Oracle® Communications Network Charging and Control

Messaging Manager Navigator Technical Guide

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Contents

About This Document

Scope

The scope of this document includes all the information required to install, configure and administer the Messaging Manager Navigator application.

Audience

This guide was written primarily for system administrators and persons installing, configuring and administering the Messaging Manager Navigator application. However, sections of the document may be useful to anyone requiring an introduction to the application.

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. Attempting to install, remove, configure or otherwise alter the described system without the appropriate background skills, could cause damage to the system; including temporary or permanent incorrect operation, loss of service, and may render your system beyond recovery.

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:

- *MM Technical Guide*
- *MM User's Guide*

Document Conventions

Typographical Conventions

The following terms and typographical conventions are used in the Oracle Communications Network Charging and Control (NCC) 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

System Overview

Overview

Introduction

This chapter provides a high-level overview of the application. It explains the basic functionality of the system and lists the main components.

It is not intended to advise on any specific Oracle Communications Network Charging and Control (NCC) network or service implications of the product.

In this Chapter

This chapter contains the following topics.

What is Messaging Manager Navigator?

Introduction

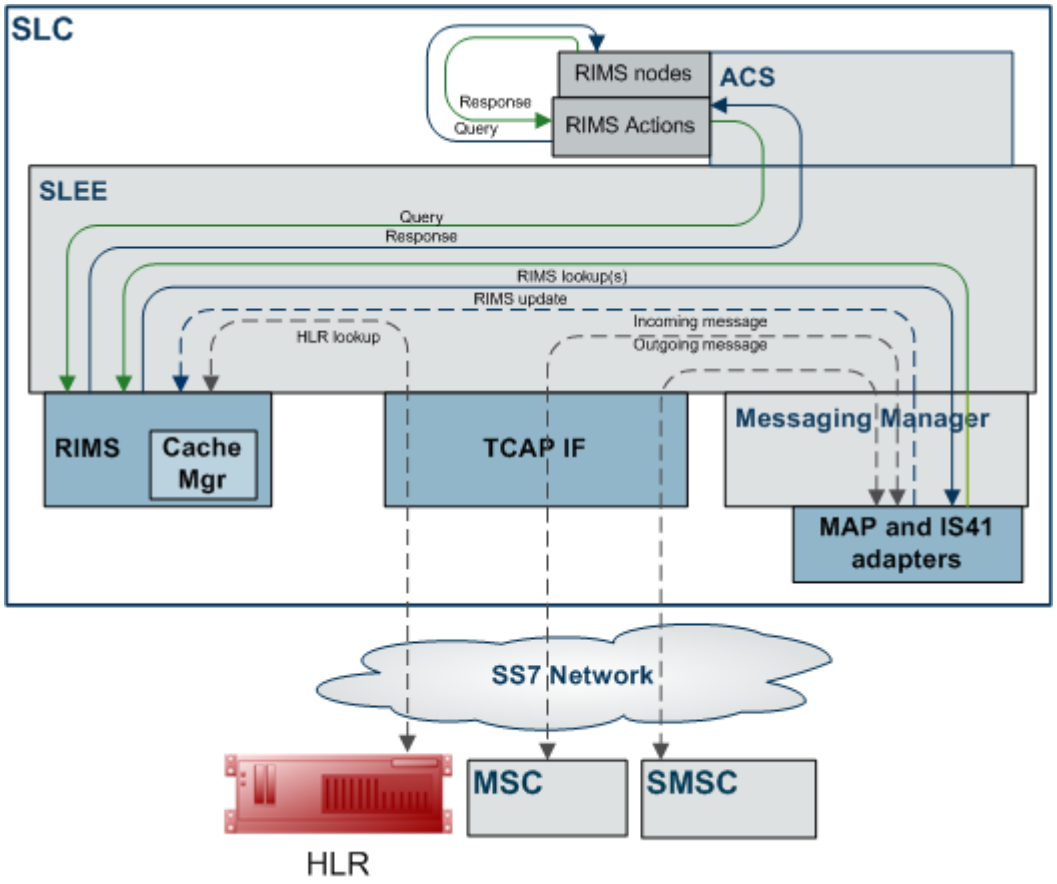
Messaging Manager Navigator is a SLEE interface which caches as much of the HLR lookup information as possible. This reduces the amount of network traffic, and makes the HLR information available to other applications.

Messaging Manager Navigator performs a protocol specific HLR dip. It supports both IS-41 CDMA and MAP (1,2,3) messages. It supports cache maintenance commands from other processes for functions such as clearing/invalidating cache entries and updating cache entries. The cached HLR information is required by Messaging Manager to perform FDA.

Note: Throughout this manual there are references to RIMS. This is the name of the Messaging Manager Navigator program.

SLC processes

Here is a diagram showing the Messaging Manager Navigator and HLR lookup processes on the SLC.



Chapter 2

Configuration

Overview

Introduction

This chapter explains the configuration of the RIMS section of the **eserv.config** file.

In this chapter

This chapter contains the following topics.

RIMS Configuration File

Example config file

Here is an example of the Messaging Manager Navigator config section (known as RIMS) of the **eserv.config**.

```
RIMS = {

    tcapInterfaceServiceKey = 42

    sleepTime = 100000

    hlrTimeout = 3

    hlrErrorMap = [
        { error = 1, permanent = true }
        { error = 32, permanent = false }
    ]

    MAP = {
        defaultMapVersionHlr = 3
        hlrErrorMap = [
            { error = 1, permanent = true }
            { error = 32, permanent = false }
            { error = 73, permanent = true }
        ]

        GT = ""
        PC = 17
        SSN = 9

        checkCacheForTcap = false

        ignoreMwStatusMCEF = true
```

```
        forwardInformSC = false
    }

    IS41 = {
        MdnMinTranslation = [
            { fromNoa=306, prefix="3", min=4, max=32, remove=2, prepend="1111" }
            { fromNoa=0, prefix="00", min=4, max=32, remove=0, prepend="" }
            { fromNoa=0, prefix="0", min=1, max=32, remove=1, prepend="0032" }
            { fromNoa=0, prefix="", min=1, max=6, remove=0, prepend="" }
            { fromNoa=0, prefix="", min=1, max=32, remove=0, prepend="0032" }
            { fromNoa=1, prefix="", min=1, max=32, remove=0, prepend="00" }
            { fromNoa=2, prefix="", min=1, max=32, remove=0, prepend="0032" }
        ]

        GT = ""
        PC = 17
        SSN = 8

        checkCacheForTcap = false

        supportIS841 = false

        minHLRTransType = 3
        mdnHLRTransType = 14
    }

    # Cache tuning options
    cache = {
        size = 5000000

        defaultSuccessValidityPeriod = "01:00:00"
        defaultTransientFailureValidityPeriod = "00:30:00"
        defaultPermanentFailureValidityPeriod = "04:00:00"

        successValidityPeriods = {
            { prefix = "027", period = "01:30:00" }
            { prefix = "021", period = "00:45:00" }
        }
        transientFailureValidityPeriods = {
            { prefix = "027", period = "00:15:00" }
        }
        permanentFailureValidityPeriods = {
            { prefix = "027", period = "03:00:00" }
        }
    }

    ChassisActions = {
        RimsChassisAction = {
            rimsInterfaceName = "rimsIf"
            TON = "001"
            NPI = "001"
            allowGPRS = true
            timeout = 3
            timeoutTick = 3
            scaUseRedirect = false
        }
    }
}
```

RIMS parameters

Here are the parameters for the main section of the `RIMS` config.

`hlrTimeout`

Syntax:	`hlrTimeout = secs`
Description:	Timeout period for queries to the HLR.
Allowed:	seconds
Default:	
Notes:	
Example:	`hlrTimeout = 3`

`sleepTime`

Syntax:	`sleepTime = microseconds`
Description:	Sleep time when there is no work to do.
Allowed:	microseconds
Default:	
Notes:	
Example:	`sleepTime = 10000`

`tcapInterfaceServiceKey`

Syntax:	`tcapInterfaceServiceKey = num`
Description:	SLEE service key of Hughes stack.
Allowed:	
Default:	
Notes:	
Example:	`tcapInterfaceServiceKey = 42`

MAP

Introduction

The RIMS config includes a sub-section for interacting with the MAP plug-in.

IMSI store location

Destination fields for data from RIMS for IMSI are in the callingImsi or calledImsi.

VMSC store location

Destination fields for data from RIMS for VMSC are in the locationNum or the calledLocationNum.

SGSN store location

Destination fields for data from RIMS for SGSN is in the callingSgsn or the calledSgsn.

Example MAP config

Here is an example configuration of the `MAP` subsection of the `RIMS` section.

```
MAP = {
    defaultMapVersionHlr = 3
```

```
        hlrErrorMap = [
            { error = 1, permanent = true }
            { error = 32, permanent = false }
            { error = 73, permanent = true }
        ]

        GT = ""
        PC = 17
        SSN = 9

        checkCacheForTcap = false

        ignoreMwStatusMCEF = true

        forwardInformSC = false
    }
```

MAP parameters

Here are the `MAP` configuration parameters.

Note: GT, PC and SSN form the source address used by Messaging Manager Navigator when consulting a MAP HLR.

checkCacheForTcap

Syntax:	`checkCacheForTcap = true|false`
Description:	Determines whether the RIMS cache will be checked for MAP SRISM messages.
Type:	Boolean
Allowed:	true, false
Default:	false
Notes:	
Example:	`checkCacheForTcap = false`

defaultMapVersionHlr

Syntax:	`defaultMapVersionHlr = num`
Description:	MAP version used to query the HLR.
Allowed:	
Default:	
Notes:	
Example:	`defaultMapVersionHlr = 3`

forwardInformSC

Syntax:	`forwardInformSC = true|false`
Description:	Prevent RIMS sending InformServiceCentre message to XMS
Type:	Boolean
Optionality:	Optional (default used if not set).
Allowed:	
Default:	false
Notes:	
Example:	`forwardInformSC = false`

GT

Syntax: `GT = "num"`

Description: Originating Global Title used by the HLR to communicate back to Messaging Manager or Messaging Manager Navigator (RIMS).

Allowed Valid global title number

Default:

Note: This parameter takes priority over PC or SSN match.

Example:
```
GT = "62912425346"
```

hlrErrorMap

Syntax:
```
hlrErrorMap = [
    {
        error = int, permanent = true|false
    }
       ...
           ]
```

Description: Mapping of HLR responses to severity.

Type: Array

Allowed:

Default:

Notes:

Example:
```
hlrErrorMap = [
    { error = 1, permanent = true }
       ...
              ]
```

ignoreMwStatusMCEF

Syntax: `ignoreMwStatusMCEF= true|false`

Description: If true, SMSC will deliver the SMS even with MCEF flag set.

Type: Boolean

Optionality: Optional (default used if not set).

Allowed: true, false

Default: true

Notes:

Example:
```
ignoreMwStatusMCEF= true
```

PC

Syntax: `PC = num`

Description: Originating Point Code array of messages used by the HLR to communicate back to Messaging Manager or Messaging Manager Navigator (RIMS).

Allowed Defined by Network Administrator

Default: 0

Note:
- This parameter takes priority over SSN match.
- To remove the point code from outgoing requests, set the PC value to 65535.

Example:
```
PC = 17
```

SSN

Syntax:	SSN = *num*
Description:	Originating Subsystem Number of the messages used by HLR to communicate back to Messaging Manager or Messaging Manager Navigator (RIMS).
Allowed	Valid sub system number.
Default:	
Note:	
Example:	SSN = 9

IS41

Introduction

When Messaging Manager performs a RIMS query using the IS41 Protocol, RIMS uses a set of number rules to normalise the MDN to a MIN. The MIN is then sent to the HLR and used to locate the VMSC.

Note: This is the default action; however you can turn this off and allow RIMS to send the MDN to the HLR, rather than perform the conversion.

The RIMS config includes a sub-section for interacting with the IS-41 plug-in.

MIN store location

Destination fields for data from RIMS for MIN are in the callingImsi or calledImsi.

VMSC store location

Destination fields for data from RIMS for VMSC are in the locationNum or the calledLocationNum.

IS41 Errors

ACCESS_DENIED_REASON_Denied and ACCESS_DENIED_REASON_Invalid will generate permanent failures.

The presence of any other value in the SMS Access Denied field will generate a transient failure.

Example IS41 config

Here is an example configuration of the IS41 subsection of the RIMS section.

```
IS41 = {
    MdnMinTranslation = [
        { fromNoa=306, prefix="3", min=4, max=32, remove=2, prepend="1111" }
        { fromNoa=0, prefix="00", min=4, max=32, remove=0, prepend="" }
        { fromNoa=0, prefix="0", min=1, max=32, remove=1, prepend="0032" }
        { fromNoa=0, prefix="", min=1, max=6, remove=0, prepend="" }
        { fromNoa=0, prefix="", min=1, max=32, remove=0, prepend="0032" }
        { fromNoa=1, prefix="", min=1, max=32, remove=0, prepend="00" }
        { fromNoa=2, prefix="", min=1, max=32, remove=0, prepend="0032" }
    ]

    GT = ""
    PC = 17
    SSN = 8

    checkCacheForTcap = false
```

```
        supportIS841 = false

        minHLRTransType = 3
        mdnHLRTransType = 14
    }
```

IS41 parameters

Here are the `IS41` configuration parameters.

Note: GT, PC and SSN form the address used by Messaging Manager Navigator when consulting IS41 HLR.

`checkCacheForTcap`

Syntax:	`checkCacheForTcap = true|false`
Description:	Determines whether the RIMS cache will be checked for IS41 SMSReq messages.
Type:	Boolean
Allowed:	true, false
Default:	false
Notes:	
Example:	`checkCacheForTcap = false`

`GT`

Syntax:	`GT = "num"`
Description:	Originating Global Title used by the HLR to communicate back to Messaging Manager or Messaging Manager Navigator (RIMS).
Allowed	Valid global title number
Default:	
Note:	This parameter takes priority over PC or SSN match.
Example:	`GT = "62912425346"`

`mdnHLRTransType`

Syntax:	`mdnHLRTransType = num`
Description:	The Global Title translation type to be used for lookups to the HLR when using an MDN.
Allowed	
Default:	14
Note:	
Example:	`mdnHLRTransType = 14`

`MdnMinTranslation`

Syntax:	`MdnMinTranslation = [`
	`{`
	`Number_Normalization_Rules_Parameters`
	`}`
	`...`
	`]`

Description:	Translates an MDN to MIN.
Type:	Array

Allowed:

Default:

Notes: This parameter uses Number Normalization rules to perform the translation.

For information about the Number Normalization parameters shown in the example below, see *MM Technical Guide*.

Example:

```
MdnMinTranslation = [
    {
         fromNoa = 0,
         prefix = "3">,
         min = 4,
         max = 32,
         remove = 2,
         prepend = "0035"
    }
       ...
                    ]
```

minHLRTransType

Syntax: `minHLRTransType = num`

Description: The Global Title translation type to be used for lookups to the HLR when using an MIN.

Allowed

Default: 3

Note:

Example: `minHLRTransType = 3`

PC

Syntax: `PC = num`

Description: Originating Point Code array of messages used by the HLR to communicate back to Messaging Manager or Messaging Manager Navigator (RIMS).

Allowed Defined by Network Administrator

Default: 0

Note:

- This parameter takes priority over SSN match.
- To remove the point code from outgoing requests, set the PC value to 65535.

Example: `PC = 17`

SSN

Syntax: `SSN = num`

Description: Originating Subsystem Number of the messages used by HLR to communicate back to Messaging Manager or Messaging Manager Navigator (RIMS).

Allowed Valid sub system number.

Default:

Note:

Example: `SSN = 9`

supportIS841

Syntax: `supportIS841 = true|false`

Description: Determines whether to send the MDN to the HLR, if there is an MDN available, rather than perform the conversion.

Type:	Boolean
Allowed:	true, false
Default:	false
Notes:	If set to true, HLR lookups will be used in preference to `MdnMinTranslation`.
Example:	`supportIS841 = false`

Caching

Introduction

Messaging Manager Navigator is a SLEE component which provides HLR lookup and caching. This component communicates with other SLEE components using the predefined RIMS protocol or MAP/IS-41 HLR lookups over TCAP.

Messaging Manager Navigator caches the results of the HLR queries. This information should be retained for different periods of time depending on its type (a real result, or a failure of some kind) and which network it belongs to.

The primary input of information to the RIMS cache is from the Messaging Manager Navigator HLR query responses, however it is possible to update the RIMS cache from other processes. This is useful for such things as invalidating any cached entry when a MAP-ALERT-SERVICECENTRE message is received, reinvigorating the cached entry when a delivery using that information works, or updating the VMSC based on incoming calls.

The RIMS cache has indexes over the MSISDN/MDN and IMSI/MIN for the same data, although both point to the same information.

Cache operations

There are a number of things that is done to the cache data.

- Look up existing entries
- Add new entries
- If the cache is full, expire the oldest entries
- Update existing entries

Note: When a new element is added to the cache, its validity period is set from the configuration. The configuration is only consulted when an item is added, not every time it is updated.

A validity period of 00:00:00 means that an entry should not be added to the cache. If an element is not added to the cache for this reason, the update function (used for both additions and updates) will return false as though it already contained more relevant data for that key.

Example caching config

Here is an example configuration of the `cache` section of `RIMS`.

```
RIMS = {
    cache = {
        size = 5000000

        defaultSuccessValidityPeriod = "01:00:00"
        defaultTransientFailureValidityPeriod = "00:30:00"
        defaultPermanentFailureValidityPeriod = "04:00:00"

        successValidityPeriods = {
```

```
            { prefix = “027”, period = “01:30:00” }
            { prefix = “021”, period = “00:45:00” }
        }
        transientFailureValidityPeriods = {
            { prefix = “027”, period = “00:15:00” }
        }
        permanentFailureValidityPeriods = {
            { prefix = “027”, period = “03:00:00” }
        }
    }
}
```

Cache parameters

Here are the Cache configuration parameters

defaultPermanentFailureValidityPeriod

Syntax: `defaultPermanentFailureValidityPeriod = "time"`

Description: Lifetime of permanent failure results not covered by a specific IMSI/MIN prefix.

Allowed HH:MM:SS

Default:

Note:

Example: `defaultPermanentFailureValidityPeriod = "00:00:30"`

defaultSuccessValidityPeriod

Syntax: `defaultSuccessValidityPeriod = "time"`

Description: Lifetime of successful results not covered by a specific IMSI/MIN prefix.

Allowed HH:MM:SS

Default:

Note:

Example: `defaultSuccessValidityPeriod = "00:01:00"`

defaultTransientFailureValidityPeriod

Syntax: `defaultTransientFailureValidityPeriod = "time"`

Description: Lifetime of transient failure results not covered by a specific IMSI/MIN prefix.

Allowed HH:MM:SS

Default:

Note:

Example: `defaultTransientFailureValidityPeriod = "00:00:10"`

permanentFailureValidityPeriods

Syntax: `permanentFailureValidityPeriods = "time"`

Description: Permanent failure validity period set per IMSI/MIN prefix.

Allowed HH:MM:SS

Default:

Note:

Example: `permanentFailureValidityPeriods = "00:00:30"`

`size`

Syntax:	`size = int`
Description:	Maximum number of HLR responses to cache at any one time
Allowed	
Default:	
Note:	Value specified in bytes
Example:	`size = 100`

`successValidityPeriods`

Syntax:	`successValidityPeriods = "time"`
Description:	Success validity period set per IMSI/MIN prefix.
Allowed	HH:MM:SS
Default:	
Note:	
Example:	`successValidityPeriods = "00:00:30"`

`transientFailureValidityPeriods`

Syntax:	`transientFailureValidityPeriods = "time"`
Description:	Transient failure validity period set per IMSI/MIN prefix.
Allowed	HH:MM:SS
Default:	
Note:	
Example:	`transientFailureValidityPeriods = "00:00:30"`

Chassis Actions

Introduction

The `RIMS` config includes a `ChassisActions` sub-section.

Example ChassisActions config

Here is an example configuration of the `ChassisActions` sub-section of the `RIMS` section.

```
ChassisActions = {
    RimsChassisAction = {
        rimsInterfaceName = "rimsIf"
        TON = "001"
        NPI = "001"
        allowGPRS = true
        timeout = 3
        timeoutTick = 3
        scaUseRedirect = false
    }
}
```

RimsChassisAction parameters

Here are the parameters in the `RimsChassisAction` array of the `ChassisActions` section of the **eserv.config**.

`allowGPRS`

Syntax: `allowGPRS = true|false`

Description: Determines whether the network supports GPRS.

Type: Boolean

Allowed: true, false

Default: true

Notes: MAP node specific parameter

Example: `allowGPRS = true`

`NPI`

Syntax: `NPI = "value"`

Description: Specifies the Number Plan Indicator value that will be filled into the query key value, in the case that the query key to be used in one of the extension digits fields.

Allowed Values:

- 000 = unknown
- 001 = ISDN (E.163/E.164)
- 003 = Data (X.121)
- 004 = Telex (F.69)
- 006 = Land mobile (E.212)
- 008 = National
- 009 = Private
- 010 = ERMES
- 013 = Point Code & subscriber number
- 014 = Internet (IP)
- 018 = WAP

Default: "001"

Note: The `NPI` should be set to the most likely `NPI` for an MSISDN or MDN, as it will be used as part of the query to Messaging Manager Navigator and the HLR.

Example: `NPI = "001"`

`rimsInterfaceName`

Syntax: `rimsInterfaceName = "name"`

Description: Controls the interface that the chassis action creates a SLEE dialog to.

Allowed string - valid name of interface

Default: "rimsIf"

Note:

Example: `rimsInterfaceName = "rimsIf"`

`scaUseRedirect`

Syntax: `scaUseRedirect = true|false`

Description: Populate the SCA Address from the IDP Redirecting Party

Type:	Boolean
Optionality:	Optional (default used if not set).
Allowed:	true, false
Default:	false
Notes:	
Example:	`scaUseRedirect = false`

`timeout`

Syntax:	`timeout = secs`
Description:	Timeout if Messaging Manager Navigator does not reply.
Allowed:	seconds
Default:	
Notes:	
Example:	`timeout = 3`

`timeoutTick`

Syntax:	`timeout = secs`
Description:	The length of a timeout monitoring period.
Allowed:	seconds. Minimum value is 1.
Default:	
Notes:	Changing this value will change the timeout for all SLEE based applications running on the same SLEE as Messaging Manager Navigator.
Example:	`timeout = 3`

`TON`

Syntax:	`TON = "value"`
Description:	Specifies the Type of Number value that will be filled into the query key value, in the case that the query key to be used in one of the extension digits fields.
Allowed	Values: • 000 = unknown • 001 = international • 002 = national • 003 = network_specific • 004 = subscriber_number • 005 = alphanumeric • 006 = abbreviated
Default:	"001"
Note:	The `TON` should be set to the most likely `TON` for an MSISDN or MDN, as it will be used as part of the query to Messaging Manager Navigator and the HLR.
Example:	`TON = "001"`

Chapter 3

Background Processes

Overview

Introduction

This chapter explains the background processes that run for Messaging Manager Navigator.

In this chapter

This chapter contains the following topics.

Statistics

Introduction

Messaging Manager Navigator gathers statistics when it receives queries, for example from MMX, and when it sends requests to the HLR.

When Messaging Manager Navigator can't respond to a query from its internal cache, it will ask the HLR for information using:

- in the case of GSM MAP, a SendRoutingInfoForSM request; or
- in the case of IS-41 and IS841, an SMSequest.

Messaging Manager Navigator statistics are generated by each SCP, and then transferred at periodic intervals to the Service Management Platform (SMP) for permanent storage and analysis.

An existing statistics system (smsStats) provides functions for the collection of basic statistical events. This is provided in the Oracle SMS application. Refer to the *SMS Technical Guide* for details.

Statistics gathered

The incidence of 12 separate events is counted, classified under the following names.

`SMS_SET_ROUTING_INFO`

Incremented when Messaging Manager Navigator receives a RIMS update request.

`SMS_GET_ROUTING_INFO`

Incremented when Messaging Manager Navigator receives a RIMS query request.

`SMS_GET_ROUTING_INFO_SUCCESS`

Incremented when Messaging Manager Navigator returns a RIMS response with the status of 'successful'.

`SMS_GET_ROUTING_INFO_FAIL`

Incremented when Messaging Manager Navigator returns a RIMS response with a status other than 'successful'.

SMS_MAP_SRI_SM_ATTEMPT

Incremented whenever Messaging Manager Navigator attempts to send a MAP SendRoutingInfoForSM message to the HLR.

SMS_MAP_SRI_SM_TEMP_ERR

Incremented when Messaging Manager Navigator receives a transient error response to a MAP SendRoutingInfoForSM message.

SMS_MAP_SRI_SM_PERM_ERR

Incremented when Messaging Manager Navigator receives a permanent error response to a MAP SendRoutingInfoForSM message.

SMS_MAP_SRI_SM_TIMEOUT

Incremented whenever Messaging Manager Navigator waits too long for a response to a MAP SendRoutingInfoForSM message.

SMS_IS41_SMSREQ_ATTEMPT

Incremented whenever Messaging Manager Navigator attempts to send an IS-(8)41 SMSRequest message to the HLR.

SMS_IS41_SMSREQ_TEMP_ERR

Incremented whenever Messaging Manager Navigator receives a transient error response to an IS-(8)41 SMSRequest message.

SMS_IS41_SMSREQ_PERM_ERR

Incremented whenever Messaging Manager Navigator receives a permanent error response to an IS-(8)41 SMSRequest message.

SMS_IS41_SMSREQ_TIMEOUT

Incremented whenever Messaging Manager Navigator has to wait too long for a response to an IS-(8)41 SMSRequest message.

Chapter 4

About Installation and Removal

Overview

Introduction

This chapter provides information about the installed components for the Oracle Communications Network Charging and Control (NCC) application described in this guide. It also lists the files installed by the application that you can check for, to ensure that the application installed successfully.

In this Chapter

This chapter contains the following topics.

Installation and Removal Overview

Introduction

For information about the following requirements and tasks, see *Installation Guide*:

- NCC system requirements
- Pre-installation tasks
- Installing and removing NCC packages

RIMS packages

An installation of Messaging Manager Navigator includes the following packages, on the:

- SMS:
  - rimsSms
- SLC:
  - rimsScp

Checking the Installation

rimsScp installation check

On successful installation the rimsScp package will have installed the following binaries:

```
IN/service_packages/RIMS/bin/RIMS
```

The following shared libraries will have been installed:

```
/IN/service_packages/RIMS/lib/librimsChassisActions.so
/IN/service_packages/RIMS/lib/librimsMacroNodes.so
```

Unclustered rimsSms installation check

On successful installation the rimsSms package on an unclustered SMS will have created the following directories:

```
/IN/service_packages/RIMS
/IN/service_packages/RIMS/lib
/IN/service_packages/RIMS/tmp
/IN/service_packages/RIMS/db
```

Clustered rimsSms installation check

On successful installation the rimsSms package on a clustered SMS will have created the following directories:

```
/IN/service_packages/RIMS
/IN/service_packages/RIMS/lib
/IN/service_packages/RIMS/tmp
```