Oracle® Communications Convergent Charging Controller

NP Provisioning Interface Commands

Release 15.0.0

October 2023

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Contents

About This Document

Scope

The scope of this document includes all the information required to configure the NP Service Pack PI commands.

Audience

The audience for this document includes system administrators responsible for the monitoring, maintenance, and configuration of the Oracle Communications Convergent Charging Controller IN applications.

Prerequisites

A solid understanding of UNIX and a familiarity with IN concepts are an essential prerequisite for safely using the information contained in this technical guide.

Although it is not a prerequisite to using this guide, familiarity with the target platform would be an advantage.

This manual describes system tasks that should only be carried out by suitably trained operators.

Related Documents

The following documents are related to this document:

- *Provisioning Interface User's and Technical Guide*
- *Virtual Private Network User's Guide*

Document Conventions

Typographical Conventions

The following terms and typographical conventions are used in the Oracle Communications Convergent Charging Controller documentation.

Formatting Convention	Type of Information
Special Bold	Items you must select, such as names of tabs. Names of database tables and fields.
Italics	Name of a document, chapter, topic or other publication. Emphasis within text.
Button	The name of a button to click or a key to press. **Example:** To close the window, either click **Close**, or press **Esc**.
Key+Key	Key combinations for which the user must press and hold down one key and then press another. Example: **Ctrl+P** or **Alt+F4**.
`Monospace`	Examples of code or standard output.
`Monospace Bold`	Text that you must enter.
variable	Used to indicate variables or text that should be replaced with an actual value.
menu option > menu option >	Used to indicate the cascading menu option to be selected. Example: **Operator Functions > Report Functions**
hypertext link	Used to indicate a hypertext link.

Specialized terms and acronyms are defined in the glossary at the end of this guide.

Chapter 1

PI Commands Overview

Overview

Introduction

The provisioning interface (PI) uses TCP/IP-based UNIX sockets to receive provisioning commands and parameters. These are translated into SQL commands that update prepaid application tables of the SMF and E2BE Oracle databases. This chapter defines the rules and packages required to translate the provisioning commands into SQL commands.

In this chapter

This chapter contains the following topics.

Command List

Command list

The following table lists the Number Portability (NP) PI functions and their corresponding commands. To use the NP PI commands the npPISms package must be installed on your system in addition to the standard piSms package.

Function	npPISms
Add a ported number range.	NPDS1=ADD
Modify a ported number range.	NPDS1=CHG
Delete a ported number range.	NPDS1=DEL
Query an active ported number range.	NPDS1=QRY
Add a ported number prefix.	NPYZ1=ADD
Query a ported number prefix.	NPYZ1=QRY
Change a ported number prefix.	NPYZ1=CHG
Delete a ported number prefix.	NPYZ1=DEL
Add new LCR rule set.	NPLC1=ADD
Modify an LCR rule set.	NPLC1=CHG
Delete an LCR rule set.	NPLC1=DEL
Add a new LCR rule.	NPLC2=ADD
Modify an LCR rule.	NPLC2=CHG
Delete an LCR rule.	NPLC2=DEL
Add a new home routing entry.	NPHR1=ADD
Modify a home routing entry.	NPHR1=CHG

Function	npPISms
Delete a home routing entry.	NPHR1=DEL
Query a home routing entry.	NPHR1=QRY

Parameter Formats

Number Portability PI Parameter Formats

This table describes the format of each Number Portability PI parameter.

Parameter	Format
ACTIVATION_DATE	YYYYMMDDHHMMSS (24 hour clock)
ADDITIONAL_RN_ID	One to 8 digit hexadecimal number
CARRIER*n (n=1 to 8)*	One to 30 character string
CASCADE	Y|N
DESCRIPTION	String of up to 64 characters.
DN	Four to 18 digit number.
DN_END	Four to 18 digit number, must be the same length as the associated DN_START value.
DN_START	Four to 18 digit number.
DN_TYPE	H|S
DONOR_ID	One to 8 digit hexadecimal number
ENTRY_TYPE	O|S
NEW_NAME	String of up to 30 characters.
NUMBER_TYPE	F|M|Null
PORT_ID	One to 8 digit hexadecimal number
PQYZ	String of up to 18 characters.
ROUTING_DESTINATION	String of up to 64 characters.
ROUTING_NUMBER	String of up to eight characters.
RULE_SET	String of up to 30 characters.
URI	String of up to 50 characters.

Chapter 2

PI Number Portability Package

Overview

Introduction

This chapter describes the available PI commands for provisioning number portability information on the SMS.

These commands are added by the `npPISms` package that is installed when you install Convergent Charging Controller. For more information about the PI, and the PI packages, see *PI User's and Technical Guide*. For more information about Number Portability, see the *NP Service Pack Technical Guide* and *NP Service Pack User's Guide*.

In this chapter

This chapter contains the following topics.

Add a Ported Number Range

Description

Use the NPDS1=ADD PI command to add a new entry to the NP_DN_RANGE table.

Required parameters

This command requires the following parameters.

DN_START

Syntax: DN_START=*integer*
Description: The start of the DN number range.
Type: Integer
Optionality: Required
Allowed: The specified number must have four to 18 digits.
Default: None
Notes:
Example: DN_START=1230

DN_END

Syntax: DN_END=*integer*
Description: The end of the DN number range.
Type: Integer
Optionality: Required
Allowed: The specified number must have four to 18 digits.
Default: None
Notes: DN_END and DN_START must be the same length.
Example: DN_END=1250

ACTIVATION_DATE

Syntax: ACTIVATION_DATE=*date*
Description: The date the range will become active.
Type: Date String
Optionality: Required
Allowed: A valid date using this format: YYYYMMDDHHMMSS
Default: None
Notes:
Example: ACTIVATION_DATE=20080714000000

ENTRY_TYPE

Syntax: ENTRY_TYPE=O|S
Description: The entry type to use.
Type: String
Optionality: Required when adding a ported number range
Allowed: Either:
- O – For an operator entry type
- S – For a subscriber entry type

Default: None
Notes:
Example: ENTRY_TYPE=S

ROUTING_NUMBER

Syntax:	ROUTING_NUMBER=*number*
Description:	The routing number.
Type:	Integer
Optionality:	Required
Allowed:	A hexadecimal number between 1 and 8 digits long.
Default:	None
Notes:	
Example:	ROUTING_NUMBER=ABC123

Optional parameters

This command accepts the following optional parameters.

NUMBER_TYPE

Syntax:	NUMBER_TYPE=F|M|D|Null value
Description:	The number type of the DN range.
Type:	String
Optionality:	Optional (default used if not set)
Allowed:	One of the following: • Null value • F - fixed • M - mobile • D - delete (see *Logic and constraints* (on page 9))
Default:	Null
Notes:	
Example:	NUMBER_TYPE=F

ADDITIONAL_RN_ID

Syntax:	ADDITIONAL_RN_ID=*integer*
Description:	The additional routing number for the DN range.
Type:	Integer
Optionality:	Optional
Allowed:	A hexadecimal number, 1 to 8 digits long.
Default:	None
Notes:	
Example:	ADDITIONAL_RN_ID=001

DONOR_ID

Syntax:	DONOR_ID=*integer*
Description:	The donor ID number for the DN range.
Type:	Integer
Optionality:	Optional
Allowed:	A hexadecimal number, 1 to 8 digits long. Must be a defined routing number.

Default:	None
Notes:	
Example:	DONOR_ID=0011

PORT_ID

Syntax:	PORT_ID=*integer*
Description:	The port ID number for the DN range.
Type:	Integer
Optionality:	Optional
Allowed:	A hexadecimal number, 1 to 8 digits long. Must be a defined routing number.
Default:	None
Notes:	
Example:	PORT_ID=001

URI

Syntax:	URI=*string*
Description:	The uri for the DN range.
Type:	String
Optionality:	Optional
Allowed:	Textual string, 1 to 50 characters long
Default:	None
Notes:	
Example:	URI=Uri.com

Logic and constraints

The following rules apply when using the NPDS1=ADD command:

- The range defined by DN_START and DN_END must not overlap an existing entry of the same entry type in the NP_DN_RANGE table, except if DN_START and DN_END exactly match a defined range and ACTIVATION_DATE is different.
- Overlapping ranges of different entry types but the same DN_START and DN_END must have a different ACTIVATION_DATE.
- DN_START and DN_END must be the same length, with DN_END being of equal or higher value.
- ROUTING_NUMBER must be an existing routing number defined in the NP_ROUTING_NUMBER table.
- ADDITIONAL_RN_ID must be an existing routing number defined in the NP_ROUTING_NUMBER table. The ADDITIONAL_RN_ID routing number's associated RD_ID value must equal the ROUTING_NUMBER's associated RD_ID value.
- DONOR_ID must be a routing number defined in the NP_ROUTING_NUMBER table.
- If the maximum number of activation dates per number range is exceeded, then an error is returned: too many routing numbers for this range.
- If **eserv.config** contains the item pi.NP.checkRN = "x", and the ROUTING_NUMBER matches this value "x", then the ADDITIONAL_RN_ID field must have a non-NULL value.
- If **eserv.config** contains the item pi.localTZ = "x", then the data specified for ACTIVATION_DATE will be converted from the local time zone "x" to GMT before being stored in the database.

Modify a Ported Number Range

Changes the entry in the NP_DN_RANGE table that matches the supplied DN_START, DN_END, ACTIVATION_DATE and ROUTING NUMBER parameters.

Description

Use the NPDS1=CHG PI command to modify the entry to the NP_DN_RANGE table for the specified DN_START, DN_END and ACTION_DATE parameters.

Required parameters

This command requires the following parameters.

DN_START

Syntax:	DN_START=*integer*
Description:	The start of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	
Example:	DN_START=1230

DN_END

Syntax:	DN_END=*integer*
Description:	The end of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	DN_END and DN_START must be the same length.
Example:	DN_END=1250

ACTIVATION_DATE

Syntax:	ACTIVATION_DATE=*date*
Description:	The date the range will become active.
Type:	Date String
Optionality:	Required
Allowed:	A valid date using this format: YYYYMMDDHHMMSS
Default:	None
Notes:	
Example:	ACTIVATION_DATE=20080714000000

Optional parameters

This command accepts the following optional parameters.

ENTRY_TYPE

Syntax:	ENTRY_TYPE=O|S
Description:	The entry type to use.
Type:	String
Optionality:	Required when adding a ported number range
Allowed:	Either: • O – For an operator entry type • S – For a subscriber entry type
Default:	None
Notes:	
Example:	ENTRY_TYPE=S

NUMBER_TYPE

Syntax:	NUMBER_TYPE=F|M|D|Null value
Description:	The number type of the DN range.
Type:	String
Optionality:	Optional (default used if not set)
Allowed:	One of the following: • Null value • F - fixed • M - mobile • D - delete (see *Logic and constraints* (on page 9))
Default:	Null
Notes:	
Example:	NUMBER_TYPE=F

ADDITIONAL_RN_ID

Syntax:	ADDITIONAL_RN_ID=*integer*
Description:	The additional routing number for the DN range.
Type:	Integer
Optionality:	Optional
Allowed:	A hexadecimal number, 1 to 8 digits long.
Default:	None
Notes:	
Example:	ADDITIONAL_RN_ID=001

DONOR_ID

Syntax:	DONOR_ID=*integer*
Description:	The donor ID number for the DN range.
Type:	Integer
Optionality:	Optional
Allowed:	A hexadecimal number, 1 to 8 digits long. Must be a defined routing number.

Default: None
Notes:
Example: DONOR_ID=0011

PORT_ID

Syntax: PORT_ID=*integer*
Description: The port ID number for the DN range.
Type: Integer
Optionality: Optional
Allowed: A hexadecimal number, 1 to 8 digits long. Must be a defined routing number.
Default: None
Notes:
Example: PORT_ID=001

ROUTING_NUMBER

Syntax: ROUTING_NUMBER=*number*
Description: The routing number.
Type: Integer
Optionality: Required
Allowed: A hexadecimal number between 1 and 8 digits long.
Default: None
Notes:
Example: ROUTING_NUMBER=ABC123

URI

Syntax: URI=*string*
Description: The uri for the DN range.
Type: String
Optionality: Optional
Allowed: Textual string, 1 to 50 characters long
Default: None
Notes:
Example: URI=Uri.com

Logic and constraints

The following rules apply when using the NPDS1=CHG command:

- The range defined by DN_START and DN_END must be an existing entry in the NP_DN_RANGE table.
- The ROUTING_NUMBER must be an existing routing number defined in the NP_ROUTING_NUMBER table.
- ADDITIONAL_RN_ID must be an existing routing number defined in the NP_ROUTING_NUMBER table. The ADDITIONAL_RN_ID routing number's associated RD_ID value must equal the ROUTING_NUMBER's associated RD_ID value.

- DONOR_ID must be a routing number defined in the NP_ROUTING_NUMBER table.
- If an optional parameter needs to be removed or blanked, set the value to "null" or "NULL". The exceptions are ROUTING_NUMBER and ENTRY_TYPE, which
- must have a value.
- If changing a DN range to ENTRY_TYPE=O, set DONOR_ID=null if a DONOR_ID is already set.
- If **eserv.config** contains the item pi.NP.checkRN = “x”, and the ROUTING_NUMBER matches this value “x”, the ADDITIONAL_RN_ID field must have a non-NULL value.
- If **eserv.config** contains the item pi.localTZ = “x”, the data specified for ACTIVATION_DATE will be converted from the local time zone “x” to GMT before being stored in the database.
- If an entry needs to be removed, set the value for the ROUTING_NUMBER to “null” or “NULL” and the NUMBER_TYPE parameter value to D or d.

Delete a Ported Number Range

Description

Use the NPDS1=DEL PI command to delete the entry in the NP_DN_RANGE table for the specified parameters.

Required parameters

This command requires the following parameters.

DN_START

Syntax:	DN_START=*integer*
Description:	The start of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	
Example:	DN_START=1230

DN_END

Syntax:	DN_END=*integer*
Description:	The end of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	DN_END and DN_START must be the same length.
Example:	DN_END=1250

Optional parameters

This command accepts the following optional parameters.

ENTRY_TYPE

Syntax:	ENTRY_TYPE=O|S
Description:	The entry type to use.
Type:	String
Optionality:	Required when adding a ported number range
Allowed:	Either: • O – For an operator entry type • S – For a subscriber entry type
Default:	None
Notes:	
Example:	ENTRY_TYPE=S

ACTIVATION_DATE

Syntax:	ACTIVATION_DATE=*date*
Description:	The date the range will become active.
Type:	Date String
Optionality:	Required
Allowed:	A valid date using this format: YYYYMMDDHHMMSS
Default:	None
Notes:	
Example:	ACTIVATION_DATE=20080714000000

Logic and constraints

The following rules apply when using the NPDS1=ADD command:

- The range defined by DN_START and DN_END must be an existing entry in the NP_DN_RANGE table.
- If **eserv.config** contains the item pi.localTZ = “x”, then the data specified for ACTIVATION_DATE will be converted from the local time zone “x” to GMT before being used to look up the row in the database.

Query an Active Ported Number Range

Description

Use the command NPDS1 and action QRY to query an entry in the NP_DN_RANGE table for the Active Ported Number Range (APNR) of a number.

Required parameters

This command requires the following parameters.

DN

Syntax:	DN=*integer*
Description:	The destination number to query. The DN must be within the required DN range.
Type:	Integer

Optionality:	Required
Allowed:	Number, 4 to 18 digits long
Default:	None
Notes:	
Example:	`DN=4124`

Optional parameters

This command accepts the following optional parameters.

`ENTRY_TYPE`

Syntax:	`ENTRY_TYPE=O|S`
Description:	The entry type to use.
Type:	String
Optionality:	Optional (default used if not set)
Allowed:	Either: • O – For an operator entry type. • S – For a subscriber entry type.
Default:	S
Notes:	If the DN is provisioned in both an Operator and Subscriber DN range that overlap each other, ENTRY_TYPE=O must be used to show the Operator DN range.
Example:	`ENTRY_TYPE=S`

Logic and constraints

The following rules apply to the NPDS1=QRY command:

- The subscriber or operator name as defined by NAME must not be blank, and must not match an existing subscriber or operator.
- The range defined by DN_START and DN_END must not overlap an already defined range which has the same ENTRY_TYPE.
- DN_END must be the same length as DN_START.
- ENTRY_TYPE must be either ‘S’ for subscriber, or ‘O’ for operator.

Add a Ported Number Prefix

About Adding Ported Number Prefixes by Using PI

Use the NPYZ1=ADD PI command to add a ported number prefix definition to the NP database. To successfully add a ported number prefix definition, you must specify either the ROUTING_NUMBER or the ROUTING_DESTINATION parameter in the command. If you specify:

- Only the ROUTING_NUMBER parameter, then ROUTING_DESTINATION is automatically set to the routing destination that matches the specific routing number.
- Only the ROUTING_DESTINATION parameter, then a routing number is not associated with the prefix in the PQYZ parameter and a prefix is not added to the number if it is matched during porting.
- Both the ROUTING_DESTINATION and the ROUTING_NUMBER parameters, then the routing destination must correspond to the value configured for the specified routing number in the database.

For example, the following PI command adds the 441473 ported number prefix:

```
NPYZ1=ADD:PQYZ=441473,ROUTING_NUMBER=123,ROUTING_DESTINATION=Destination1,NUMBER_TYP
E=F,URI=uri.com,DESCRIPTION=Any text
```

After successfully adding ported number prefixes to the NP database, the PI returns this message:

```
NPYZ1=ADD:ACK;
```

If unsuccessful, then the PI may return any of the following error codes: 68, 69, 1002, 1008 or 1020.

Required Parameter

This command requires the following parameter.

PQYZ

Syntax:	PQYZ=*string*
Description:	The prefix number to use to match ported numbers.
Type:	String
Optionality:	Required
Allowed:	A string of up to 18 characters.
Example:	PQYZ=441473

Optional parameters

This command accepts the following optional parameters.

ROUTING_NUMBER

Syntax:	ROUTING_NUMBER=*string*
Description:	The routing number to prepend to numbers that match the prefix in PQYZ during a ported number check.
Type:	String
Optionality:	Optional
Allowed:	Specify a string of up to eight characters.
Example:	ROUTING_NUMBER=123

ROUTING_DESTINATION

Syntax:	ROUTING_DESTINATION=*string*
Description:	The routing destination.
Type:	String
Optionality:	Optional
Allowed:	A string of up to 64 characters.
Example:	ROUTING_DESTINATION=Vodaphone

NUMBER_TYPE

Syntax:	NUMBER_TYPE=F|M|Blank or empty value
Description:	Sets the type of ported number.
	Note: You unset the ported number type for an existing prefix definition by using the NPYZ1=CHG command to specify a blank or empty value for NUMBER_TYPE.
Type:	String

Optionality:	Optional (default used if not set)
Allowed:	One of the following: • F – For fixed number • M –For mobile number • Blank or empty value. The ported number type is not set.
Default:	Blank or empty value
Example:	`NUMBER_TYPE=F`

`URI`

Syntax:	`URI=`*`string`*
Description:	Defines the associated URI.
Type:	String
Optionality:	Optional
Allowed:	A string of up to 50 characters.
Example:	`URI=uri.com`

`DESCRIPTION`

Syntax:	`DESCRIPTION=`*`string`*
Description:	The description for the ported number.
Type:	String
Optionality:	Optional
Allowed:	A string of up to 50 characters.
Example:	`DESCRIPTION=Any text`

Change a Ported Number Prefix

About Changing Ported Number Prefixes by Using PI

Use the NPYZ1=CHG PI command to change a ported number prefix definition in the NP database. For example, the following PI command changes the definition for the 441473 ported number prefix:

```
NPYZ1=CHG:PQYZ=441473,ROUTING_NUMBER=321,ROUTING_DESTINATION=Destination2,NUMBER_TYP
E=F,URI=uri.com,DESCRIPTION=Any text
```

If unsuccessful, then the PI may return any of the following error codes: 68, 69, 1002, 1008, 1021.

Required Parameter

This command requires the following parameter.

`PQYZ`

Syntax:	`PQYZ=`*`string`*
Description:	The prefix number, on which ported numbers are matched, that you want to change.
Type:	String
Optionality:	Required
Allowed:	An existing PQYZ prefix string of up to 18 characters.
Example:	`PQYZ=441473`

Optional parameters

This command accepts the following optional parameters.

ROUTING_NUMBER

Syntax:	ROUTING_NUMBER=*string*
Description:	The routing number to prepend to numbers that match the prefix in PQYZ during a ported number check.
Type:	String
Optionality:	Optional
Allowed:	Specify a string of up to eight characters.
Example:	ROUTING_NUMBER=123

ROUTING_DESTINATION

Syntax:	ROUTING_DESTINATION=*string*
Description:	The routing destination.
Type:	String
Optionality:	Optional
Allowed:	A string of up to 64 characters.
Example:	ROUTING_DESTINATION=Vodaphone

NUMBER_TYPE

Syntax:	NUMBER_TYPE=F|M|Blank or empty value
Description:	Sets the type of ported number. **Note:** You unset the ported number type for an existing prefix definition by using the NPYZ1=CHG command to specify a blank or empty value for NUMBER_TYPE.
Type:	String
Optionality:	Optional (default used if not set)
Allowed:	One of the following: • F – For fixed number • M –For mobile number • Blank or empty value. The ported number type is not set.
Default:	Blank or empty value
Example:	NUMBER_TYPE=F

URI

Syntax:	URI=*string*
Description:	Defines the associated URI.
Type:	String
Optionality:	Optional
Allowed:	A string of up to 50 characters.
Example:	URI=uri.com

DESCRIPTION

Syntax:	DESCRIPTION=*string*
Description:	The description for the ported number.
Type:	String
Optionality:	Optional
Allowed:	A string of up to 50 characters.
Example:	DESCRIPTION=Any text

Query a Ported Number Prefix

About Querying Ported Number Prefixes by Using PI

Use the NPYZ1=QRY PI command to query the NP database for PQYZ entries. A PQYZ entry maps a ported number prefix to a routing destination. You can query the NP database for multiple PQYZ entries by appending the % wild card character to the DN string parameter. The query returns all the PQYZ entries that match the specified network address. For example, the following PI command returns all the number prefixes for destination addresses that start with 44147328990:

```
NPYZ1=QRY:DN=44147328990%;
```

If you do not append the % character to the PQYZ string in the query, then the query returns the longest matching PQYZ entry.

By default, the maximum number of records returned when you query the NP database is 1500. You can specify a different maximum by configuring the `pqyzMaxRecords` parameter in the pi, NP section of the **eserv.config** configuration file. The PI outputs an error if the query finds more records than the configured maximum. For more information about configuring the PI, see *PI User's and Technical Guide*.

After successfully performing a prefix query, the PI returns this message:

```
NPYZ1=QRY:ACK:
    PQYZ=prefix,ROUTING_NUMBER=r_number,NUMBER_TYPE=F|M,URI=uri,[DESCRIPTION=descript
    ion]
    [PQYZ=...]
```

Where:

- *prefix* is a matching PQYZ prefix.
- *r_number* is the routing number for the prefix.
- *uri* is the URI associated with the prefix.
- *description* is the optional description for the prefix.

If no matching prefix is found, then the PI may return the following error codes: 69, 1004, or 1022.

Required Parameter

This command requires the following parameter.

DN

Syntax:	DN=*string*
Description:	A network address that is checked against PQYZ entries in the NP database. The longest matching entry is returned by default. To query the NP database for multiple PQYZ entries, enter % as the last character in the DN query string.
Type:	String
Optionality:	Required.
Allowed:	A string of up to 18 characters.

Example:	DN=44147328990%

Delete a Ported Number Prefix

About Deleting Ported Number Prefixes by Using PI

Use the NPYZ1=DEL PI command to delete ported number prefixes from the NP database. You can delete multiple ported number prefixes by appending the % wild card character to the end of the PQYZ prefix string parameter. For example, the following PI command deletes all the prefix numbers that start with the digits 4414:

```
NPYZ1=DEL:PQYZ=4414%
```

If unsuccessful, then the PI may return the following the error codes: 69, 1021, or 1022.

Required Parameter

This command requires the following parameter.

PQYZ

Syntax:	PQYZ=*string*
Description:	The prefix number, on which ported numbers are matched, that you want to delete. To delete multiple PQYZ prefix strings, specify the initial characters of the group of prefixes that you want to delete and then append it with the % wild card character.
Type:	String
Optionality:	Required
Allowed:	An existing PQYZ prefix string of up to 18 characters.
Example:	PQYZ=441473

Add New LCR Rule Set

Description

Use the NPLC1=ADD Pi command to add a new rule set to the NP_RULE_SET table.

Required parameters

This command requires the following parameters.

RULE_SET

Syntax:	RULE_SET=*string*
Description:	The name of a the rule set you want to add, change, or delete.
Type:	String
Optionality:	Required.
Allowed:	Textual string, 1 to 30 characters long.
Default:	None.
Notes:	
Example:	RULE_SET=Rule Set 1

Constraint required parameters

There are no constraint required parameters for this command.

Optional parameters

There are no optional parameters for this command.

Logic and constraints

The following rule applies to the NPLC1=ADD command:

- The rule set name must not exist already.

Modify LCR Rule Set

Description

Use the NPLC1=CHG PI command to change the name of a rule set in the NP_RULE_SET table.

Required parameters

This command requires the following parameters.

RULE_SET

Syntax:	RULE_SET=*string*
Description:	The name of a the rule set you want to add, change, or delete.
Type:	String
Optionality:	Required.
Allowed:	Textual string, 1 to 30 characters long.
Default:	None.
Notes:	
Example:	RULE_SET=Rule Set 1

NEW_NAME

Syntax:	NEW_NAME=*string*
Description:	The new name for the rule set specified in RULE_SET.
Type:	String
Optionality:	Required.
Allowed:	Textual string of up to 30 characters.
Default:	None.
Notes:	
Example:	NEW_NAME=Rule Set 2

Constraint required parameters

There are no constraint required parameters for this command.

Optional parameters

There are no optional parameters for this command.

Logic and constraints

The following rules apply to the NPLC1=CHG command:

- This rule set name must exist already.
- The new name for the rule set must be unique.

Delete LCR Rule Set

Description

Use the NPLC1=DEL PI command to delete a rule set from the NP_RULE_SET table. You can also delete any associated rules defined for the rule set.

Required parameters

This command requires the following parameters.

`RULE_SET`

Syntax:	`RULE_SET=`*`string`*
Description:	The name of a the rule set you want to add, change, or delete.
Type:	String
Optionality:	Required.
Allowed:	Textual string, 1 to 30 characters long.
Default:	None.
Notes:	
Example:	`RULE_SET=Rule Set 1`

Constraint required parameters

There are no constraint required parameters for this command.

Optional parameters

This command accepts the following optional parameters.

`CASCADE`

Syntax:	`CASCADE=Y|N`
Description:	Flag to determine whether or not rules based on this rule set should also be deleted.
Type:	Boolean
Optionality:	Optional (default used if not set).
Allowed:	Either: Y – Cascade deletion into the NP_RULE table. N – Do not delete rules from the NP_RULE table.

Default:	N
Notes:	
Example:	CASCADE=Y

Logic and constraints

The following rules apply to the NPLC1=DEL command:

- This rule set must exist in the NP_RULE_SET table.
- If CASCADE is 'N' or not specified, the rule set must not have any associated rules in the NP_RULE table.
- If CASCADE is 'Y', all rules from this set will be deleted from the NP_RULE table.

Add New LCR Rule

Description

Use the command NPLC2 and action ADD to add a new rule to the NP_RULE table for the specified rule set.

Required parameters

This command requires the following parameters.

RULE_SET

Syntax:	RULE_SET=*string*
Description:	The name of a the rule set you want to add, change, or delete.
Type:	String
Optionality:	Required.
Allowed:	Textual string, 1 to 30 characters long.
Default:	None.
Notes:	
Example:	RULE_SET=Rule Set 1

ROUTING_DESTINATION

Syntax:	ROUTING_DESTINATION=*string*
Description:	The routing destination operator name.
Type:	String
Optionality:	Required when adding, modifying or deleting LCR rules.
Allowed:	A text string, up to 64 characters long.
Default:	None
Notes:	
Example:	ROUTING_DESTINATION=Vodaphone

CARRIER1

Syntax:	CARRIER1=*string*
Description:	The name of the carrier.
Type:	String

Optionality: Required.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: `CARRIER1=Carrier 1`

Constraint required parameters

This command accepts the following constraint required parameters.

`CARRIER2`

Syntax: `CARRIER2=`*`string`*
Description: The name of the second carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: `CARRIER2=Carrier 2`

`CARRIER3`

Syntax: `CARRIER3=`*`string`*
Description: The name of the third carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: `CARRIER3=Carrier 3`

`CARRIER4`

Syntax: `CARRIER4=`*`string`*
Description: The name of the fourth carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: `CARRIER4=Carrier 4`

`CARRIER5`

Syntax: `CARRIER5=`*`string`*
Description: The name of the fifth carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.

Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: `CARRIER5=Carrier 5`

`CARRIER6`

Syntax: `CARRIER6=string`
Description: The name of the sixth carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: `CARRIER6=Carrier 6`

`CARRIER7`

Syntax: `CARRIER7=string`
Description: The name of the 7th carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: `CARRIER7=Carrier 7`

Optional parameters

This command accepts the following optional parameters.

`CARRIER8`

Syntax: `CARRIER8=string`
Description: The name of the 8th carrier.
Type: String
Optionality: Optional. May only be specified if carriers 1 to 7 are specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: `CARRIER8=Carrier 8`

Logic and constraints

The following rules apply to the NPLC2=ADD command:

- This rule set must exist in the NP_RULE_SET table.
- The routing destination must be defined in the NP_ROUTING_DESTINATION table.
- The combined rule set and routing destination must not already be defined in the NP_RULE table.
- The carrier names must exist in the NP_CARRIER table.

- Carriers must be specified sequentially.

Modify LCR Rule

Description

Use the command NPLC2 and action CHG to change a rule in the NP_RULE table for the specified rule set.

Required parameters

This command requires the following parameters.

RULE_SET

Syntax:	RULE_SET=*string*
Description:	The name of a the rule set you want to add, change, or delete.
Type:	String
Optionality:	Required.
Allowed:	Textual string, 1 to 30 characters long.
Default:	None.
Notes:	
Example:	RULE_SET=Rule Set 1

ROUTING_DESTINATION

Syntax:	ROUTING_DESTINATION=*string*
Description:	The routing destination operator name.
Type:	String
Optionality:	Required when adding, modifying or deleting LCR rules.
Allowed:	A text string, up to 64 characters long.
Default:	None
Notes:	
Example:	ROUTING_DESTINATION=Vodaphone

CARRIER1

Syntax:	CARRIER1=*string*
Description:	The name of the carrier.
Type:	String
Optionality:	Required.
Allowed:	A text string of up to 30 characters.
Default:	None
Notes:	
Example:	CARRIER1=Carrier 1

Constraint required parameters

This command accepts the following constraint required parameters.

CARRIER2

Syntax: CARRIER2=*string*
Description: The name of the second carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: CARRIER2=Carrier 2

CARRIER3

Syntax: CARRIER3=*string*
Description: The name of the third carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: CARRIER3=Carrier 3

CARRIER4

Syntax: CARRIER4=*string*
Description: The name of the fourth carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: CARRIER4=Carrier 4

CARRIER5

Syntax: CARRIER5=*string*
Description: The name of the fifth carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.
Allowed: A text string of up to 30 characters.
Default: None
Notes:
Example: CARRIER5=Carrier 5

CARRIER6

Syntax: CARRIER6=*string*
Description: The name of the sixth carrier.
Type: String
Optionality: Must be specified if subsequent carriers are to be specified.

Allowed:	A text string of up to 30 characters.
Default:	None
Notes:	
Example:	`CARRIER6=Carrier 6`

`CARRIER7`

Syntax:	`CARRIER7=`*`string`*
Description:	The name of the 7th carrier.
Type:	String
Optionality:	Must be specified if subsequent carriers are to be specified.
Allowed:	A text string of up to 30 characters.
Default:	None
Notes:	
Example:	`CARRIER7=Carrier 7`

Optional parameters

This command accepts the following optional parameters.

`CARRIER8`

Syntax:	`CARRIER8=`*`string`*
Description:	The name of the 8th carrier.
Type:	String
Optionality:	Optional. May only be specified if carriers 1 to 7 are specified.
Allowed:	A text string of up to 30 characters.
Default:	None
Notes:	
Example:	`CARRIER8=Carrier 8`

Logic and constraints

The following rules apply to the NPLC2=CHG command:

- This rule set must exist in the NP_RULE_SET table.
- The routing destination must be defined in the NP_ROUTING_DESTINATION table.
- The combined rule set and routing destination must exist in the NP_RULE table.
- The carrier names must exist in the NP_CARRIER table.
- Carriers must be specified sequentially.
- All carriers (carriers 1 to 8) will be updated, therefore you must specify a value for each of the required carriers. Carriers for which you do not specify a value will be set to null.

Delete LCR Rule

Description

Use the NPLC2=DEL PI command to delete a rule from the NP_RULE table for the specified rule set and routing destination.

Required parameters

This command requires the following parameters.

RULE_SET

Syntax:	RULE_SET=*string*
Description:	The name of a the rule set you want to add, change, or delete.
Type:	String
Optionality:	Required.
Allowed:	Textual string, 1 to 30 characters long.
Default:	None.
Notes:	
Example:	RULE_SET=Rule Set 1

ROUTING_DESTINATION

Syntax:	ROUTING_DESTINATION=*string*
Description:	The routing destination operator name.
Type:	String
Optionality:	Required when adding, modifying or deleting LCR rules.
Allowed:	A text string, up to 64 characters long.
Default:	None
Notes:	
Example:	ROUTING_DESTINATION=Vodaphone

Constraint required parameters

There are no constraint required parameters for this command.

Optional parameters

There are no optional parameters for this command.

Logic and constraints

The following rules apply to the NPLC2=DEL command:

- This rule set must exist in the NP_RULE_SET table.
- The routing destination must be defined in the NP_ROUTING_DESTINATION table.
- The combination of rule set and routing destination must exist in the NP_RULE table.

Add Home Routing Entry

Description

Use the NPHR1=ADD PI command to add a new home routing entry in the NP_HOME_ROUTING table.

Required parameters

This command requires the following parameters.

DN_START

Syntax:	DN_START=*integer*
Description:	The start of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	
Example:	DN_START=1230

DN_END

Syntax:	DN_END=*integer*
Description:	The end of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	DN_END and DN_START must be the same length.
Example:	DN_END=1250

Constraint required parameters

This command accepts the following constraint required parameters.

DN_TYPE

Syntax:	DN_TYPE=H|S
Description:	The type of DN.
Type:	String
Optionality:	Optional (default used if not set).
Allowed:	Either: • H - home • S - special
Default:	S
Notes:	If the ROUTING_DESTINATION field is not specified, DN_TYPE must be set to S.
Example:	DN_TYPE=H

Optional parameters

This command accepts the following optional parameters.

ROUTING_DESTINATION

Syntax:	ROUTING_DESTINATION=*string*
Description:	The routing destination operator name.
Type:	String

Optionality:	Required when adding, modifying or deleting LCR rules.
Allowed:	A text string, up to 64 characters long.
Default:	None
Notes:	
Example:	`ROUTING_DESTINATION=Vodaphone`

Logic and constraints

The following rules apply to the NPHR1=ADD command:

- The range defined by DN_START and DN_END must not overlap an already defined range.
- DN_END must be the same length as DN_START.
- If specified, ROUTING_DESTINATION must be a routing destination defined in the np_routing_destination table.
- The DN_LENGTH field in the NP_HOME_ROUTING table is populated by a database trigger.
- If ROUTING_DESTINATION is specified, DN_TYPE must be 'H' or 'S'.
- If ROUTING_DESTINATION is not specified, DN_TYPE must be 'S'.
- DN_TYPE will default to 'S' if the ROUTING_DESTINATION is not specified and DN_TYPE is not specified.

Modify Home Routing Entry

Description

Use the NPHR1=CHG PI command to modify an existing entry in the NP_HOME_ROUTING table.

Required parameters

This command requires the following parameters.

`DN_START`

Syntax:	`DN_START=`*`integer`*
Description:	The start of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	
Example:	`DN_START=1230`

`DN_END`

Syntax:	`DN_END=`*`integer`*
Description:	The end of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	DN_END and DN_START must be the same length.

Example:	DN_END=1250

Constraint required parameters

This command accepts the following constraint required parameters.

DN_TYPE

Syntax:	DN_TYPE=H|S
Description:	The type of DN.
Type:	String
Optionality:	Optional (default used if not set).
Allowed:	Either: • H - home • S - special
Default:	S
Notes:	If the ROUTING_DESTINATION field is not specified, DN_TYPE must be set to S.
Example:	DN_TYPE=H

Optional parameters

This command accepts the following optional parameters.

ROUTING_DESTINATION

Syntax:	ROUTING_DESTINATION=*string*
Description:	The routing destination operator name.
Type:	String
Optionality:	Required when adding, modifying or deleting LCR rules.
Allowed:	A text string, up to 64 characters long.
Default:	None
Notes:	
Example:	ROUTING_DESTINATION=Vodaphone

Logic and constraints

The following rules apply to the NPHR1=CHG command:

- The range defined by DN_START and DN_END must exist already in the NP_HOME_ROUTING table.
- If specified, ROUTING_DESTINATION must be a routing destination defined in the NP_ROUTING_DESTINATION table.
- If ROUTING_DESTINATION is specified, DN_TYPE must be ‘H’ or ‘S’.
- If ROUTING_DESTINATION is not specified, DN_TYPE must be ‘S’. An existing set ROUTING_DESTINATION will be made null.
- DN_TYPE will default to ‘S’ if the ROUTING_DESTINATION is not specified and DN_TYPE is not specified.

Delete Home Routing Entry

Description

Use the NPHR1=DEL PI command to delete an existing entry from the NP_HOME_ROUTING table.

Required parameters

This command requires the following parameters.

DN_START

Syntax:	DN_START=*integer*
Description:	The start of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	
Example:	DN_START=1230

DN_END

Syntax:	DN_END=*integer*
Description:	The end of the DN number range.
Type:	Integer
Optionality:	Required
Allowed:	The specified number must have four to 18 digits.
Default:	None
Notes:	DN_END and DN_START must be the same length.
Example:	DN_END=1250

Constraint required parameters

There are no constraint required parameters for this command.

Optional parameters

There are no optional parameters for this command.

Logic and constraints

The following rule applies to the NPHR1=DEL command:

- The range defined by DN_START and DN_END must exist already in the NP_HOME_ROUTING table.

Query Home Routing Entry

Description

Use the NPHR1=QRY PI command to query an entry in the NP_HOME_ROUTING table for the following information:

- DN range
- Routing destination
- DN type

Required parameters

This command requires the following parameters.

DN

Syntax:	DN=*integer*
Description:	The destination number to query. The DN must be within the required DN range.
Type:	Integer
Optionality:	Required
Allowed:	Number, 4 to 18 digits long
Default:	None
Notes:	
Example:	DN=4124

Constraint required parameters

There are no constraint required parameters for this command.

Optional parameters

There are no optional parameters for this command.

Logic and constraints

The following rules apply to the NPHR1=QRY command:

- The DN must be within the DN range you want to query, that is, the DN must be >= DN_START and <= DN_END.
- The DN must be formatted correctly. It must be a number between 4 and 18 digits long.

Chapter 3

Error Code Lists

Overview

Introduction

This chapter explains the error codes for NP PI commands.

In this chapter

This chapter contains the following topics.

PI Chassis Errors

Error List

This table describes the PI Chassis error codes.

Code	Message	Description
70	TOO MANY SESSIONS	All PI sessions are in use.
71	LOGON SYNTAX ERROR	The login string was incorrectly formatted.
72	INVALID LOGON – username, password	Invalid username and/or password
73	INVALID LOGON – user not allowed on this port	The user attempted to log in to the wrong PI port.
74	INVALID LOGON – host	The PI client is unknown.
75	UNKNOWN COMMAND	Client sent an unknown command.
76	USER DOES NOT HAVE SUFFICIENT SECURITY	The user's security level is less than the command's security level.
77	SYNSTAMP NOT FOUND	Synstamps are turned on, but the client did not send one.
78	SYNSTAMP NOT VALID	Synstamps are turned on, but the synstamp sent by the client is invalid.
79	INVALID OR MISSING CHECKSUM	Checksums are turned on, but the client is one of the following: • Did not send one • It was invalid
80	UNKNOWN PARAMETER FOR COMMAND	A parameter was sent that was not valid for this command.
81	MISSING PARAMETERS FROM COMMAND	A required parameter is missing.

Code	Message	Description
82		Undefined
83	DUPLICATE PARAMETER	The client sent two identically named parameters.
84	ERROR RUNNING PROCEDURE	An internal error occurred running the command.
85	USER SESSION TERMINATED	The user's session has been terminated by an administrator.
86	COMMAND TOO BIG	The command sent is too long. Indicates an incorrectly formatted command.
87	COMMAND SYNTAX ERROR	The command sent is incorrectly formatted.
88	PARAMETER NAME TOO BIG	A parameter name is too long. Indicates the command was incorrectly formatted.
89	PARAMETER VALUE TOO BIG	A parameter value is too long. Indicates the command was incorrectly formatted.
90	SYNSTAMP OUT OF PLACE	The synstamp is not at the end of the command, but before the checksum.
91	TIMEOUT	The command took too long to run.

PI Command Errors

Number Portability PI Error Codes

This table lists the error codes and error messages for the Number Portability PI commands.

Code	Error Message	Commands
68	Badly formatted parameter *name*. Where *name* is an invalid parameter name.	All commands.
69	This error indicates that an error without a specific error code has occurred for a NP PI command. Details about the error are included in the error text.	All commands.
1000	The specified range *start* to *end* [with activation date *date*] overlaps an already defined range of the same entry type Where: • *start* is the start of the DN range • *end* is the end of the DN range • *date* is DN range activation date	NPDS1=ADD (includes text in square brackets) NPHR1=ADD NPDS1=CHG (includes text in square brackets)
1001	The end of range *end* is a different length to the start of range *start* Where: • *end* is the end of the DN range • *start* is the start of the DN range	NPDS1=ADD NPDHR1=ADD
1002	This error displays one of the following error messages: • The routing number *number* is not defined in the routing number table.	NPDS1=ADD NPDS1=CHG NPYZ1=ADD NPYZ1=CHG

Code	Error Message	Commands
	• The number type *string* is not defined in the number type. • The given URI is too long. Where: • *number* is the undefined routing number. • *string* is the undefined number type.	
1003	The specified range *start* to *end* [with activation date *date*] is not defined Where: • *start* is the start of the DN range specified in the PI command. • *end* is the end of the DN range specified in the PI command. • *date* is DN range activation date specified in the PI command.	NPDS1=CHG (includes text in square brackets) NPDS1=DEL (includes text in square brackets) NPHR1=CHG NPHR1=DEL
1004	The DN *number* was not matched. Where *number* is the value specified for DN in the PI command.	NPDS1=QRY NPHR1=QRY NPYZ1=QRY
1005	A rule set with name *name* is already defined Where *name* is the rule set name specified in RULE_SET in the PI command.	NPLC1=ADD NPLC1=CHG
1006	A rule set with name *name* is not defined Where *name* is the rule set name specified in RULE_SET in the PI command.	NPLC1=CHG NPLC1=DEL NPLC2=ADD NPLC2=CHG NPLC2=DEL
1007	The rule set *name* has associated rules Where *name* is the rule set name specified in RULE_SET in the PI command.	NPLC1=DEL
1008	The routing destination *string* is not defined in the routing destination table. Where *string* is the value specified for ROUTING_DESTINATION in the PI command.	NPLC2=ADD NPLC2=CHG NPLC2=DEL NPHR1=ADD NPHR1=CHG NPYZ1=ADD NPYZ1=CHG
1009	The rule set *name* and routing destination *string* are already defined in the rules table Where: • *name* is the rule set name specified in RULE_SET in the PI command. • *string* is the value specified for ROUTING_DESTINATION in the PI command..	NPLC2=ADD

Code	Error Message	Commands
1010	CARRIER*n* must be defined if CARRIER*m*, where *m* is greater than *n*, is defined Where: • *n* is the carrier number before CARRIER*m*. • *m* is the carrier number after CARRIER*n*. **Note:** Carriers must be defined in order.	NPLC2=ADD NPLC2=CHG
1011	The rule set *name* and routing destination *string* are not defined in the rules table Where: • *name* is the rule set name specified in RULE_SET in the PI command. • *string* is the value specified for ROUTING_DESTINATION in the PI command.	NPLC2=CHG NPLC2=DEL
1012	The DN_TYPE *type* is not a known type Where *type* is the DN type specified in DN_TYPE in the PI command.	NPHR1=ADD NPHR1=CHG
1013	The CARRIER*n* *name* is not a known carrier Where: • *n* is the carrier number specified in the PI command. • The *name* specified in CARRIER*n* is not an existing carrier name for that carrier number.	NPLC2=ADD NPLC2=CHG
1014	The start of range *start* is after the end of range *end* Where: • *start* is the value specified for the start of the DN range in the PI command. • *end* is the value specified for the end of the DN range in the PI command.	NPDS1=ADD NPDS1=CHG NPDS1=DEL NPHR1=ADD NPHR1=CHG NPHR1=DEL
1015	DN_TYPE not specified when ROUTING_DESTINATION is specified	NPHR1=ADD NPHR1=CHG
1020	The specified PQYZ *number* is already defined. Where *number* is the PQYZ number specified in the PI command.	NPYZ1=ADD
1021	The specified PQYZ *number* is not present. Where *number* is the PQYZ number specified in the PI command.	NPYZ1=CHG NPYZ1=DEL
1022	Max query results exceeded. Try a smaller range. To reduce the number of records found when you use the NPYZ1=QRY PI command, enter an additional character in the query string before you append the % wild card character.	NPYZ1=QRY