects in a virtual target. The same *<value>* is displayed in the **core #** column of the **SYStem.CONFIG.ListCORE** window. The example for **<value>** applies to the MCD and the CADI interface.

MCD Interface - Syntax Rules for <string> - Format 2 of SYStem.CONFIG.CORE

To specify *unique strings identifying cores*, observe the following rules for *<string>* and take the screenshot below into account for a better understanding of these rules:

- The *<string>* is case-sensitive.
- The *<string>* starts at the first column **to the left of** the **core #** column:




```
;                    col.1    col.2         col.3          col.4
SYStem.CONFIG.CORE "<core>|<device>|<system_instance>|<system>"
```

- In the *<string>*, each column of the **SYStem.CONFIG.ListCORE** window is represented by a | character (vertical line). To ignore one or more columns, type one | per column to be ignored:

```
SYStem.CONFIG.CORE "||4:1" ;ignore columns 1 and 2, and connect
                           ;to the core having this unique
                           ;sub-string '4:1' in column 3
```

- You can specify (a) an entire row or (b) the contents of one or more cells (cell = intersection of column and row) or (c) just a sub-string of a cell:

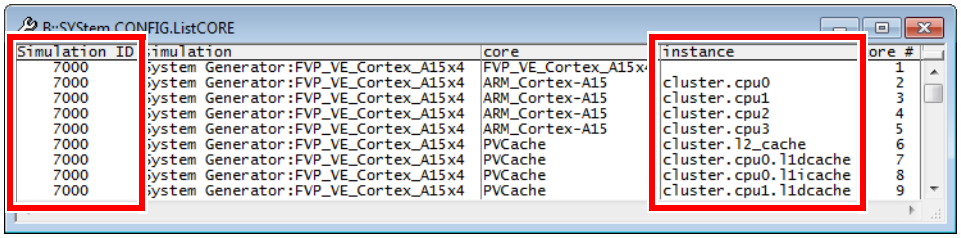
```
;(a) entire row - the ellipsis ... is used for space economy
SYStem.CONFIG.CORE "HARDWARE.ARM0.cpu3|HARDWARE.ARM0|...|..."

;(b) content of one cell
SYStem.CONFIG.CORE "HARDWARE.ARM0.cpu3"

;(c) sub-string from cell
SYStem.CONFIG.CORE "cpu3"
```

- Wildcards like ***** and **?** are **not** supported.
- For SMP systems: To connect to two or more cores, separate their unique strings or sub-strings with a comma:

```
;connect to cpu1 and cpu2
SYStem.CONFIG.CORE "cpu1,cpu2"

;let's take the sub-strings '4:0' and 4:1' from column 3 into
;account
SYStem.CONFIG.CORE "cpu0||4:0,cpu3||4:1"
```

To specify *unique strings identifying cores*, observe the following rules for *<string>* and take the screenshot below into account for a better understanding of these rules:

- The *<string>* is case-sensitive.
- The *<string>* always contains the **instance** or a part of it, and may contain the **Simulation ID**:

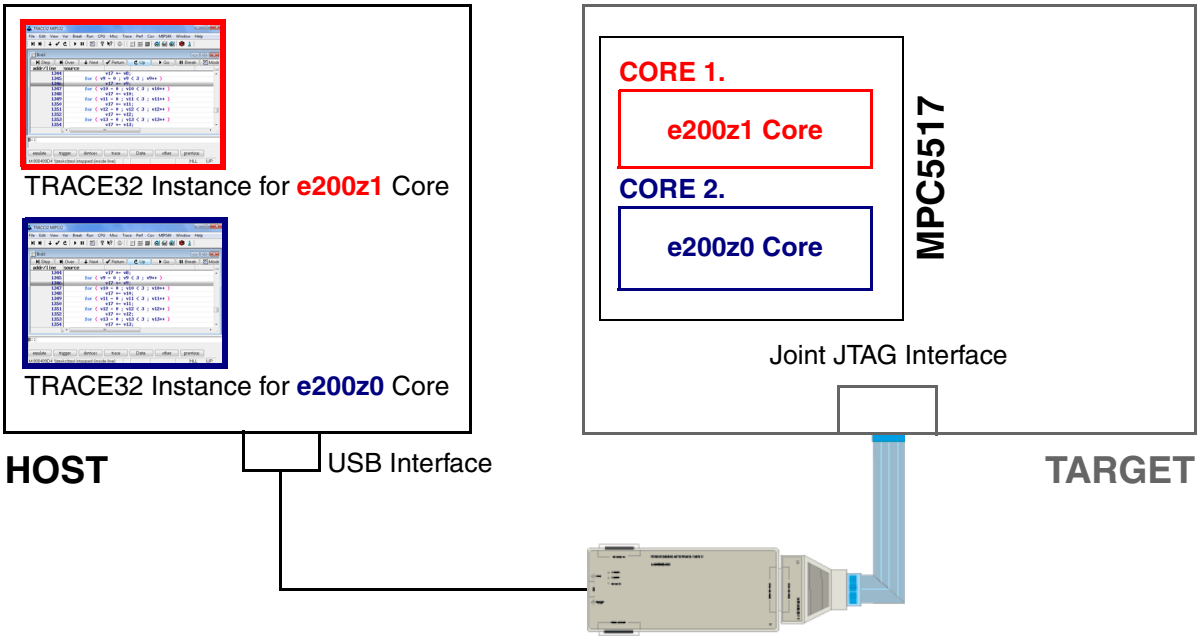



```
;connect to a core by just specifying the instance
SYStem.CONFIG.CORE   "cluster.cpu0"

;connect to a core by specifying the Simulation ID and the instance
SYStem.CONFIG.CORE   "7000|cluster.cpu0"
```

- Information from columns other than **Simulation ID** and **instance** cannot be used to define a connection to a core.
- Wildcards like ***** and **?** are **not** supported.
- For SMP systems: To connect to two or more cores, separate their unique strings or sub-strings with a comma:

```
;connect to cpu0 and cpu3, see instance column
SYStem.CONFIG.CORE "cpu0,cpu3"

;let's take the Simulation ID into account
SYStem.CONFIG.CORE "7000|cpu0,7000|cpu3"
```

Example for the MPC5517 (one chip with 2 cores)



Start-up commands for the **e200z1** core:

```
SYStem.RESet                              ; reset all SYStem settings

SYStem.CPU MPC5517                        ; select MPC5517 as target
                                          ; processor

;                       <core>  <chip>    ; assign the TRACE32 instance to
SYStem.CONFIG.CORE        1.      1.      ; core 1 (e200z1), chip 1

SYStem.Up                                 ; establish the communication
                                          ; between the debugger and the
                                          ; e200z1 core
```

Start-up commands for the **e200z0** core:

```
SYStem.RESet                              ; reset all SYStem settings

SYStem.CPU MPC5517                        ; select MPC5517 as target
                                          ; processor

;                       <core>  <chip>    ; assign the TRACE32 instance to
SYStem.CONFIG.CORE        2.      1.      ; core 2 (e200z0), chip 1

SYStem.Mode.Attach                        ; establish the communication
                                          ; between the debugger and the
                                          ; e200z1 core
```

Example for <string> - Format 2 of SYStem.CONFIG.CORE

This simple example applies to the MCD and the CADI interface in an SMP system. Steps that are specific to SMP systems are flagged with '(SMP system)' in the comments:

```
SYStem.DOWN

SYStem.CONFIG.ListCORE          ;list the cores of a virtual target in
                                ;the SYStem.CONFIG.ListCORE window.

SYStem.CPU CortexA9MPCore       ;select a multicore CPU (SMP system)

SYStem.CONFIG.CoreNumber 2      ;set up the number of cores you want
CORE.NUMber 2                   ;TRACE32 to connect to (SMP system)


SYStem.CONFIG.CORE "cpu1,cpu2" ;connect to cpu1 and cpu2 (SMP system)

                                ;NOTE: In the 'Cores' pull-down list,
                                ;cpu1 becomes core 0 and
                                ;cpu2 becomes core 1.
                                ;The 'Cores' pull-down list is accessible
                                ;via the TRACE32 state line.
SYStem.Up
```

Example for <value> - Format 2 of SYStem.CONFIG.CORE

This example applies to the MCD and CADI Interface.

```
SYStem.DOWN

SYStem.CONFIG.ListCORE ;list the cores of a virtual target in the
                       ;SYStem.CONFIG.ListCORE window

                       ;the core <values> are displayed in the
                       ;'core #' column. TRACE32 connects to the core
                       ;having the specified <value>

;                    <value>
SYStem.CONFIG.CORE     2.

SYStem.Up
```

See also

■ SYStem.CONFIG.ListCORE ■ CORE.ASSIGN

Format: **SYStem.CONFIG.CoreNumber** *<number>*

Sets up the number of hardware threads that are available inside the chip. The access to the particular hardware threads can be configured by architecture specific **SYStem.CONFIG** commands described in your **Processor Architecture Manual**. The defined hardware threads can be used by the **CORE** commands to set up an SMP system.

An error message is displayed below the command line if the command is used for single-core CPUs.

See also

- CONFIGNUMBER()

Format:	**SYStem.CONFIG.DEBUGPORT** *<dp_fi>* |*<dp_emu>* |*<dp_back>*
dp_fi>:	**Unknown** **CSWP0** **IntelUSB0** **SNEAKPEEK0** **XCP0**
dp_emu>:	**GTL0 | GTL1 | GTL2 | GTL3 | GTL4** **InfineonDAS0** **VerilogTransactor0** **Unknown**
<dp_hw> :	**DebugCable0** **DebugCableA | DebugCableB** **Analyzer0**

Debugging via a functional interface of the host computer (*<dp_fi>* parameters)

	Interface	**Protocol**
Unknown	(default)	
CSWP0	USB	Arm CoreSight Wire Protocol
IntelUSB0	USB	Intel DCI Protocol
SNEAKPEEK0	TCP/IP	MIPI SneakPeek Protocol
XCP0	TCP/IP	ASAM MCD-1 XCP Protocol

Debugging via a functional interface is only supported for certain architectures. Please refer to the Lauterbach homepage for details.

Please refer to **"TRACE32 Debug Back-Ends"** (backend_overview.pdf) for setup details.

	Communication via
Unknown	(default)
GTL*<n>*	Generic Transactor Library designed by Lauterbach
InfineonDAS0	Infineon DAS Server
VerilogTransactor0	Verilog Transactors for testing the low-level communication, not suitable for debugging

Debugging a RTL simulation or emulation is only supported for certain architectures. Please refer to the Lauterbach homepage for details.

Please refer to **"TRACE32 Debug Back-Ends"** (backend_overview.pdf) for setup details.

Debugging via TRACE32 hardware (*<dp_hw>* parameter)

If a PowerDebug module together with a debug cable or a MicroTrace is used for debugging, **DebugCable0** is automatically set when TRACE32 is started. This setting only needs to be changed in very special cases.

If a PowerDebug module together with a CombiProbe is used for debugging and tracing, **DebugCableA** is automatically set when TRACE32 is started. In most cases, nothing needs to be changed in this setting.

There are three operational scenarios for which the command must be used:

1. **CombiProbe with two connected MIP20T-HS whiskers for debugging via two debug connectors.**

If the multicore chip 1 is debugged via the first debug connector (cable A whisker),

```
SYStem.CONFIG.DEBUGPORT DebugCableA
```

must be set in each TRACE32 instance that controls cores of this chip.

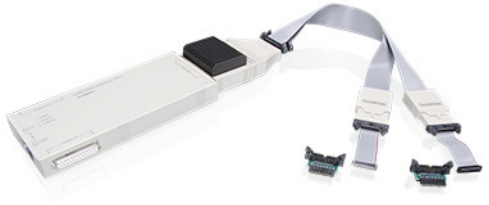
Analogously, if the multicore chip 2 is debugged via the second debug connector (cable B whisker)

```
SYStem.CONFIG.DEBUGPORT DebugCableB
```

must be set in each TRACE32 instance that controls cores of this chip.

Debugging via two debug connectors is also possible using two MIPI34 whiskers. However, it is recommended to contact Lautebach support in advance.

2. **CombiProbe with two connected AUTO26 whiskers for dsPIC33 dual core debugging.**



A dual core dsPIC33 needs a CombiProbe with two AUTO26 whiskers for debugging, because each core has its own debug connector. In the required AMP setup, the following setting must be made in the TRACE32 instance controlling the master core (cable A whisker):

```
SYStem.CONFIG.DEBUGPORT DebugCableA
```

Analogously, the following must be set in the TRACE32 instance controlling the slave core (cable B whisker):

```
SYStem.CONFIG.DEBUGPORT DebugCableB
```

3. PowerTrace with connected parallel *NEXUS Debug/Trace for Qorivva MPC5xxx/SPC5xxx* and connected *Debug Cable for Qorivva MPC5xxx/SPC5xxx*.

Since both the NEXUS Debug/Trace Adapter and the debug cable can be used for JTAG communication, the SYStem.CONFIG.DEBUGPORT commands must be used to specify which communication port TRACE32 is to use.

```
; inform TRACE32 to use debug cable for the JTAG communication
SYStem.CONFIG.DEBUGPORT DebugCable0

; inform TRACE32 to use NEXUS Debug/Trace Adapter for the JTAG
; communication
SYStem.CONFIG.DEBUGPORT Analyzer0
```

SYStem.CONFIG.DEBUGTIMESCALE Extend debug driver timeouts

Format:	**SYStem.CONFIG.DEBUGTIMESCALE** *<multiplier>*

Extends any timing behavior of the debug driver by the passed *<multiplier>*.

The timing behavior should be adapted in case the debugger is connected to an emulator that runs with a much smaller clock compared to a silicon target. The original timeout settings may cause timeouts or bus errors in this scenario.

<multiplier>	The *<multiplier>* can take only values out of the power-of-two series e.g. 1, 2, 4, 8, 16 etc. A high *<multiplier>* can cause the software to hang for an extended period of time in case the debug driver waits for a certain condition.

Format:	**SYStem.CONFIG.ELA** *<sub_cmd>*
<sub_cmd>:	**Base** *<address>* | **RESET**

Configures the ELA CoreSight module, which provides visibility to on-chip signals. After configuration, the **ELA** command group is available.

Base *<address>*	Informs the debugger about the start address of the register block of the component. And this way it notifies the existence of the component.
RESET	Undoes the configuration for this component. This does not cause a physical reset for the component on the chip.

See also

- ELA

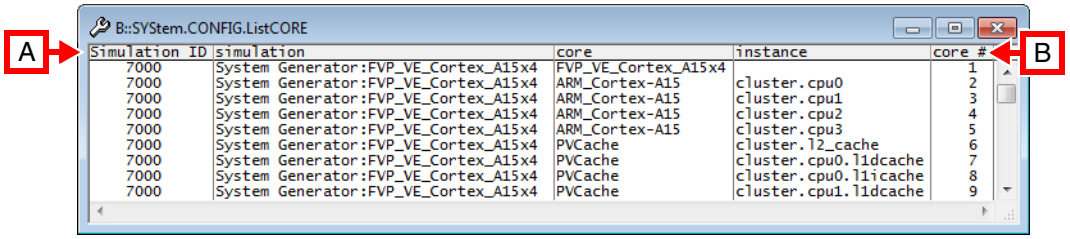
SYStem.CONFIG.ListCORE Display the cores of a virtual target

Virtual targets only

Format:	**SYStem.CONFIG.ListCORE**

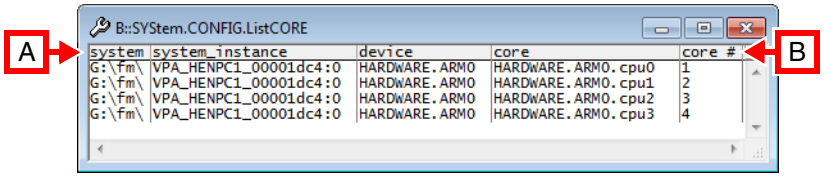
Retrieves the list of cores from a virtual target and displays the result as a snapshot in the **SYStem.CONFIG.ListCORE** window. To re-read the list from the virtual target, re-open the window.

The following screenshot shows an example of a core list provided by a virtual target that is connected to TRACE32 via the CADI interface:



Simulation ID	simulation	core	instance	core #
7000	System Generator:FVP_VE_Cortex_A15x4	FVP_VE_Cortex_A15x4		1
7000	System Generator:FVP_VE_Cortex_A15x4	ARM_Cortex-A15	cluster.cpu0	2
7000	System Generator:FVP_VE_Cortex_A15x4	ARM_Cortex-A15	cluster.cpu1	3
7000	System Generator:FVP_VE_Cortex_A15x4	ARM_Cortex-A15	cluster.cpu2	4
7000	System Generator:FVP_VE_Cortex_A15x4	ARM_Cortex-A15	cluster.cpu3	5
7000	System Generator:FVP_VE_Cortex_A15x4	PVCache	cluster.l2_cache	6
7000	System Generator:FVP_VE_Cortex_A15x4	PVCache	cluster.cpu0.l1dcache	7
7000	System Generator:FVP_VE_Cortex_A15x4	PVCache	cluster.cpu0.l1icache	8
7000	System Generator:FVP_VE_Cortex_A15x4	PVCache	cluster.cpu1.l1dcache	9

The following screenshot shows an example of a core list provided by a virtual target that is connected to TRACE32 via the MCD interface:



system	system_instance	device	core	core #
G:\fm\	VPA_HENPC1_00001dc4:0	HARDWARE.ARM0	HARDWARE.ARM0.cpu0	1
G:\fm\	VPA_HENPC1_00001dc4:0	HARDWARE.ARM0	HARDWARE.ARM0.cpu1	2
G:\fm\	VPA_HENPC1_00001dc4:0	HARDWARE.ARM0	HARDWARE.ARM0.cpu2	3
G:\fm\	VPA_HENPC1_00001dc4:0	HARDWARE.ARM0	HARDWARE.ARM0.cpu3	4

A Column headers in the **SYStem.CONFIG.ListCORE** window correspond to the column headers of the used interface.

B The **core #** column displays the sequence of cores provided by the interface.

See also

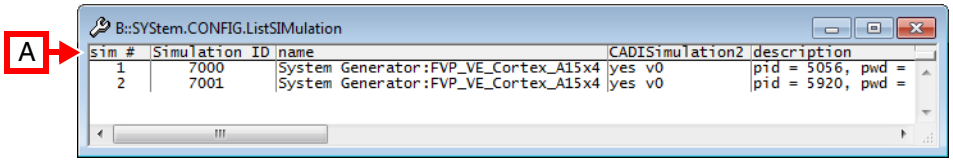
- ■ SYStem.CONFIG.ListSIMulation
- ❏ SYStem.CONFIG.ListCORE()
- ■ SYStem.CONFIG.CORE
- ❏ SYStem.CONFIG.ListSIM()
- ▲ 'Connecting to Virtual Targets' in 'Virtual Targets User's Guide'

SYStem.CONFIG.ListSIMulation Display the simulations of a virtual target

Virtual targets only: CADI

Format: **SYStem.CONFIG.ListSIMulation**

Retrieves the list of simulations from a virtual target and displays the result as a snapshot in the **SYStem.CONFIG.ListSIMulation** window. To re-read the list from the virtual target, re-open the window.



sim #	Simulation ID	name	CADISimulation2	description
1	7000	System Generator:FVP_VE_Cortex_A15x4	yes v0	pid = 5056, pwd =
2	7001	System Generator:FVP_VE_Cortex_A15x4	yes v0	pid = 5920, pwd =

A The **sim #** column displays the sequence of simulations provided by the interface.

See also

- ■ SYStem.CONFIG.ListCORE
- ❏ SYStem.CONFIG.ListSIM()
- ❏ SYStem.CONFIG.ListCORE()

SYStem.CONFIG.MULTITAP Select type of JTAG multi-TAP network

Format:	**SYStem.CONFIG.MULTITAP** *<sub_cmd>*
<sub_cmd>:	**NONE** **PrimaryTAP** *<irlength> <irvalue> <drlength> <drenable> <drdisable>*

Some SoCs with a JTAG interface need special JTAG sequences before the core can be accessed.
E.g. The JTAG-TAP of the core has to be dynamically added to the JTAG daisy chain of the SoC.

NONE	Disables any special multi-TAP handling (default).
PrimaryTAP	Before accessing the core via JTAG, the debugger writes *<irvalue>* to the JTAG IR shift-register and then *<drenable>* to the JTAG DR shift-register. After accessing the core via JTAG, the debugger writes *<irvalue>* to the JTAG IR shift-register and then *<drdisable>* to the JTAG DR shift-register.

See also

- SYStem.CONFIG.MULTITAP.JtagSEQuence

Format:	**SYStem.CONFIG.MULTITAP.JtagSEQuence.***<sub_cmd>*
<sub_cmd>:	**on** **Attach** *<seq_name>* | **default** **SELect** *<seq_name>* | **none** **DeSELect** *<seq_name>* | **none**

Some SoCs with a JTAG interface need special JTAG sequences before the core can be accessed. For example, the JTAG-TAP of some ARC cores has to be dynamically added to the JTAG daisy chain of an SoC.

With this command you can select complex JTAG sequences which should be executed by the debugger whenever it switches between the debugged cores.

For some CPUs (selected with **SYStem.CPU**), TRACE32 already provides pre-defined JTAG sequences. For others, you can create JTAG sequences for your individual needs with **JTAG.SEQuence.Create**.

The debugger assumes that every JTAG sequence starts and ends in the state of the JTAG state machine which was set with **SYStem.CONFIG.TAPState**.

<seq_name>	Name of a JTAG sequence created with **JTAG.SEQuence**.
Attach	Choose a JTAG sequence which is executed during the attach to the core via **SYStem.Up** or **SYStem.Attach**. If **SYStem.CONFIG SLAVE** is set to **OFF**, the selected JTAG sequence should reset the JTAG TAP (e.g. by going to the tests-logic-reset state).
SELect	Specifies the JTAG sequence to be executed for core A when the debugger switches from any other core to core A (in a multicore setup). *<other>* core ==switch==> core A
DeSELect	Specifies the JTAG sequence to be executed for core A when the debugger switches from core A to any other core (in a multicore setup). core A ==switch==> *<other>* core
default	By choosing **Attach default**, the debugger will perform a default action, which is: Resetting the core by going to the tests-logic-reset state (if **SYStem.CONFIG SLAVE** is set to **OFF**) and then starting the JTAG sequence, which has been assigned to **SELect**.
none	No JTAG sequence will be executed.
on	Enable the multitap JTAG sequences.

Example: This script snippet illustrates the use of JTAG sequences in PRACTICE scripts (*.cmm), i.e. where and when you should define and enable a JTAG sequence, and when it is executed automatically.

```
SYStem.CPU <cpu_type>
...

;define a JTAG sequence
JTAG.SEQuence.Create myAttach
JTAG.SEQuence.Add    myAttach  <your_code>
...

;enable the multitap JTAG sequences
SYStem.CONFIG.MULTITAP.JtagSEQuence.on
SYStem.CONFIG.MULTITAP.JtagSEQuence.Attach myAttach
...

;the JTAG sequence 'myAttach' is executed automatically on SYStem.Up
SYStem.Up
...
```

See also

■ SYStem.CONFIG.MULTITAP ■ JTAG.SEQuence

Format:	**SYStem.CONFIG.state** [**/***<tab>*] **SYStem.MultiCore.view** (deprecated)

Opens the **SYStem.CONFIG.state** window, where you can view and modify most of the target configuration settings. The configuration settings tell the debugger how to communicate with the chip on the target board and how to access the on-chip debug and trace facilities in order to accomplish the debugger's operations.

Alternatively, you can modify the target configuration settings via the TRACE32 command line with the **SYStem.CONFIG** commands. Note that the command line provides *additional* **SYStem.CONFIG** commands for settings that are *not* included in the **SYStem.CONFIG.state** window.

<tab>	Opens the **SYStem.CONFIG.state** window on the specified tab: • **DebugPort** • **Jtag** • etc. The number of tabs and commands on the tabs are CPU specific. For architecture-specific information about the tabs, refer to the **Processor Architecture Manuals** [▲] listed in the **See also** block below.

Example:

```
SYStem.CONFIG.state /Jtag    ;open the window on the Jtag tab
```

Format:	**SYStem.CONFIG.TRACEPORT** *<index> <sub_cmd>*
<index>:	**1** | **2** | …
<sub_cmd>:	**TraceSource** *<source>* | **Name** *<name>* | **Type** *<type>* | **RESET**

<index>	Index number of the trace port.
TraceSource *<source>*	Declares the trace *<source>*, e.g. **TPIU**, **ETR**, **ETM**. These trace *<sources>* are only available if: • You have already added them as components in the **SYStem.CONFIG.state /COmponents** window. • You have programmed them with the appropriate commands, see example below. For more information, refer to the **SYStem.CONFIG** description in your **Processor Architecture Manuals**.
Name *<name>*	Assigns a user-defined *<name>* to a trace port. Unique names are useful for AMP debugging because they allow you to differentiate trace ports with identical types across multiple TRACE32 instances.
Type *<type>*	Declares the trace port type, e.g. **AURORA** or **PCIE**.
RESET	Removes the trace port declaration.

Example:

```
; declare system trace components
SYStem.CONFIG DTMCONFIG ON
SYStem.CONFIG.ETM.BASE APB:0x8000E000
SYStem.CONFIG.FUNNEL1.BASE APB:0x80004000
SYStem.CONFIG.FUNNEL1.ATBSOURCE ETM 0 DTM 2
SYStem.CONFIG.ETF1.BASE APB:0x8000C000
SYStem.CONFIG.ETF1.ATBSOURCE FUNNEL1
SYStem.CONFIG.TPIU.BASE APB:0x80003000
SYStem.CONFIG.TPIU.ATBSource ETF1
SYStem.CONFIG.TRACEPORT1.Type.AURORA
SYStem.CONFIG.TRACEPORT1.TraceSource TPIU
```

See also

- TRACEPORT

Format: **SYStem.CONFIG.TRANSACTORPIPENAME** *<file>*

Defines the pipe name used to communicate with the Verilog Transactor in the RTL Simulation.

Example: Enter the transactor pipe name in TRACE32 PowerView.

```
SYStem.CONFIG.DEBUGPORT VerilogTransactor0
SYStem.CONFIG.TRANSACTORPIPENAME "/tmp/t32verilog_actuator_user"
```

Linux: Define environment variable in the context of the RTL simulation and Verilog Transactor in the shell.

```
> export T32VERILOGTRANSACTORPIPE=/tmp/t32verilog_actuator_user
```

SYStem.CONFIG.USB USB configuration

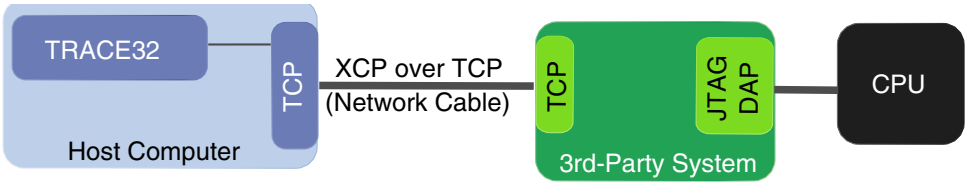
Intel® x86

Using the **SYStem.CONFIG.USB** command group, you can configure a TRACE32 system for debugging via the USB protocol.

For more information, see **"Debugging via USB User´s Guide"** (usbdebug_user.pdf).

SYStem.CONFIG.XCP XCP specific settings

The **SYStem.CONFIG.XCP** command group allows to set up and configure debugging over XCP.



The command group is available after **XCP0** has been selected as debug port.

```
;optional step: open the SYStem.CONFIG.state dialog showing the DebugPort
;tab
SYStem.CONFIG.state /DebugPort

;selecting the XCP back-end activates the SYStem.CONFIG XCP commands
SYStem.CONFIG.DEBUGPORT XCP0
```

For more information, see **“XCP Debug Back-End”** (backend_xcp.pdf).

See also

- SYStem.CONFIG

Format: **SYStem.CPU** *<cpu>*

Tells TRACE32 the exact CPU type used on your target. This is required to get the matching **PER** file and other CPU specific settings (e.g. predefined settings for on-chip FLASH). Asterisks (*) can be used as wildcard characters to list all CPUs of an architecture or just the ones matching the filter criterion.

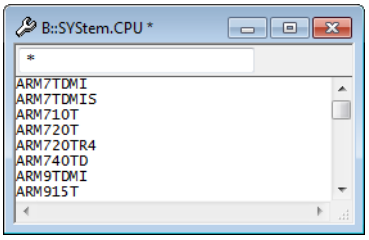
Examples:

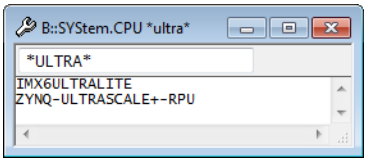
```
SYStem.CPU ARM940T  ;select the CPU type ARM940T
;...                 your code
SYStem.Up           ;start the debugger
```

NOTE: **SYStem.CPU** used together with an asterisk in a PRACTICE script (*.cmm) causes the script to stop, and the **SYStem.CPU** window is displayed until you have made a selection.

```
SYStem.CPU *        ;list the CPUs of an architecture
```

```
SYStem.CPU *ultra*  ;list the CPUs of an architecture matching the
                    ;filter criterion
```





See also

■ SYStem.state ■ PER.view ❑ CPUFAMILY() ❑ SYStem.CPU()

▲ 'Release Information' in 'Legacy Release History'

Format: **SYStem.CpuAccess** *<sub_cmd>* (deprecated)

<sub_cmd>:

Enable (deprecated)
Use SYStem.MemAccess StopAndGo instead.

Denied (deprecated)
There is no need to use a successor command (default setting).

Nonstop (deprecated)
Use SYStem.CpuBreak Denied instead.

Default: Denied.

Configures how memory access is handled during run-time.

Enable	Allow intrusive run-time memory access.
Denied	Lock intrusive run-time memory access.
Nonstop	Lock all features of the debugger that affect the run-time behavior.

See also

- SYStem.state

Format:	**SYStem.CpuBreak** [*<mode>*]
<mode>:	**Enable** | **Denied**

Default: Enable.

Enable	Allows stopping the target.
Denied	Denies stopping the target. This includes manual stops and stop breakpoints. However, short stops, such as spot breakpoints, may still be allowed. **SYStem.CpuBreak Denied** can be used to protect a target system which does not tolerate that the program execution is stopped for an extended period of time; for example, a motor controller which could damage the motor if the motor control software is stopped. For more information, see **SYStem.CpuSpot**, **SYStem.MemAccess**.

See also

- SYStem.state

Format:	**SYStem.CpuSpot** [*<mode>*]
<mode>:	**Enable** | **Denied** | **Target** | **SINGLE**

Default: Enable.

Spotting is an intrusive way to transfer data periodically or on certain events from the target system to the debugger. As a result, the program is not running in real-time anymore. For more information, see **SYStem.CpuBreak** and **SYStem.MemAccess**.

Enable	Allows spotting the target.
Denied	Denies spotting the target. Stopping the target may still be allowed.
Target	Allows spotting the target controlled by the target. This allows target-stopped **FDX** and **TERM** communication. All other spots are denied.
SINGLE	Allows single spots triggered by a command. This includes spotting for changing the breakpoint configuration and the **SNOOPer.PC** command. This setting also allows target-stopped **FDX** and **TERM** communication. All other spots are denied.

See also

- SYStem.state

SYStem.DCI DCI configuration

Intel® x86

The Intel® Direct Connect Interface (DCI) allows debugging and tracing of Intel® targets using the USB3 port of the target system.

The **SYStem.DCI** command group allows to configure target properties as well as TRACE32 hardware dedicated for the use with DCI.

For more information, see **"Debugging via Intel® DCI User´s Guide"** (dci_intel_user.pdf).

See also

- SYStem

Format:	**SYStem.DETECT** *<type>*
<type>:	**state** **BASECPU** **CPU** **DaisyChain** **CoreSightTrace** **DAP** **IDCode** **JtagClock** **PortSHaRing**

state Opens the System Detection Wizard which allows a step-by-step investigation of the entire JTAG chain. It displays all found devices and suggests a CPU and the corresponding multi-core settings for each found device. The user can choose the desired core, any valid multi-core configuration will be applied.

BASECPU Detects and selects the appropriate CPU and multi-core configuration for the first device in the JTAG chain. CPU detection is only based on the JTAG ID code, no further ID registers are read from the device.

CPU Detects and selects the appropriate CPU and multi-core configuration for the first device in the JTAG chain. The command will investigate the entire device for an exact detection.
If supported for your architecture, you can use **SYStem.CPU AUTO** instead.

DaisyChain Scans your JTAG chain and prints details to the **AREA** window.
See example.

CoreSightTrace Tries to detect the ARM CoreSight Trace topology and prints details to the **AREA** window.

DAP Identifies the types of access ports of the DAP.
In addition, the **SYStem.DETECT.DAP** command inspects the ROM tables, if available, to discover any CoreSight components and their access addresses.
The result is displayed in the form of a list in the **SYStem.DETECT.DAP** window.

SHOWChain Scans the JTAG chain and show details in a separate window.
In this window (**SYStem.DETECT SHOWChain**) you can double-click on a CPU core to set the values IRPOST, IRPRE, DRPOST and DRPRE in window **SYSTEM.CONFIG state /Jtag** accordingly.

IDCode

Detects the ID codes of all JTAG-TAP controllers in the JTAG chain and stores them internally, i.e. the result is **not** printed to the **AREA** window. In order to access the result use the following functions:

- **IDCODENUMBER()** returns the number of detected TAP controllers.
- **IDCODE()** returns the IDCODE of the n-th TAP controller

Example: `PRINT IDCODE(0)` prints `0x100034B1`, if the first core in the JTAG chain is an ARC700.

JtagClock

Determines the maximum JTAG Frequency by polling the BYPASS register. This only reflects the quality of the electrical connection and the speed the BYPASS register path. The function **EVAL()** retrieves the result of the command in Hertz. This command may heavily confuse all devices attached to the JTAG chain.

PortSHaRing

Determines if the debug port is shared with a 3rd-party tool. In a PRACTICE script, the result can be obtained by the **PORTSHARING()** function.

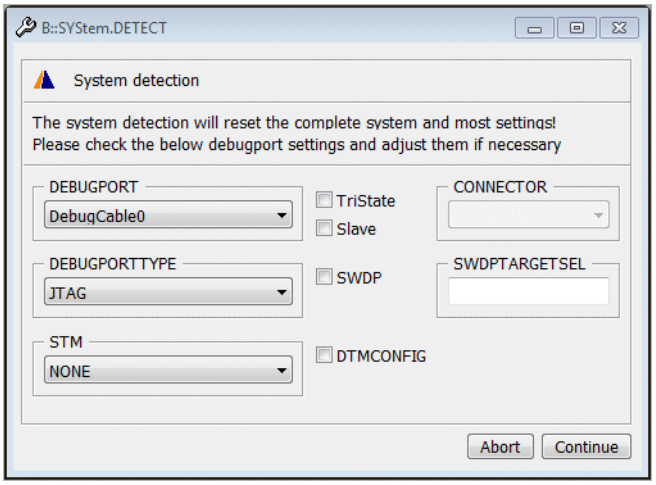
NOTE:	The availability of the **SYStem.DETECT** types are dependent on the architecture and the debug port protocol, so they may not be available for all architectures and configurations.

NOTE:	**SYStem.DETECT** may apply a Power-on Reset to your system and always switches the debug system to Down-State (see **SYStem.Mode Down**).

The System Detection Wizard is still under construction. It currently supports only the following architectures: ARM/Cortex, MIPS, TriCore.

Example for the ARM architecture:

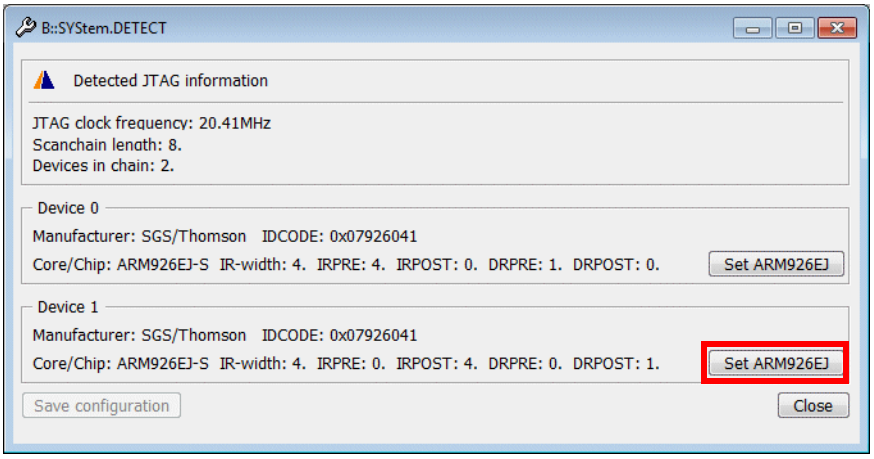
```
SYStem.DETECT state                    ; open a System Detection Wizard
```



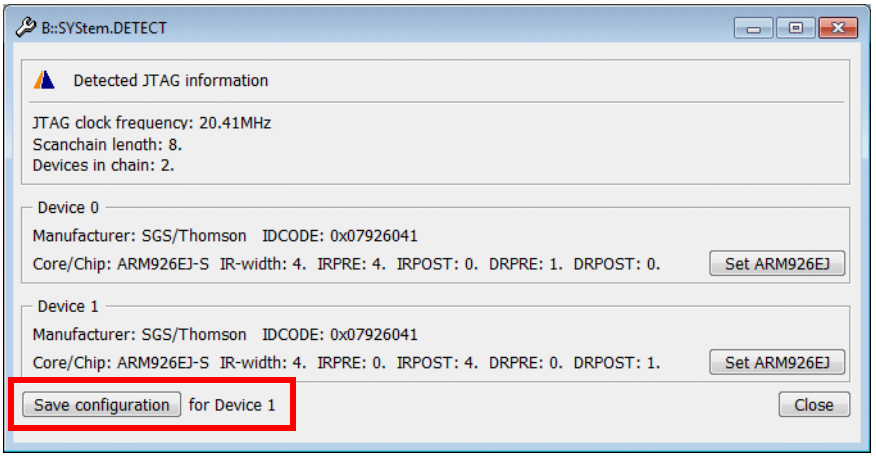
Before TRACE32 can check your target configuration it needs to know how the TRACE32 debugger is connected to the target (here for example via JTAG).

Click **Continue** to confirm that the connection details are valid.

TRACE32 runs the system detection and display the results.

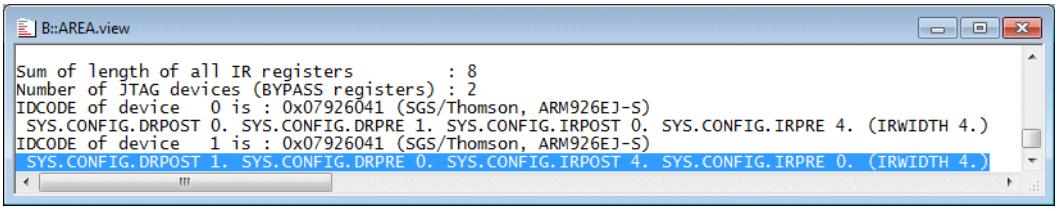


If several cores are detected, you can choose which core should be controlled by the current TRACE32 instance by pushing the **Set <core>** button. Here for example “Device 1: Set ARM9EJ”.



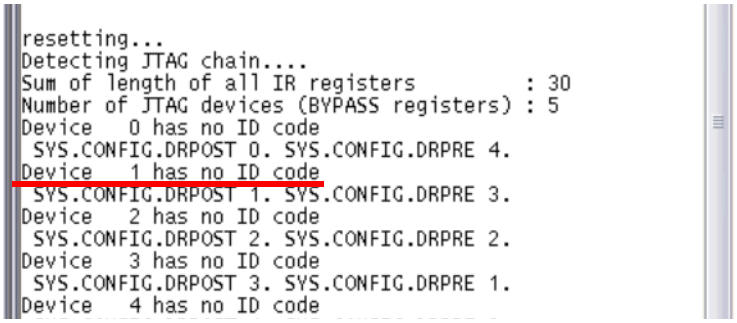
The **Save Configuration** button allows you to store the chosen settings to a file.

```
AREA.view                                ; open a TRACE32 AREA window

SYStem.DETECT.DaisyChain                 ; run TRACE32 daisy-chain detection
```



The result of the daisy-chain detection is displayed in the **AREA** window. TRACE32 also displays the commands that are required for a correct daisy-chain setup (see blue bar). Just copy these commands to your script, separate them by space and you are done.

Please be aware that TRACE32 can only generate the commands for the daisy-chain setup if it knows the ID codes for the cores on your target (see picture below).



See also

■ SYStem.state ❏ IDCODE()

SYStem.DLLCommand Custom DLL connection to target

Debugger MIPS, V24 monitor with DLL

Format: **SYStem.DLLCommand**

See also

■ SYStem.state

The **SYStem.InfineonDAS** command group allows to configure the back-end for DAS. The command group is available after **InfineonDAS0** has been selected as debug port.

```
;optional step: open the SYStem.CONFIG.state dialog showing the DebugPort
;tab
SYStem.CONFIG.state /DebugPort

;selecting the DAS back-end activates the SYStem.InfineonDAS commands
SYStem.CONFIG.DEBUGPORT InfineonDAS0
```

For more information, see **"Debugging via Infineon DAS Server"** (backend_das.pdf).

See also

- SYStem

Virtual targets only: IRIS

The **SYStem.IRISconfig** command group is used to define IRIS-specific setups for debugging and tracing.

See also

- SYStem.CADIconfig
- SYStem.state

SYStem.IRISconfig.RemoteServer Define connection to IRIS server

Virtual targets only: IRIS

Format:	**SYStem.IRISconfig.RemoteServer** [*<ip>* *<port>*]

Defines connection parameters to IRIS server.

Format: **SYStem.JtagClock** *<frequency>*

Selects the JTAG port frequency (TCK) used by the debugger to communicate with the processor. The frequency affects e.g. the download speed. It could be required to reduce the JTAG frequency if there are buffers, additional loads or high capacities on the JTAG lines or if VTREF is very low. A very high frequency will not work on all systems and will result in an erroneous data transfer. Therefore we recommend to use the default setting if possible.

See also

■ SYStem.state ❑ SYStem.JtagClock()

▲ 'Release Information' in 'Legacy Release History'

[Example]

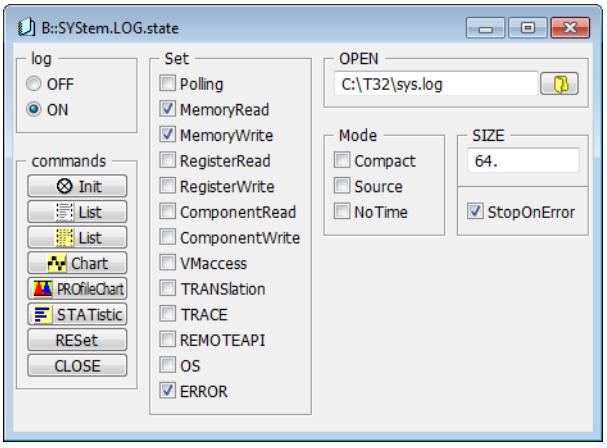
Using the **SYStem.LOG** command group, you can record the read and write accesses TRACE32 performs to the target hardware. For example, the **SYStem.LOG** command group can be used to diagnose why errors like “debug port fail”, “bus error”, etc. occurred. By default, logging stops after an error has occurred (see **SYStem.LOG.StopOnError**).

The read and write accesses can be displayed in the **SYStem.LOG.List** window. In addition, they can be recorded in a system log file with an unlimited file size. The log entries are recorded in plain text format, and the read and write accesses are converted to **Data.Set** commands. This way it is possible to re-run the system log in a TRACE32 Instruction Set Simulator.

The system log records all TRACE32 debugger accesses to the target. Examples of accesses that cannot be logged include:

- Accesses via JTAG API
- Accesses initiated by the **TERM** command
- Accesses initiated by the **SNOOPer** command

For configuring a system log, use the TRACE32 command line, a PRACTICE script (*.cmm), or the **SYStem.LOG.state** window:



Example:

```
SYStem.LOG.state                ;optional: open the configuration window
SYStem.LOG.RESet                ;use default configuration of system log
SYStem.LOG.OPEN ~~\sys.log      ;open a system log file for writing
SYStem.LOG.List                 ;display the accesses to the target

;log the read and write accesses to the target
List.auto
Step.single

SYStem.LOG.CLOSE                ;close the system log file for writing
```

See also

- SYStem.LOG.CLEAR
- SYStem.LOG.CLOSE
- SYStem.LOG.Init
- SYStem.LOG.List
- SYStem.LOG.Mode
- SYStem.LOG.OFF
- SYStem.LOG.ON
- SYStem.LOG.OPEN
- SYStem.LOG.RESet
- SYStem.LOG.Set
- SYStem.LOG.SIZE
- SYStem.LOG.state
- SYStem.LOG.StopOnError
- SYStem.state
- SLTrace
- LOG

SYStem.LOG.CLEAR Clear the 'SYStem.LOG.List' window

Format: **SYStem.LOG.CLEAR**

Clears and immediately re-populates the list in the **SYStem.LOG.List** window with new system log entries - same as if you are running the commands **SYStem.LOG.Init** and **SYStem.LOG.ON** in rapid succession.

SYStem.LOG.CLEAR is the command behind the **Clear** button in the **SYStem.LOG.List** window.

See also

- SYStem.LOG
- SYStem.LOG.Init
- SYStem.LOG.state

Format: **SYStem.LOG.CLOSE**

Closes the active system log file. Any further read and write accesses are not recorded in the system log file. You can now open the file in an **EDIT** or **TYPE** window or in another application.

Example: Using the **DO** command, you can also re-run the system log in a TRACE32 Instruction Set Simulator. You do **not** need to rename the file extension to **cmm**, the extension for PRACTICE scripts; you can keep the file extension **log**.

```
...

SYStem.LOG.CLOSE                ;close the system log file for writing

PEDIT ~~\sys.log                ;open log file as a PRACTICE script
```

See also

- SYStem.LOG
- SYStem.LOG.OPEN
- SYStem.LOG.state

SYStem.LOG.Init Clear the "SYStem.LOG.List" window

Format: **SYStem.LOG.Init**

Clears the system log entries displayed in the **SYStem.LOG.List** window. The **SYStem.LOG.Init** command has **no** impact on the system log file.

Since the **SYStem.LOG.List** window itself continues to log the target, the list in the window may be immediately re-populated after clearing.

To prevent the list in the **SYStem.LOG.List** window from being re-populated, run these commands:

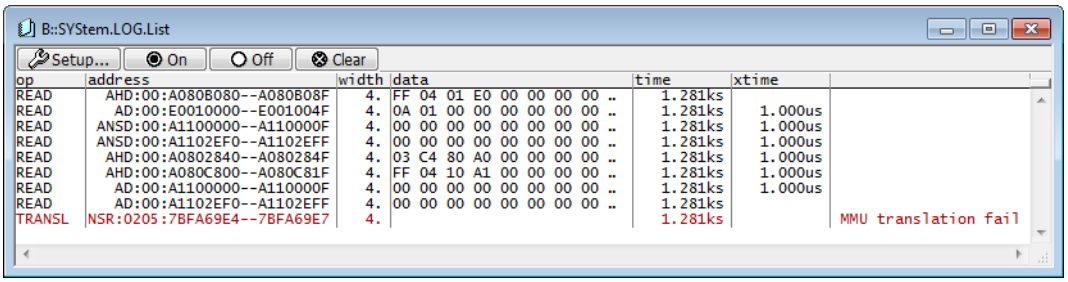
```
SYStem.LOG.OFF
SYStem.LOG.Init
```

See also

- SYStem.LOG
- SYStem.LOG.CLEAR
- SYStem.LOG.state

Format: **SYStem.LOG.List**
Data.LOG (deprecated)

Displays all types of target accesses made by TRACE32.



Description of Toolbar Buttons in the SYStem.LOG.List Window

Setup	Opens the **SYStem.LOG.state** window.
On	Starts/resumes logging - same as **SYStem.LOG.ON**.
Off	Pauses logging - same as **SYStem.LOG.OFF**.
Clear	Clears and immediately re-populates the list with new system log entries - same as if you are running the commands **SYStem.LOG.Init** and **SYStem.LOG.ON** in rapid succession.

Description of Columns in the SYStem.LOG.List Window

op	Type of target access.
address	Access class and address where TRACE32 has accessed the target.
width	The bus width used by TRACE32. **Example**: The value **4.** indicates that TRACE32 performs 32-bit read or write accesses.
data	Data written or read. Only the first 8 bytes are displayed in the **SYStem.LOG.List** window.
time	Absolute timestamps in relation to **ZERO**.
xtime	Execution time.

See also

■ SYStem.LOG ■ SYStem.LOG.state

▲ 'Release Information' in 'Legacy Release History'

Format:	**SYStem.LOG.Mode** *<logging_mode>*
<logging_ mode>:	**Compact ON** | **OFF** **Source ON** | **OFF** **NoTime ON** | **OFF**

Sets the degree of detail with which the read and write accesses are recorded in the system log file.

Compact (default: OFF)	• **OFF**: Access addresses and data are included in the system log file. • **ON**: Access addresses are logged, but data is not logged.
Source (default: OFF)	• **OFF**: The source of accesses such as ETM, HTM, etc. is not logged. • **ON**: Information about which component has accessed the target is included in the system log file.
NoTime (default: OFF)	• **OFF**: Timing information is included in the system log file; see **time** and **xtime** columns of the **SYStem.LOG.List** window. • **ON**: Timing information is not logged. **NoTime ON** is useful, for example, if you want to compare two versions of a system log file.

See also

■ SYStem.LOG ■ SYStem.LOG.state

Format: **SYStem.LOG.OFF**

Temporarily deactivates logging, i.e. the read and write accesses are no longer logged. However, the system log file remains operational. Logging can be resumed with **SYStem.LOG.ON**.

Example:

```
SYStem.LOG.OPEN  ~~\sys.log  ;open a system log file for writing
;…                            ;log read and write accesses
;…
SYStem.LOG.OFF               ;temporarily deactivate logging
;…                            ;accesses are no longer logged
SYStem.LOG.ON                ;resume logging
;…                            ;accesses are logged again
;…
SYStem.LOG.CLOSE             ;close system log file and terminate logging
```

See also

- SYStem.LOG.ON
- SYStem.LOG
- SYStem.LOG.state

SYStem.LOG.ON Resume logging

Format: **SYStem.LOG.ON**

Logs all read and write accesses you have selected with **SYStem.LOG.Set**. The **SYStem.LOG.ON** command can be used after the system log has been temporarily deactivated with the command **SYStem.LOG.OFF**.

See also

- SYStem.LOG.OFF
- SYStem.LOG
- SYStem.LOG.state

Format: **SYStem.LOG.OPEN** *<file>*

Generates a new system log file for logging read and write accesses and opens it for writing. The number of logged read and write accesses is unlimited. If a file with the same name already exists, it will be overwritten.

<file>	The default extension for *<file>* is ***.log**.

Example:

```
SYStem.LOG.OPEN  ~~\sys.log    ;open a system log file
;…
;…
SYStem.LOG.CLOSE               ;close file and terminate logging
```

The path prefix ~~ expands to the TRACE32 system directory, by default C:\t32.

See also

- SYStem.LOG
- SYStem.LOG.CLOSE
- SYStem.LOG.state

SYStem.LOG.RESet Reset configuration of system log to defaults

Format: **SYStem.LOG.RESet**

Resets all commands of the **SYStem.LOG** command group to their defaults. You can view the result in the **SYStem.LOG.state** window.

See also

- SYStem.LOG
- SYStem.LOG.state

Format: **SYStem.LOG.Set** *<setting>*

<setting>:
Polling ON | OFF
MemoryRead ON | OFF
MemoryWrite ON | OFF
RegisterRead ON | OFF
RegisterWrite ON | OFF
ComponentRead ON | OFF
ComponentWrite ON | OFF
VMaccess ON | OFF
TRANSlation ON | OFF
TRACE ON | OFF
REMOTEAPI ON | OFF
OS ON | OFF
ERROR ON | OFF

Allows you to select the TRACE32 accesses you want to record in **SYStem.LOG.List**.

<setting> **OFF**	This *<setting>* is omitted from the system log file.
<setting> **ON**	This *<setting>* is included in the system log file.
ComponentRead	Read accesses to a debug component.
ComponentWrite	Write accesses.
ERROR	• **ON**: All errors are included in the system log file. • **OFF**: Logs only errors of the read and write accesses that are set to **ON**.
MemoryRead	Memory read accesses.
MemoryWrite	Memory write accesses.
OS	Accesses to the operating system (OS).
Polling	Polling of the CPU. The polling mode can be set with **SYStem.POLLING**.
RegisterRead	Register read accesses.
RegisterWrite	Register write accesses.
REMOTEAPI	Accesses via the TRACE32 Remote API. See also **"API for Remote Control and JTAG Access in C"** (api_remote_c.pdf).
TRACE	Accesses to the trace data streaming.

TRANSlation	• **ON**: Display valid address translations and translation failures in the system log file. Currently only the logical address is displayed. • **OFF**: Include only translation failures in the system log file.
VMaccess	If the option is enabled, any read or write access to addresses with the access class VM: or AVM: will be recorded in the **SYStem.LOG.List** window.

See also

■ SYStem.LOG ■ SYStem.LOG.state

▲ 'Release Information' in 'Legacy Release History'

SYStem.LOG.SIZE Define number of lines in the 'SYStem.LOG.List' window

Format: **SYStem.LOG.SIZE** *<lines>*

Default: 64.

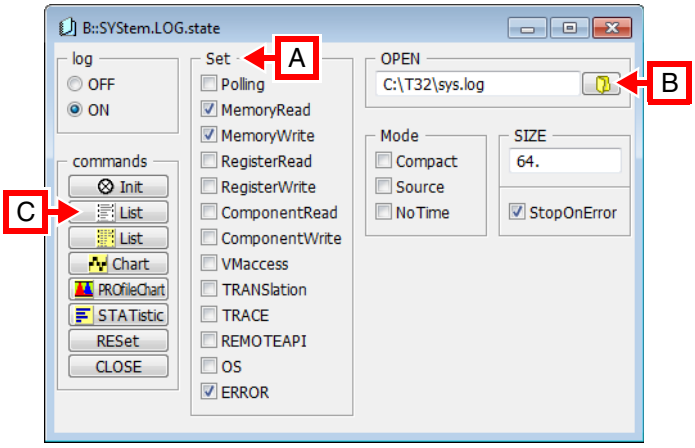
Defines the number of lines displayed in the **SYStem.LOG.List** window. The displayed lines reflect the most recent read and write accesses to the target hardware. The *<lines>* setting does **not** affect the file size.

See also

■ SYStem.LOG ■ SYStem.LOG.state

Format: **SYStem.LOG.state**

Opens the **SYStem.LOG.state** window, where you can configure a system log for recording read and write accesses to the target hardware.



A Only the information of selected options is displayed in the **SYStem.LOG.List** window and recorded in the system log file.
For descriptions of the individual options, see **SYStem.LOG.Set**.

B **To open a system log file, do one of the following:**

- Click the **folder** icon and navigate to the file you want to use.
- Type path and file name into the **OPEN** text box. Then press **Enter**.
  The TRACE32 message line displays that the file is now open for recording log entries.

To close the system log file:

- Clear the content from the **OPEN** text box. Then press **Enter**.
  The TRACE32 message line displays that the file is now closed.

C For descriptions of the commands in the **SYStem.LOG.state** window, refer to the **SYStem.LOG.*** commands in this section.
Example: For information about the **List** button, see **SYStem.LOG.List**.

See also

- SYStem.LOG
- SYStem.LOG.CLEAR
- SYStem.LOG.CLOSE
- SYStem.LOG.Init
- SYStem.LOG.List
- SYStem.LOG.Mode
- SYStem.LOG.OFF
- SYStem.LOG.ON
- SYStem.LOG.OPEN
- SYStem.LOG.RESet
- SYStem.LOG.Set
- SYStem.LOG.SIZE
- SYStem.LOG.StopOnError
- SLTrace

Format: **SYStem.LOG.StopOnError ON | OFF**

Defines the logging behavior after an error has occurred.

ON (default)	TRACE32 automatically runs the command **SYStem.LOG.OFF** to stop logging after an error, such as a bus error, has occurred.
OFF	Logging continues after an error has occurred.

NOTE: The system log file remains open for writing.
- To continue logging, click **Start** in the **SYStem.LOG.List** window or run **SYStem.LOG.ON**.
- To close the system log file, run **SYStem.LOG.CLOSE**.

See also

- SYStem.LOG
- SYStem.LOG.state

SYStem.MCDCommand Send command to MCD server

Virtual targets only: MCD

Format: **SYStem.MCDCommand** *<command>*

SYStem.MCDCommand *<command>* sends via the MCD API call **mcd_execute_command_f()** the *<command>* as ASCII character string to the MCD server. It is not necessary to enclose the command with quotation marks. All quotations marks within *<command>* will be sent as such to the MCD server. The answer from the MCD server on this command can have a maximum of 100 characters and can be read out by **SYStem.MCDCommand.ResultString()**.

See also

- SYStem.state

Virtual targets only: MCD

Format: **SYStem.MCDconfig** *<srv.cfg>*

SYStem.MCDCommand *<srv.cfg>* will send *<srv.cfg>* as ASCII character string within the parameter `config_string` of **mcd_open_server_f()** towards the MCD server. It is not necessary to enclose *<srv.cfg>* with quotation marks. All quotations marks in *<srv.cfg>* will be sent to the MCD server.

See also

- SYStem.state

Format:	**SYStem.MemAccess** *<mode>*
<mode>:	**Enable** | **Denied** | **StopAndGo** | *<cpu_specific>* | *<interface_specific>*

The debugger can read and write the target memory while the CPU is executing the program.

Enable
CPU (deprecated)
Is used to activate the memory access while the CPU is running on the TRACE32 Instruction Set Simulator and on debuggers which do not have a fixed name for the memory access method.

Denied
Real-time memory access during program execution to target is disabled.

StopAndGo
Temporarily halts the core(s) to perform the memory access. Each stop takes some time depending on the speed of the JTAG port, the number of the assigned cores, and the operations that should be performed.

<cpu_specific>
Depending on the target processor, there may exist means to access processor / target memory while the processor is running. Examples are DAP, AHB or AXI for ARM processors, NEXUS or SAP for Power Architecture, and so on. Refer to processor architecture manuals for details.

<interface_specific>
Depending on the debug interface in use, there may exist means to access processor / target memory while the processor is running. Example: XCP.

See also

■ SYStem.state

▲ 'Release Information' in 'Legacy Release History'

Format:	**SYStem.Mode** [*<mode>*] **SYStem.***<mode>* (as an alternative)
<mode>:	**StandBy** **Down** **Attach** **NoDebug** **Go** **Up** **Prepare**

Configures how the debugger connects to the target and how the target is handled. Please refer to the description of this command in your **Processor Architecture Manual** for more information.

See also

- SYStem.state

▲ 'Release Information' in 'Legacy Release History'

SYStem.Option Special setup

[SYStem.state window > Option]

Format:	**SYStem.Option** *<option>* [**ON** | **OFF**]

The *<options>* of **SYStem.Option** are used to control special features of the debugger or to configure the target. It is recommended to execute the **SYStem.Option** commands **before** the emulation is activated by a **SYStem.Up** or **SYStem.Mode** command.

<option>	Mostly architecture specific. For descriptions of the options, refer to the **Processor Architecture Manuals**.

NOTE:	Some of the commands toggle between the options **ON** and **OFF** if they are invoked without parameters.

See also

- SYStem.Option.IMASKASM
- SYStem.Option.IMASKHLL
- SYStem.Option.MACHINESPACES
- SYStem.Option.MMUSPACES
- SYStem.Option.ZoneSPACES
- SYStem.state

▲ 'Release Information' in 'Legacy Release History'

Format: **SYStem.Option.IMASKASM** [**ON** | **OFF**]

Default: OFF.

If enabled, the interrupt mask bits of the CPU will be set during assembler single-step operations. The interrupt routine is not executed during single-step operations. After single step the interrupt mask bits are restored to the value before the step.

See also

- SYStem.Option

SYStem.Option.IMASKHLL Disable interrupts while HLL single stepping

Format: **SYStem.Option.IMASKHLL** [**ON** | **OFF**]

Default: OFF.

If enabled, the interrupt mask bits of the cpu will be set during HLL single-step operations. The interrupt routine is not executed during single-step operations. After single step the interrupt mask bits are restored to the value before the step.

See also

- SYStem.Option

SYStem.Option.MACHINESPACES Address extension for guest OSes

ARM and Intel® x86

Format: **SYStem.Option.MACHINESPACES** [**ON** | **OFF**]

Default: OFF

Enables the TRACE32 support for debugging virtualized systems. Virtualized systems are systems running under the control of a hypervisor.

After loading a Hypervisor Awareness, TRACE32 is able to access the context of each guest machine. Both currently active and currently inactive guest machines can be debugged.

If **SYStem.Option.MACHINESPACES** is enabled, addresses are extended with an identifier called machine ID. The machine ID clearly specifies to which host or guest machine the address belongs.

NOTE:	For architecture-specific information about the command, refer to the **Processor Architecture Manual**.

See also

- SYStem.Option

SYStem.Option.MMUSPACES Separate address spaces by space IDs

Format:	**SYStem.Option.MMUSPACES** [**ON** | **OFF**] **SYStem.Option.MMUspaces** [**ON** | **OFF**] (deprecated) **SYStem.Option.MMU** [**ON** | **OFF**] (deprecated)

Default: OFF.

Enables the use of space IDs for logical addresses to support **multiple** address spaces.

For an explanation of the TRACE32 concept of address spaces (zone spaces, MMU spaces, and machine spaces), see **"TRACE32 Concepts"** (trace32_concepts.pdf).

NOTE:	**SYStem.Option.MMUSPACES** should not be set to **ON** if only one translation table is used on the target. If a debug session requires space IDs, you must observe the following sequence of steps: 1. Activate **SYStem.Option.MMUSPACES**. 2. Load the symbols with **Data.LOAD**. Otherwise, the internal symbol database of TRACE32 may become inconsistent.

Examples:

```
;Dump logical address 0xC00208A belonging to memory space with
;space ID 0x012A:
Data.dump D:0x012A:0xC00208A

;Dump logical address 0xC00208A belonging to memory space with
;space ID 0x0203:
Data.dump D:0x0203:0xC00208A
```

See also

- SYStem.Option

SYStem.Option.ZoneSPACES Enable symbol management for zones

Format: **SYStem.Option.ZoneSPACES** [**ON** | **OFF**]

Default: OFF. Not supported for all core architectures.

For CPUs which have several operation modes with individual MMU translations and register sets, the **SYStem.Option ZoneSPACES** command allows to load separate symbol sets for these CPU modes. Within TRACE32, such CPU modes are referred to as zones. Addresses and symbols belonging to a certain CPU mode are identified by their access class specifier.

OFF TRACE32 does not separate symbols by access class.

ON Separate symbol sets can be loaded for each zone, even with overlapping address ranges. Loaded symbols are specific to one of the CPU zones.

If a symbol is referenced by name, the associated access class of its zone will be used automatically, so that the memory access is done within the correct CPU mode context. As a result, the symbol's logical address will be translated to the physical address with the correct MMU translation table.

NOTE: For architecture-specific information about the command, refer to the **Processor Architecture Manual**.

See also

- SYStem.Option

Format:	**SYStem.PAUSE** *<time>* [*/<option>*]
<option>:	**Target** | **Host**

Pauses the execution of any operation of the debugger including semihosting, status polling, and APIs. The command cannot be interrupted or canceled. The passed option only takes effect if a back-end with virtual connection to an RTL emulation/simulation is used, e.g. GTL.

<time>	• The pause time of **Host** is typically measured in milliseconds, e.g. `100ms` • The pause time of **Target** is typically measured in microseconds, e.g. `10us` • Without **Target** or **Host**: The used time base depends on **SYStem.VirtualTiming.PauseinTargetTime**.
Host	Host clock is used as time base.
Target	Emulation clock is used as time base.

See also

- SYStem.state
- WAIT

Format:	**SYStem.POLLING** *<run_mode> <stopped_mode>*
<run_mode>:	**CONTinuous** **DEFault** **FAST** **OFF** **SLOW**
<stopped_mode>:	**DEFault** **OFF** **SIGnals**

When the CPU is running, the debug driver can poll the CPUs state in the background to speed up operations where a fast break detection is preferred. Features that can be improved by a fast break detection are:

- CPU break from PodBus Trigger, if the CPU has no dedicated break in line
- Any communication that is based to spot break points e.g. TERM, FDX
- Break triggered actions like **Data.EPILOG**, **Data.TIMER**
- Precision of the runtime counter if the CPU has no dedicated break in line

If the poll rate is high the system is more sensitive to disturbances.

CONTinuous	Polling with maximum frequency.
FAST	Polling with interval of 1 ms.
OFF	No polling at all, to prevent from disturbance.
SLOW	Normal polling with interval of **SETUP.UpdateRATE**, increase RTCK time-out to hide short power down/sleep states of the CPU.
DEFault	Polling with interval of **SETUP.UpdateRATE**.

NOTE:	The minium polling interval for timing measurement tasks, e.g. **RunTime**, is 1 ms, any lower settings are ignored.

When the CPU is stopped, the debug driver can poll the CPUs state in the background to observe for exceptional events caused by watch-dogs or other CPUs.

For transactor based solutions those polling can slow down the debug session, therefore it's possible to turn it off.

SIGnals	Polling of signals as RESET only
OFF	No polling at all, to prevent from disturbance.
DEFault	Polling with interval of **SETUP.UpdateRATE**.

See also

■ SYStem.state ■ SETUP.UpdateRATE

▲ 'Release Information' in 'Legacy Release History'

SYStem.PORT Configure external communication interface

Format:	**SYStem.PORT** *<mode>*
<mode>:	**COM***<x>* *<settings>* *<ip>*:*<port>*

This command is used to configure an external communication interface:

- Between TRACE32 and a monitor program running on the target.
- Between TRACE32 and a debug agent running on the target.

Both serial and TCP/IP are supported.

<x>	COM port number, e.g. COM1, COM2
<settings>	The *<settings>* for the communication interfaces depend on the host operating system.

Examples:

```
SYStem.PORT COM1 baud=9600            ; configure COM1 as external
                                      ; communication interface

SYStem.PORT 10.1.2.99:2345            ; configure TCP/IP as external
                                      ; communication interface
```

See also

■ SYStem.state

Format: **SYStem.RESet**

Resets all debug system settings (such as SYStem.CPU, SYStem.JtagClock) to their default values. After this switches to the **SYStem.Mode Down** state.

See also

■ SYStem.state ■ RESet

▲ 'Release Information' in 'Legacy Release History'

SYStem.RESetOut Reset peripherals

Format: **SYStem.RESetOut**

Triggers the CPU RESET command, which initializes the peripherals. This command is not available on all probes.

Example:

```
SYStem.RESetOut                ; Initialize peripherals
```

See also

■ SYStem.state

▲ 'Release Information' in 'Legacy Release History'

SYStem.RESetTarget Release target reset

Format: **SYStem.RESetTarget**

A target reset is performed and then released. On most targets, **SYStem.RESetTarget** is similar to **SYStem.Up** and **Register.RESet**. On virtual platforms usually activates a target platform reset.

See also

■ SYStem.state

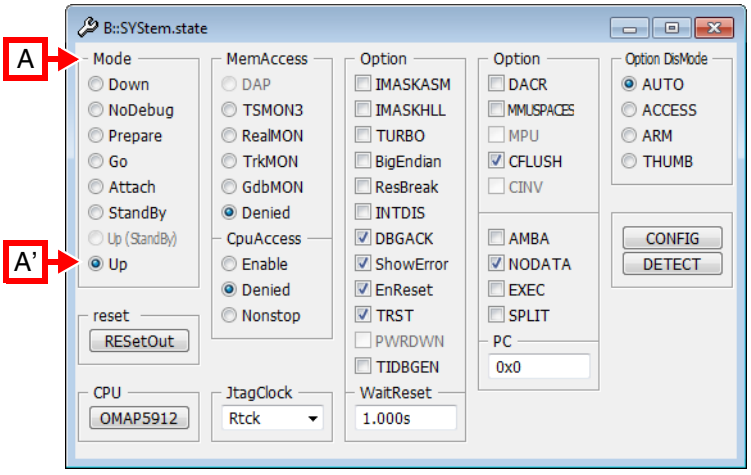
▲ 'Release Information' in 'Legacy Release History'

Format:	**SYStem.state**

Opens a **SYStem.state** window displaying all probe setup parameters. You can also open the **SYStem.state** window by double-clicking the **System** field in the state line of the TRACE32 main window.

All modes can be selected and altered by clicking the appropriate buttons, options, etc. within the **SYStem.state** window.

The **SYStem.state** window is highly target-dependent; example of a **SYStem.state** window:



A For descriptions of the architecture-specific commands in the **SYStem.state** window, please refer to the **SYStem.*** commands in your **Processor Architecture Manual**.

Example: For information about **Up**, see **SYStem.Mode Up**.

See also

- SYStem.BdmClock
- SYStem.CONFIG
- SYStem.CpuSpot
- SYStem.GTL
- SYStem.LOG
- SYStem.Mode
- SYStem.PORT
- SYStem.SNEAKPEEK
- CPUIS()
- SYStem.Mode()
- SYStem.BREAKTIMEOUT
- SYStem.CPU
- SYStem.DCI
- SYStem.InfineonDAS
- SYStem.MCDCommand
- SYStem.Option
- SYStem.RESet
- SYStem.TARGET
- hardware.ICD()
- SYStem.Up()
- SYStem.CADICommand
- SYStem.CpuAccess
- SYStem.DETECT
- SYStem.IRISconfig
- SYStem.MCDconfig
- SYStem.PAUSE
- SYStem.RESetOut
- SYStem.TCFconfig
- INTERFACE.SIM()
- SYStem.CADIconfig
- SYStem.CpuBreak
- SYStem.DLLCommand
- SYStem.JtagClock
- SYStem.MemAccess
- SYStem.POLLING
- SYStem.RESetTarget
- SYStem.VirtualTiming
- SYStem.CPU()

Format:	**SYStem.TARGET** *<target>*
<target>:	*<ip_address>* | *<ip_name>*

Defines the OSE target IP address or name to debug. If no target is specified, TRACE32 uses a broadcast message to find OSE targets and uses the first target found.

See also

- SYStem.state

Format: **SYStem.VirtualTiming**

The commands of the **SYStem.VirtualTiming** command group are used to modify time timing behavior of the debugger when virtual debug interfaces are used, e.g. the TRACE32 Verilog Actuator or Generic Transactor Library.

These virtual debug interfaces connect the debugger to simulations with a virtual time or extra slow emulators. In these scenarios, PowerView commands can take a very long time to execute. Therefore, the interaction with the target is done by PRACTICE scripts mainly, but the default timing of the debugger software targets more a stutter-free behavior of the windows.

To modify these timings, the **SYStem.VirtualTiming** commands can be used. The debugger uses timeouts to cancel polling for expected results in the debug registers of the core and for reading back hardware acknowledge signals of the target as the RTCK signal.

The commands **SYStem.VirtualTiming.TimeinTargetTime** and **SYStem.VirtualTiming.PauseinTargetTime** allow to couple the timing to the emulation/simulation timing. This allows to stall the whole simulation environment without the internal timeouts expiring, but also can lead to longer execution time of the debugger.

The command **SYStem.VirtualTiming.TimeScale** can be used to reduce or increase the internal timeouts in general. In case the simulation does not respond fast enough, the timeouts need to be extended. In case the debugger polls for an error state too long to keep the user interface responsive, the timeouts can be reduced.

See also

- SYStem.VirtualTiming.HardwareTimeout
- SYStem.VirtualTiming.InternalClock
- SYStem.VirtualTiming.MaxTimeout
- SYStem.VirtualTiming.PauseinTargetTime
- SYStem.VirtualTiming.PollingPause
- SYStem.VirtualTiming.TimeScale
- SYStem.VirtualTiming.HardwareTimeoutScale
- SYStem.VirtualTiming.MaxPause
- SYStem.VirtualTiming.OperationPause
- SYStem.VirtualTiming.PauseScale
- SYStem.VirtualTiming.TimeinTargetTime
- SYStem.state

- ▲ 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- ▲ 'Timing Adaption' in 'GTL Debug Back-End'
- ▲ 'Timing Adaption' in 'Verilog Debug Back-End'

Format: **SYStem.VirtualTiming.HardwareTimeout ON | OFF**

The debugger has a timeout that handle the maximum time to wait for an hardware signal. The timeout can be disabled in case it doesn't matter for the debug scenario in case error messages "no RTCK" or "subcore communication timeout" occur. In case the hardware timeout is necessary for the debug scenario the debugger can enter an endless loop, in that cases the hardware timeout should be extended by **SYStem.VirtualTiming.HardwareTimeoutScale** or the target should respond earlier.

ON Hardware timeout is active and used to cancel hardware operations.

OFF Hardware timeout is disabled.

Example:

```
SYStem.VirtualTiming.PauseinTargetTime OFF  ; use host time
```

See also

- SYStem.VirtualTiming

- 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- 'Timing Adaption' in 'GTL Debug Back-End'
- 'Timing Adaption' in 'Verilog Debug Back-End'

SYStem.VirtualTiming.HardwareTimeoutScale Multiply hardware timeout

[Example]

Format: **SYStem.VirtualTiming.HardwareTimeoutScale**

Scales the timeout that leads to the message "subcore communication timeout" for software-only tools. The command is implemented for the back-end GTL.

Low-level operations can have a total communication timeout to prevent the system from hanging in case of an error. In software-only tools, this timeout can malfunction. Either the timeout appears too late and the system seem to hang, or the timeout appears too early and the operation fails with the message "subcore communication timeout".

Example:

```
;shrink the standard timeout by factor 10 to display the timeout earlier
SYStem.VirtualTiming.HardwareTimeoutScale 0.1
```

See also

- SYStem.VirtualTiming

- 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- 'Timing Adaption' in 'GTL Debug Back-End'
- 'Timing Adaption' in 'Verilog Debug Back-End'

SYStem.VirtualTiming.InternalClock Base for artificial time calculation

Format: **SYStem.VirtualTiming.InternalClock** *<frequency>*

Overrides the TRACE32 debug clock setting for internal timing calculation in case the interface's debug clock implementation is wrong in a software-only solution. A clock of 0Hz (default) will not override the debug clock setting. The command is implemented for the back-end GTL.

Example:

```
; TRACE32 transfers 10Mhz setting to the interface
SYStem.JtagClock 10Mhz

; but use 100kHz for internal timing calculations
SYStem.VirtualTiming.InternalClock 100kHz
```

See also

- SYStem.VirtualTiming

- 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- 'Timing Adaption' in 'GTL Debug Back-End'
- 'Timing Adaption' in 'Verilog Debug Back-End'

Format: **SYStem.VirtualTiming.MaxPause** *<time>*

<time>: **10ns** … **40000ms**

The debugger software contains statements to wait time, in order to give the target time to respond. The command is used to set up the maximum time for those wait statements.

Example:

```
SYStem.VirtualTiming.MaxPause 1s            ; set maximum to 1 second
```

See also

- SYStem.VirtualTiming

- ▲ 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- ▲ 'Timing Adaption' in 'GTL Debug Back-End'
- ▲ 'Timing Adaption' in 'Verilog Debug Back-End'

SYStem.VirtualTiming.MaxTimeout Override time-outs

Format: **SYStem.VirtualTiming.MaxTimeout** *<time>*

<time>: *<x>***ns** … *<y>***ms**

The debugger software contains sections where a status of the target is polled for a certain time until a conditions is met in order to finish an operation. The command is used to set up the maximum time that is used for those sections.

Example:

```
SYStem.VirtualTiming.MaxTimeout 10s         ; set maximum to 10 seconds
```

See also

- SYStem.VirtualTiming

- ▲ 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- ▲ 'Timing Adaption' in 'GTL Debug Back-End'
- ▲ 'Timing Adaption' in 'Verilog Debug Back-End'

SYStem.VirtualTiming.OperationPause Insert a pause after each operation

Format: **SYStem.VirtualTiming.OperationPause** *<time>*

<time>: *<x>***ns** … *<y>***ms**

The debug driver issue pause statements after each action e.g. shift or bus access to give the emulation time to compute. Operation pauses will slow down the debugger and prevent from pre-bundling operations.

Example:

```
SYStem.VirtualTiming.OperationPause 100ns  ; enable pause of 100ns
```

See also

- SYStem.VirtualTiming

- ▲ 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- ▲ 'Timing Adaption' in 'GTL Debug Back-End'
- ▲ 'Timing Adaption' in 'Verilog Debug Back-End'

SYStem.VirtualTiming.PauseinTargetTime Set up pause time-base

Format: **SYStem.VirtualTiming.PauseinTargetTime ON | OFF**

The debugger software contains statements to wait time, in order to give the target time to respond. The command specifies it the time shall elapse in virtual simulator time (ON) or real host time (OFF). When set to ON the debugger behaves as with a real target, but become as slow as the simulation.

ON Pause time elapses in virtual simulation time.

OFF Pause time elapses in real host time.

Example:

```
SYStem.VirtualTiming.PauseinTargetTime OFF ; use host time
```

See also

- SYStem.VirtualTiming

- ▲ 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- ▲ 'Timing Adaption' in 'GTL Debug Back-End'
- ▲ 'Timing Adaption' in 'Verilog Debug Back-End'

Format: **SYStem.VirtualTiming.PauseScale** *<factor>*

The debugger software contains statements to wait time in order to give the target time to respond. The command scales these time in order to wait a shorter or longer time.

Example:

```
SYStem.VirtualTiming.PauseScale 10.        ; 10 times longer pauses
```

See also

- SYStem.VirtualTiming

▲ 'Timing Adaption' in 'Debugging via Infineon DAS Server'
▲ 'Timing Adaption' in 'GTL Debug Back-End'
▲ 'Timing Adaption' in 'Verilog Debug Back-End'

SYStem.VirtualTiming.PollingPause Advance emulation time when polling

Format: **SYStem.VirtualTiming.PollingPause** *<time>*

The command is used for systems that advance the simulation time only when the debugger executes actions on it. Usually the debugger is executing JTAG shifts all the time, but this is not efficient to let the emulation time grow. Executing a "pause" statement at the emulation is more efficient, therefore the command inserts "pause" statements of a certain duration when the emulation time needs to be increased, e.g. when the core is running and the debugger waits until a breakpoint has been hit.

A smaller polling pause will speed up the debugger, but slow down the execution of the target program in the emulation. A bigger polling pause will make the debugger less responsive, but let that emulation run faster.

Example:

```
SYStem.VirtualTiming.PollingPause 10us     ; insert 10us pauses
```

See also

- SYStem.VirtualTiming

Format: **SYStem.VirtualTiming.TimeinTargetTime ON | OFF**

The command specifies whether the timeout time shall elapse in virtual simulator time (**ON**) or real host time (**OFF**). When set to **ON** the debugger behaves as with a real target, but become as slow as the simulation.

ON Use virtual target time to elapse time-outs

OFF Use real host time to elapse time-outs

Example:

```
SYStem.VirtualTiming.TimeinTargetTime ON   ; time-outs elapse time-outs
```

See also

- SYStem.VirtualTiming

- ▲ 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- ▲ 'Timing Adaption' in 'GTL Debug Back-End'
- ▲ 'Timing Adaption' in 'Verilog Debug Back-End'

Format: **SYStem.VirtualTiming.TimeScale** *<factor>*

The command scales pauses and time-outs in general.

Example 1:

```
;in this example, time-outs and pauses are 10 times longer
SYStem.VirtualTiming.TimeScale 10.0
```

Example 2:

```
;in this example, time-outs and pauses are 100 times shorter
SYStem.VirtualTiming.TimeScale 0.01

;in case the error "RTCK fail" or "subcore communication timeout"
;occur, extend hardware timeouts by factor 10
SYStem.VirtualTiming.HardwareTimeoutScale 10.0
```

See also

- SYStem.VirtualTiming

- 'Timing Adaption' in 'Debugging via Infineon DAS Server'
- 'Timing Adaption' in 'GTL Debug Back-End'
- 'Timing Adaption' in 'Verilog Debug Back-End'

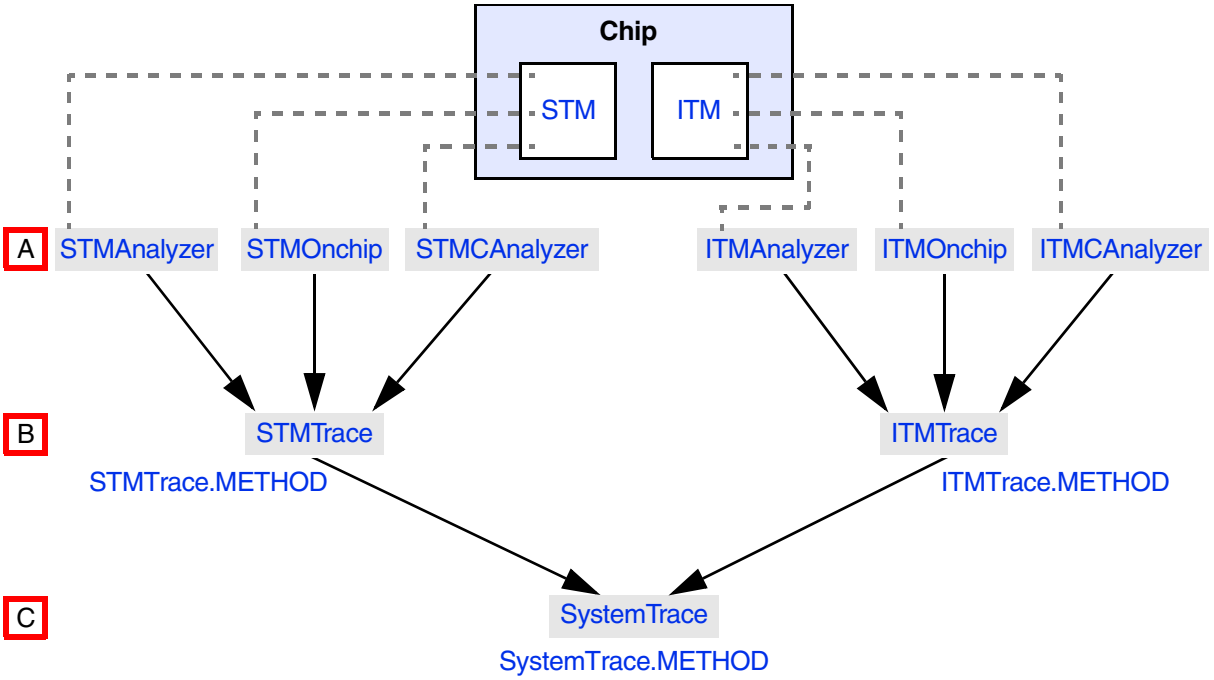
SystemTrace — MIPI STP and CoreSight ITM

[Examples]

Format:	**SystemTrace.**<*sub_cmd*>

Using the **SystemTrace** command group, you can configure the trace recording as well as analyze and display trace data emitted either by the trace source STM or ITM.

The figure illustrates that there are three ways [**A** to **C**] to handle instrumented code from the STM or ITM:



A The six command groups are distinctive ways to handle STM or ITM trace data. Prior to that you need to set the trace method with **STMTrace.METHOD** or **ITMTrace.METHOD**.

B Alternatively, the generic replacement command groups **STMTrace** and **ITMTrace** can be used to handle STM or ITM trace data. Prior to that you need to set the trace method with **STMTrace.METHOD** or **ITMTrace.METHOD**.

C The command group **SystemTrace** lets you handle STM or ITM trace data independently of the trace protocol and trace method in the **SystemTrace.List** window. This requires that the trace method has been set with the command **SystemTrace.METHOD**.

Examples for [**A**] and [**B**] can be found in sections **"System Trace User's Guide"** (trace_stm.pdf) and **"Overview ITM<trace>"** in General Commands Reference Guide I, page 88 (general_ref_i.pdf).

An example for [**C**] can be found below.

<sub_cmd>	For descriptions of the subcommands, please refer to the general *<trace>* command descriptions in **"General Commands Reference Guide T"** (general_ref_t.pdf). **Example**: For a description of **SystemTrace.List** refer to **<trace>.List**

Example 1:

```
SystemTrace.state           ;optional step: open the window in which the
                            ;trace recording is configured.
SystemTrace.METHOD Onchip   ;select the trace method Onchip for
;<configuration>            ;recording system trace data.

STM.state                   ;optional step: open the window in which
                            ;the trace source STM is configured.

STM.ON                      ;switch the trace source STM on.
;<configuration>

;trace data is recorded using the commands Go, WAIT, Break

SystemTrace.List            ;display the system trace data from the STM.
```

NOTE:	The trace method selection for the **SystemTrace** command group corresponds to the trace method selection for the **Trace** command group. This becomes obvious when you compare the examples 1 and 2. For background information, see **"Types of Replacements for <trace>"** in General Commands Reference Guide T, page 121 (general_ref_t.pdf).

Example 2:

```
Trace.state                 ;optional step: open the window in which the
                            ;trace recording is configured.
Trace.METHOD Analyzer       ;select the trace method Analyzer for
;<configuration>             ;recording instruction trace data.

ETM.state                   ;optional step: open the window in which
                            ;the trace source ETM is configured.

ETM.ON                      ;switch the trace source ETM on.
;<configuration>

;trace data is recorded using the commands Go, WAIT, Break

Trace.List                  ;display the instruction trace data
                            ;from the ETM.
```

See also

■ STM ■ ITM ■ Trace.METHOD

▲ 'Release Information' in 'Legacy Release History'

SystemTrace.state — Open system-trace configuration window

Format: **SystemTrace.state**

Opens the **SystemTrace.state** window, displaying all probe setup parameters.