

Entire Net-Work Administration

Application Programming

Version 6.5.2

October 2022

This document applies to Entire Net-Work Administration Version 6.5.2 and all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

Copyright © 2022 Software AG, Darmstadt, Germany and/or Software AG USA, Inc., Reston, VA, USA, and/or its subsidiaries and/or its affiliates and/or their licensors.

The name Software AG and all Software AG product names are either trademarks or registered trademarks of Software AG and/or Software AG USA, Inc. and/or its subsidiaries and/or its affiliates and/or their licensors. Other company and product names mentioned herein may be trademarks of their respective owners.

Detailed information on trademarks and patents owned by Software AG and/or its subsidiaries is located at <http://softwareag.com/licenses>.

Use of this software is subject to adherence to Software AG's licensing conditions and terms. These terms are part of the product documentation, located at <http://softwareag.com/licenses/> and/or in the root installation directory of the licensed product(s).

This software may include portions of third-party products. For third-party copyright notices, license terms, additional rights or restrictions, please refer to "License Texts, Copyright Notices and Disclaimers of Third-Party Products". For certain specific third-party license restrictions, please refer to section E of the Legal Notices available under "License Terms and Conditions for Use of Software AG Products / Copyright and Trademark Notices of Software AG Products". These documents are part of the product documentation, located at <http://softwareag.com/licenses> and/or in the root installation directory of the licensed product(s).

Use, reproduction, transfer, publication or disclosure is prohibited except as specifically provided for in your License Agreement with Software AG.

Document ID: WCPMF-APPROG-652-20221108

Table of Contents

Application Programmer's Reference	v
1 About this Documentation	1
Document Conventions	2
Online Information and Support	2
Data Protection	3
2 Programmable Command Interface	5
NODE Statement Parameters	6
Calling the PCI from a 3GL Program	6
Sample C Program	10
Index	15

Application Programmer's Reference

This document addresses developers of application programs and explains how their programs can communicate interactively with Entire Net-Work. Entire Net-Work provides a Programmable Command Interface that allows application programs to issue Entire Net-Work operator commands and process results from the commands.

Information for the application programmer is provided under the following headings:

Programmable Command Interface Describes how to use the programmable command interface.

1 About this Documentation

▪ Document Conventions	2
▪ Online Information and Support	2
▪ Data Protection	3

Document Conventions

Convention	Description
Bold	Identifies elements on a screen.
Monospace font	Identifies service names and locations in the format <code>folder.subfolder.service</code> , APIs, Java classes, methods, properties.
<i>Italic</i>	Identifies: Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
Monospace font	Identifies: Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the symbol.
[]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

Online Information and Support

Product Documentation

You can find the product documentation on our documentation website at <https://documentation.softwareag.com>.

In addition, you can also access the cloud product documentation via <https://www.software-ag.cloud>. Navigate to the desired product and then, depending on your solution, go to “Developer Center”, “User Center” or “Documentation”.

Product Training

You can find helpful product training material on our Learning Portal at <https://knowledge.softwareag.com>.

Tech Community

You can collaborate with Software AG experts on our Tech Community website at <https://tech-community.softwareag.com>. From here you can, for example:

- Browse through our vast knowledge base.
- Ask questions and find answers in our discussion forums.
- Get the latest Software AG news and announcements.
- Explore our communities.
- Go to our public GitHub and Docker repositories at <https://github.com/softwareag> and <https://hub.docker.com/publishers/softwareag> and discover additional Software AG resources.

Product Support

Support for Software AG products is provided to licensed customers via our Empower Portal at <https://empower.softwareag.com>. Many services on this portal require that you have an account. If you do not yet have one, you can request it at <https://empower.softwareag.com/register>. Once you have an account, you can, for example:

- Download products, updates and fixes.
- Search the Knowledge Center for technical information and tips.
- Subscribe to early warnings and critical alerts.
- Open and update support incidents.
- Add product feature requests.

Data Protection

Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

2 Programmable Command Interface

- NODE Statement Parameters 6
- Calling the PCI from a 3GL Program 6
- Sample C Program 10

The Entire Net-Work Programmable Command Interface (PCI) is a callable interface that allows application programs to issue Entire Net-Work operator commands and process results from the commands.

- For 3GL applications, the Entire Net-Work subroutine NETPCI is provided. 3GL applications must be linked with both NETPCI and the ADAUSER module.
- For Natural applications, the CALLNAT subroutine USR1070N and the sample program USR1070P are provided in the library SYSEXT.
- For C applications, a sample program is provided.

NODE Statement Parameters

The PCI is controlled using the following NODE statement parameters (for more information, see the section *Entire Net-Work NODE Statement* in the *Entire Net-Work Reference Guide*):

Parameter	Function
ENDCMD	Controls whether operator commands such as NETEND that end Entire Net-Work operation are accepted through the PCI.
LOGSIZE	Specifies the size of a wrap-around buffer used to contain the most recent output written to DDPRINT.
PASSWORD	Enables or disables the Entire Net-Work PCI.
REMCMD	Controls the acceptance of remote PCI calls.

Calling the PCI from a 3GL Program

3GL programs use the NETPCI subroutine to communicate with the PCI. Each call must provide the following ten parameters:

Parameter	Description
TARGET	Target ID of the Entire Net-Work node being addressed.
PASSWORD	Value specified by the PASSWORD parameter on the NODE statement.
FUNCTION	PCI function: COMMAND, CONSOLE, or LOGON.
PLEN	Length of the parameter for the PCI function.
PARM	Parameter for the PCI function.
LINENO	Line number from the CONSOLE function.
RLEN	Length of the PCI reply buffer.
RESULT	PCI reply buffer.

Parameter	Description
RC	PCI response code.
REASON	PCI reason code.

TARGET

Format:	Unsigned binary, length 2.
Input:	The node ID of the Entire Net-Work node to be addressed. If TARGET is set to 0 (zero), the call is presented to the local Entire Net-Work node.
Output:	The node ID of the answering node. This is identical to the input value, except for the LOGON function, or when the input value is 0 (zero).

PASSWORD

Format:	Alphanumeric, length 8
Input:	The password of the Entire Net-Work node addressed. This must match the password specified on the NODE statement in the Entire Net-Work parameter file DDKARTE.

FUNCTION

Format:	Alphanumeric, length 8, left justified
Input:	The function to be executed by the Entire Net-Work node, i.e., LOGON, COMMAND, or CONSOLE

The following functions can be specified and are described in this section:

- LOGON
- COMMAND
- CONSOLE

LOGON

The LOGON function can be used by an application to verify a user-supplied password or determine an Entire Net-Work node ID for a given node name.

- A logon request is accepted by any Entire Net-Work Version 5.7 or later node, regardless of its PASSWORD setting.
- The request is then forwarded to the target node whose node name is specified by PARM.
- After successful logon, the node ID of the responding Entire Net-Work node is returned as the value of TARGET.

The return code (RC) is one of the following:

RC	Meaning
0	LOGON function was successful.
22	LOGON function was rejected. REASON Indicates the cause of the rejection.
148	The node specified by either TARGET or PARM could not be reached. REASON Net-Work node that generated the response code.

COMMAND

The COMMAND function causes the operator command specified by PARM to be executed on the node specified by TARGET.

Output generated during command execution that would normally be written to the local system console is placed in the RESULT output parameter. Each output line is followed by X`15'.

Output generated asynchronous to command execution is not included. For example, in response to a PROBE command, RESULT may contain the following message:

```
NET0136I: PROBE MESSAGE SENT
```

The message is followed by X`15'. However, no indication of the failure or success of the probe message is returned (i.e., no message NET0135.)

The length of the response is returned in RLEN. The return code (RC) is one of the following:

RC	Meaning
0	COMMAND function was successful.
22	COMMAND function was rejected. REASON Indicates the cause of the rejection.
53	Resulting output is longer than the length of RESULT, as indicated in RLEN. The length needed is returned in the parameter REASON.
148	The node specified by TARGET could not be reached. REASON contains the node ID of the Entire Net-Work node that generated the response code.

CONSOLE

The CONSOLE function causes lines from the wrap-around log buffer to be returned in the RESULT parameter.

- Each line is followed by X`15'.
- As many lines are returned as fit into RESULT of length RLEN.
- Output parameter LINENO contains the line number of the first line in RESULT.
- Output parameter RLEN contains the length of the data returned.

The return code (RC) is one of the following:

RC	Meaning
0	CONSOLE function was successful and data was returned.
3	No data was returned; the NODE statement of the target node contains no LOGSIZE keyword.
22	CONSOLE function was rejected. REASON indicates the cause of the rejection.
148	The node specified by TARGET could not be reached. REASON contains the node ID of the Entire Net-Work node that generated the response code.

PLEN

Format:	Binary, length 2
Input:	The length of data in the PARM parameter. The length must not exceed 80 characters.

PARM

Format:	Alphanumeric, length 80 maximum	
Input:	The parameter for the PCI function, as follows:	
	Function	Parameter
	LOGON	The node name of the Entire Net-Work node.
	COMMAND	An Entire Net-Work operator command.
	CONSOLE	None

LINENO

Format:	Binary, length 4
Input:	Reserved for future use. Should be set to 0 (zero).
Output:	For the CONSOLE function only, the line number of the first line received in RESULT.

RLEN

Format:	Binary, length 2
Input:	The maximum length of data that can be received in the output parameter RESULT. The maximum length is 32767. For the LOGON function, RLEN can be set to zero.
Output:	The actual length of the data returned in RESULT.

RESULT

Format:	Alphanumeric, length must be less than 32768
Output:	The response buffer for the COMMAND and CONSOLE functions.

RC

Format:	Binary, length 4
Output:	The return code received from the Programmable Command Interface. For possible values, see the FUNCTION parameter. For any other value returned, see the section <i>Entire Net-Work Codes</i> in the <i>Entire Net-Work Messages and Codes Manual</i> .

REASON

Format:	Binary, length 4												
Output:	<p>For all return codes except 53 and 22, this parameter contains the node ID of the Entire Net-Work node that generated the return code.</p> <p>For return code 53, this parameter contains the length needed to receive the result.</p> <p>For return code 22, this parameter contains one of the following:</p> <table border="0"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Target Entire Net-Work node is not Version 5.7 or later.</td> </tr> <tr> <td>101</td> <td>Remote commands are not accepted (REMCMD=NO).</td> </tr> <tr> <td>103</td> <td>The PCI is disabled (no value specified for the PASSWORD parameter on the NODE statement).</td> </tr> <tr> <td>104</td> <td>Invalid password.</td> </tr> <tr> <td>105</td> <td>Invalid FUNCTION (the value specified is not LOGON, CONSOLE, or COMMAND).</td> </tr> </tbody> </table>	Value	Meaning	0	Target Entire Net-Work node is not Version 5.7 or later.	101	Remote commands are not accepted (REMCMD=NO).	103	The PCI is disabled (no value specified for the PASSWORD parameter on the NODE statement).	104	Invalid password.	105	Invalid FUNCTION (the value specified is not LOGON, CONSOLE, or COMMAND).
Value	Meaning												
0	Target Entire Net-Work node is not Version 5.7 or later.												
101	Remote commands are not accepted (REMCMD=NO).												
103	The PCI is disabled (no value specified for the PASSWORD parameter on the NODE statement).												
104	Invalid password.												
105	Invalid FUNCTION (the value specified is not LOGON, CONSOLE, or COMMAND).												

Sample C Program

The following C program calls the NETPCI subroutine.

```

/* This program is a sample application demonstrating the use */
/* of function 'netpci' as Programmable Command Interface for */
/* Entire Entire Net-Work V5.7 or later. This interface allows the */
/* programmer to 'logon' to a Net-Work node, issue */
/* operator commands and receive the reply in a buffer. */
/* Multiple output lines in the reply buffer are separated by */
/* logical line-end X'15'. Also, a function is provided to retrieve */
/* a wrap-around buffer that mirrors recent output to DDPRINT. */
/* */
/* */
/* Programming Note: */
/* In the data definition below, variable 'target' is initialized */
/* to zero. */
/* */
#include <stdio.h>
#define BEGIN (<
#define DO (<
#define END >)
#define NE !=
    
```

```
main (int argc, char *argv(||))
```

```
BEGIN
```

```

void netpci(unsigned short*, /* Target ID of Entire Net-Work node */
            char*,          /* Password from NODE statement */
            char*,          /* Function (COMMAND, CONSOLE, or LOGON)*/
            short*,         /* Length of function parameter */
            char*,          /* Parameter for function */
            int*,           /* CONSOLE line number */
            short*,         /* Length of reply buffer ( <32768 ) */
            char*,          /* Reply buffer */
            int*,           /* Response code */
            int*);          /* Reason code */
    
```

```
void neterr(int*,int*);
```

```

unsigned short target = 0; /* Zero denotes the local Entire Net-Work node */
                        /* See programming note above. */
char password (|9|) = "FIVEFOUR";
char function (|9|) = "LOGON ";
short int plen = 8;
char parm (|81|) = "DAEFNODE";
long int lineno = 0;
    
```

```
short int rlen      = 0;
char result (|2001|);
long int rc, reason;
```

```
char *p, *q;
```

```
/*-----*/
/*  Have the local Entire Net-Work forward our logon request to      */
/*  node DAEFNODE, and find out about DAEFNODE's target id.        */
/*-----*/
netpci(&target,password,function,&plen,parm,&lineno,&rlen,
      result,&rc,&reason);
if (rc NE 0)
  DO
    /* It didn't work, let's find out why */
    neterr(&rc,&reason) ;
    return rc;      /* ...and give up */
  END
```

```
/*-----*/
/*  Variable 'target' is now set to DAEFNODE's node-ID. Send it a  */
/*  HELP command to see what operator commands are available.     */
/*-----*/
plen = 4;      /* length of HELP command (excluding NULL)*/
rlen = 2000;   /* usable length of our reply buffer      */
```

```
netpci(&target,password,"COMMAND ",&plen,"HELP",
      &lineno,&rlen,result,&rc,&reason);
if (rc NE 0)
  DO
    /* It didn't work, let's find out why */
    neterr(&rc,&reason) ;
    return rc;      /* ...and give up */
  END
```

```
/*-----*/
/*  In character string 'result' we now find the help information,  */
/*  each line followed by 0x15. Note that function 'netpci' does    */
/*  not supply a NULL at the end of the result, so if we wanted    */
/*  to use C string functions against 'result', we must set        */
/*  result(|rlen|) to NULL ourselves.                               */
/*-----*/
p = result;
for (q=p; p < &result(|rlen|); p=++q)
  DO
    while(*++q NE 0x15);      /* find end of a line */
    *q = NULL;                /* terminate character string */
```

```

        printf("%s\n",p);          /* print a line */
    END
END

```

```

/*-----*/
/*  The error routine. Print an explanation of response code and  */
/*  reason code.                                                */
/*-----*/
void neterr(int* nrc,int* nreason)
BEGIN
char *p;

```

```

switch (*nrc)
BEGIN
    case 22:                /* command rejected */
        switch (*nreason)
        BEGIN
            case 101:
                p = "Remote commands not accepted";
                break;
            case 102:
                p = "Invalid cypher code in ACB";
                break;
            case 103:
                p = "Programmable Command Interface disabled";
                break;
            case 104:
                p = "Invalid password";
                break;
            case 105:
                p = "Invalid PCI function";
                break;
            case 106:
                p = "Invalid length of operator command";
                break;
            default:
                p = "Not an Entire Net-Work V5.7 or later node";
        END
        printf("Command rejected: %s\n",p);
        break;
    case 53:                /* reply buffer too short */
        printf("Reply buffer length needed is %d\n",*nreason);
        break;
    default:
        printf("Response code %d, generated on Entire Net-Work node %d\n",
            *nrc,*nreason);
END
return;
END

```


Index

Symbols

3GL programs, 6

C

COMMAND function, 8

CONSOLE function, 8

F

FUNCTION parameter, 7

L

LINENO parameter, 9

LOGON function, 7

N

NODE statement
parameters for PCI, 6

P

PARM parameter, 9

PASSWORD parameter, 7

PCI

programmable command interface (PCI), 5

PLEN parameter, 9

programmable command interface (PCI), 5

calling from a 3GL program, 6

NODE statement parameters, 6

overview, 6

parameters, 6

sample C program, 10

R

RC parameter, 10

REASON parameter, 10

RESULT parameter, 10

RLEN parameter, 9

S

sample C program, 10

T

TARGET parameter, 7

