NETMP Specification

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About This Manual

This is the Runtime Library Release 2.4 version of the *NETMP Specification* manual.

It describes NETMP, which is a protocol used only between dsnetm and applications, on the host.

Changes Since Last Release

None

Related Documentation

Note: the Developer Support Web site posts current developments regarding the Libraries and also provides notice of future documentation releases and upgrades.

Typographic Conventions

Certain Typographic Conventions are used throughout this manual to clarify the meaning of the text:

Convention	Meaning
`courier`	Indicates literal program code.
italic	Indicates names of arguments and structure members (in structure/function definitions only).
medium bold	Indicates data types and structure/function names (in structure/function definitions only).
blue	Indicates a hyperlink.

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Overview

NETMP is a protocol used only between dsnetm and applications, on the host. Therefore, the Node IDs for both the Source and Destination fields in the DECI2 header will be 'H'. The protocol number for NETMP is 0x0400.

NETMP is used for making the following types of requests from the application to dsnetm.

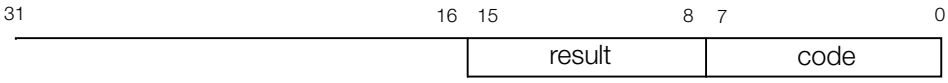
- Application registration
- Packet forwarding/delivery using a specified protocol
- Target system reset
- Status information management
- Unconditional release of a specified protocol

Packet forwarding/delivery requests are only applicable for received packets. They are not required for transmitted packets, which can always be sent.

Message Format

NETMP messages always have the header shown below which follows the DECI2 header.

Figure 1: The NETMP message header



code indicates the message type. Messages can be requests or replies. The following message codes are supported.

Table 1: Supported message codes

Message code	Result	Meaning
NETMP_CODE_CONNECT	0	// connect request
NETMP_CODE_CONNECTR	1	// connect reply
NETMP_CODE_RESET	2	// reset request
NETMP_CODE_RESETR	3	// reset reply
NETMP_CODE_MESSAGE	4	// message request
NETMP_CODE_MESSAGER	5	// message reply
NETMP_CODE_STATUS	6	// status request
NETMP_CODE_STATUSR	7	// status reply
NETMP_CODE_KILL	8	// kill request
NETMP_CODE_KILLR	9	// kill reply
NETMP_CODE_VERSION	10	// version request
NETMP_CODE_VERSIONR	11	// version reply

result indicates the message result. For request messages, result is always 0. For reply messages, result is one of the following.

Table 2: Reply message results

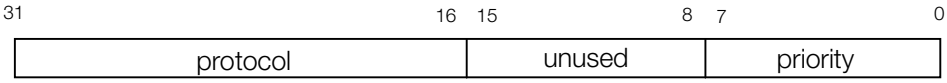
Reply message	Result	Meaning
NETMP_ERR_OK	0	// good
NETMP_ERR_INVAL	1	// invalid request
NETMP_ERR_BUSY	2	// protocol busy
NETMP_ERR_NOTCONN	3	// can not connect
NETMP_ERR_ALREADYCONN	4	// already connect
NETMP_ERR_NOMEM	5	// no memory
NETMP_ERR_NOPROTO	6	// no protocol

Messages

NETMP_CODE_CONNECT

NETMP_CODE_CONNECT is a connection request and a forwarding/delivery request message from an application to dsnetm. The connection data shown below can be repeated any number of times after the NETMP header.

Figure 2: NETMP_CODE_CONNECT Data



priority

Specifies the receive forwarding/delivery priority for a protocol. An unsigned integer between 0 and 255 can be specified. 0 is the lowest priority.

When several applications are using the same protocol, dsnetm will deliver packets from the application having the highest priority. However, with the TTYP protocol, packets will not be delivered according to priority, but will be delivered for all applications. If no prioritization is needed, priority must be set to 0x80.

unused

This is a reserved area and must always be set to 0.

protocol

The number of the protocol requesting forwarding/delivery of received data.

The messages below may be delivered from dsnetm to applications even if the NETMP_CODE_CONNECT message has not been explicitly specified. Delivery takes place only after a successful connection by this message.

- DCMP status message
- DCMP error message
- Notification that NETMP was reset successfully (NETMP_CODE_RESETR)

NETMP_CODE_CONNECTR

NETMP_CODE_CONNECTR is a reply message from dsnetm to an application in response to NETMP_CODE_CONNECT. The message contains only the NETMP header (2 bytes).

The following result codes (result) are valid.

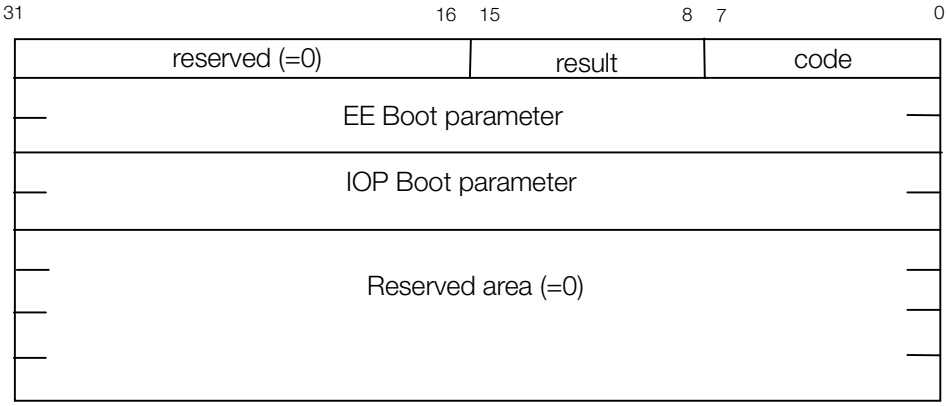
Table 3: Valid NETMP_CODE_CONNECTR result codes

Result code	Meaning
NETMP_ERR_OK	Connection successful
NETMP_ERR_BUSY	Another application is already connected with the same priority and the same protocol
NETMP_ERR_NOTCONN	Connection failed (some other reason)
NETMP_ERR_ALREADYCONN	Already connected
NETMP_ERR_NOMEM	Insufficient memory

NETMP_CODE_RESET

NETMP_CODE_RESET is a request message from an application to dsnetm requesting a target system reset. After the NETMP header, there is a 2-byte reserved area followed by a 2 word x 2 area for initialization parameters, for a total of 20 bytes.

Figure 3: The NETMP_CODE_CONNECT message



The Boot parameter area is saved by dsnetm and is used as Boot parameter data in the DCMP_TYPE_CONNECT message sent by dsnetm to the target. If all the Boot parameter bits are 1, the data saved by dsnetm will not be updated.

NETMP_CODE_RESETR

NETMP_CODE_RESETR is a message sent by dsnetm to an application as notification that a reset operation has been completed. The message includes only an NETMP header (2 bytes).

This message will be sent for any of the following conditions:

- Completion of a reset by NETMP_CODE_RESET from the application.
- Completion of a reset by NETMP_CODE_RESET from another application.
- Completion of a reset resulting from pressing the reset button or powering on the target

The cause of the reset operation cannot be determined from this message.

The following result codes (result) are valid:

Table 4: Valid NETMP_CODE_RESETR result codes

Result code	Meaning
NETMP_ERR_OK	Reset completed
NETMP_ERR_INVAL	The board driver reported an error. For case 1 above, this will be sent only to the application requesting the reset.

NETMP_CODE_MESSAGE

NETMP_CODE_MESSAGE is a message sent from an application to dsnetm to set up connection information. The NETMP header is followed by variable-length ASCII data (no NUL termination), which must be in the format "<user>@<host>,<prog>".

It is strongly recommended that this connection information be sent immediately after the NETMP_CODE_CONNECT message. An application can obtain the information sent in this message by using the NETMP_CODE_STATUS message.

NETMP_CODE_MESSAGER

NETMP_CODE_MESSAGER is sent in response to NETMP_CODE_MESSAGE by dsnetm to an application to indicate that set up of connection information has been completed. The message includes only the NETMP header (2 bytes).

The following result codes (result) are valid:

Table 5: Valid NETMP_CODE_MESSAGER

Result code	Meaning
NETMP_ERR_OK	Settings completed
NETMP_ERR_NOMEM	Insufficient memory

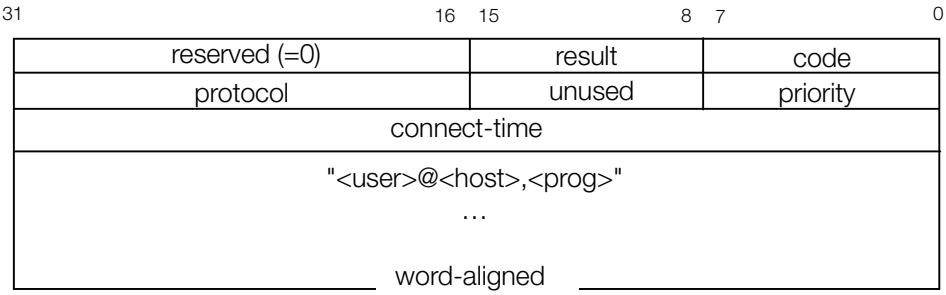
NETMP_CODE_STATUS

NETMP_CODE_STATUS is a message requesting access to information about connections, by protocol, that are controlled by dsnetm. The message contains only the NETMP header (2 bytes).

NETMP_CODE_STATUSR

NETMP_CODE_STATUSR is a reply message sent by dsnetm to an application in response to NETMP_CODE_STATUS. After the NETMP header and a 2-byte reserved area, word-aligned connection information is repeated a variable number of times to indicate information about connections, by protocol, that are controlled by dsnetm.

Figure 4: The NETMP_CODE_STATUSR message



connect-time

The number of seconds as an unsigned 32-bit value. Indicates the time elapsed since the TCP-level connection for that protocol was started.

protocol / unused / priority

Indicates the same information as the corresponding fields in NETMP_CODE_CONNECT.

"<user>@<host>,<prog>"

Connection information sent from an application via NETMP_CODE_MESSAGE. Terminated with at least one byte of NUL data. The data is padded with 0 to 3 bytes of NUL data so it will be word-aligned from the start of the NETMP message.

The following result code is valid.

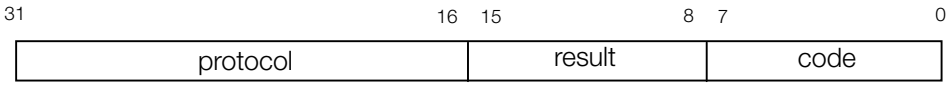
Table 6: Valid "<user>@<host>,<prog>" result code

Result code	Meaning
NETMP_ERR_OK	Successful completion

NETMP_CODE_KILL

NETMP_CODE_KILL is a message sent from an application to dsnetm to request an unconditional release of the specified protocol. Two bytes of data following the NETMP header are used to indicate the protocol number.

Figure 5: The NETMP_CODE_KILL message



dsnetm unconditionally closes the TCP-level connection with the highest priority application using the specified protocol and releases the protocol.

If there are several priorities for a single protocol, this message must be sent for each priority in order to completely release the protocol.

Conversely, if several protocols are associated with an application, a single NETMP_CODE_KILL may release a protocol that was not specified.

NETMP_CODE_KILLR

NETMP_CODE_KILLR is a reply message sent by dsnetm to an application in response to NETMP_CODE_KILL. The message contains only a NETMP header (2 bytes).

The following result codes (result) are valid:

Table 7: Valid NETMP_CODE_KILLR result codes

Result code	Meaning
NETMP_ERR_OK	Unconditional release completed
NETMP_ERR_NOPROTO	No connection using the specified protocol exists

NETMP_CODE_VERSION

NETMP_CODE_VERSION is a request message sent from an application to dsnetm to request version information. After the NETMP header, there is a variable-length ASCII data string (with no NUL termination). The ASCII data must be a string indicating the version of the application.

dsnetm does not check this information, therefore any string can be used.

NETMP_CODE_VERSIONR

NETMP_CODE_VERSIONR is a reply message sent from dsnetm to an application in response to a NETMP_CODE_VERSION message. After the NETMP header, there is a variable-length ASCII data string (with no NUL termination). The ASCII data contains version information for dsnetm. The format of the version information is "X.Y.Z", where X, Y, and Z are decimal numbers.

The following result code (result) is valid.

Table 8: Valid NETMP_CODE_VERSIONR result code

Result code	Meaning
NETMP_ERR_OK	Successful completion