TRCAUTHSTATUS, Authentication Status Register

The TRCAUTHSTATUS characteristics are:

Purpose

Provides information about the state of the implementation defined authentication interface for debug.

For additional information, see the CoreSight Architecture Specification.

Configuration

External register TRCAUTHSTATUS bits [31:0] are architecturally mapped to AArch64 System register TRCAUTHSTATUS[31:0].

This register is present only when FEAT_ETE is implemented and FEAT_TRC_EXT is implemented. Otherwise, direct accesses to TRCAUTHSTATUS are res0.

Attributes

TRCAUTHSTATUS is a 32-bit register.

Field descriptions

31 30 29 28	27 26	25 24	23 22 21 20 19 18 17 16	15 14	13 12	11 10	9 8	7 6	5 4	3 2	1 0
RES0	RTNID	RTID	RES0	RLNID	RLID	HNID	HID	SNID	SID	NSNID	NSID

Bits [31:28]

Reserved, res0.

RTNID, bits [27:26]

Root non-invasive debug.

This field has the same value as DBGAUTHSTATUS_EL1.RTNID.

RTID, bits [25:24]

Root invasive debug.

RTID	Meaning

0b00	Not implemented.

Bits [23:16]

Reserved, res0.

RLNID, bits [15:14]

Realm non-invasive debug.

This field has the same value as DBGAUTHSTATUS_EL1.RLNID.

RLID, bits [13:12]

Realm invasive debug.

RLID	Meaning
0b00	Not implemented.

HNID, bits [11:10]

Hyp Non-invasive Debug. Indicates whether a separate enable control for EL2 non-invasive debug features is implemented and enabled.

HNID	Meaning
0b00	Separate Hyp non-invasive debug enable not implemented, or EL2 non-invasive debug features not implemented.
0b10	Implemented and disabled.
0b11	Implemented and enabled.

All other values are reserved.

This field reads as 0b00.

HID, bits [9:8]

Hyp Invasive Debug. Indicates whether a separate enable control for EL2 invasive debug features is implemented and enabled.

HID	Meaning
0b00	Separate Hyp invasive debug enable not implemented, or EL2 invasive debug features not implemented.
0b10	Implemented and disabled.
0b11	Implemented and enabled.

All other values are reserved.

This field reads as `0b00`.

SNID, bits [7:6]

Secure Non-invasive Debug. Indicates whether Secure non-invasive debug features are implemented and enabled.

SNID	Meaning
`0b00`	Secure non-invasive debug features not implemented.
`0b10`	Implemented and disabled.
`0b11`	Implemented and enabled.

All other values are reserved.

When EL3 is implemented, this field takes the value `0b10` or `0b11` depending whether Secure non-invasive debug is enabled.

When EL3 is not implemented and the PE is Non-secure, this field reads as `0b00`.

When EL3 is not implemented and the PE is Secure, this field takes the value `0b10` or `0b11` depending whether Secure non-invasive debug is enabled.

SID, bits [5:4]

Secure Invasive Debug. Indicates whether Secure invasive debug features are implemented and enabled.

SID	Meaning
`0b00`	Secure invasive debug features not implemented.
`0b10`	Implemented and disabled.
`0b11`	Implemented and enabled.

All other values are reserved.

This field reads as `0b00`.

NSNID, bits [3:2]

Non-secure Non-invasive Debug. Indicates whether Non-secure non-invasive debug features are implemented and enabled.

NSNID	Meaning
`0b00`	Non-secure non-invasive debug features not implemented.

0b10	Implemented and disabled.
0b11	Implemented and enabled.

All other values are reserved.

When EL3 is implemented, this field reads as 0b11.

When EL3 is not implemented and the PE is Non-secure, this field reads as 0b11.

When EL3 is not implemented and the PE is Secure, this field reads as 0b00.

NSID, bits [1:0]

Non-secure Invasive Debug. Indicates whether Non-secure invasive debug features are implemented and enabled.

NSID	Meaning
0b00	Non-secure invasive debug features not implemented.
0b10	Implemented and disabled.
0b11	Implemented and enabled.

All other values are reserved.

This field reads as 0b00.

Accessing TRCAUTHSTATUS

For implementations that support multiple access mechanisms, different access mechanisms can return different values for reads of TRCAUTHSTATUS if the authentication signals have changed and that change has not yet been synchronized by a Context synchronization event. This scenario can happen if, for example, the external debugger view is implemented separately from the system instruction view to allow for separate power domains, and so observes changes on the signals differently.

External debugger accesses to this register are unaffected by the OS Lock.

TRCAUTHSTATUS can be accessed through the external debug interface:

Component	Offset	Instance
ETE	0xFB8	TRCAUTHSTATUS

This interface is accessible as follows:

- When !IsTraceCorePowered(), accesses to this register generate an error response.
- Otherwise, accesses to this register are **RO**.

28/03/2023 16:02; 72747e43966d6b97dcbd230a1b3f0421d1ea3d94