INTERACTIVE TRANSACTION MANAGER
2.2.0

User Guide

ISSUE 1.0.1

CUSTOMER'S NAME

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Acronyms and abbreviations

Term	Definition
ITM	**I**nteractive **T**ransaction **M**anager
NSM	**N**agravision **S**ystem **M**anagement
SEP	**S**oftware **E**nvironment **P**latform

Table 1 - Acronyms and abbreviations

ITM USER GUIDE

1. Introduction

This user guide document provides guidance to operate the NagraVision Interactive Transaction Manager application (hereafter **ITM**).

The ITM application, as part of the NagraVision conditional access system (**CAS**), has to be considered as the secured, connection oriented interface between the terminal subscriber equipment (**IRD**) and the headend system (**CAS**). In that sense, it enables all the return path related activities, e.g. interactive purchases, home banking, home shopping, statistical report.

The operation of the ITM application, described in this user guide document, encompasses the user operation, the maintenance and the troubleshooting aspects.

From the functional point of view, the ITM application described in the present document addresses the interactive purchase functionality.

1.1 Purpose

The objective of this user guide document is to provide the operator of the ITM application the necessary knowledge to be able to establish and maintain the operational mode of the application, as well as to be able to maintain and troubleshoot the ITM application.

1.2 Scope

The scope of the ITM application is

- **Advanced Interactivity**: possibility of using a "content on demand" service.

- **Bidirectional PrivateChannel**: point-to-point and bi-directional communication.

- **Distributed architecture**: possibility to dispatch services over the network.

- **Scalability**: easiness in the way of calculating ideal dimensions of the system.

- **High system integrity**: availability to recover the system after any crash.

- **High system security**: secured communication entry points and encrypted information.

- **Centralized system supervision**: monitoring the system may be done from one centralized console.

1.3 Audience

This guide is intended for persons that will operate the ITM product.

1.4 Prerequisite

This guide is intended for persons that have a basic understanding of the following:
1. the NagraVision CAS

2. Use of Unix
3. UML diagrams

1.5 Document history

Version	Date, author(s)	Description
1.0.1	10.7.2000 Sébastien Ruffy	Chap 2.9: "SMS downtime management" added. Chap 2.10: "Ani provider" added.
1.0.0	15.3.2000 Sébastien Ruffy, Nicolas Pauli, Michel Buri	First version

1.6 Further reading

[1] SEP User Guide, SEP 0.8.0, Issue 1.0.0
[2] NSM Log Control User Guide, NSM 0.8.0, Issue 1.0.0
[3] SMS Gateway interface definition, Issue 2.6.1
[4] SEP Product Installation Check List, Issue 1.4.1
[5] NSM Product Installation Check List, Issue 0.0.3
[6] ITM Software Installation Guide, Issue 1.0.0

1.7 Conventions used in this guide

1.7.1 For windows

Item	Description
Menu commands	In **bold** type: e.g., Select **File** > **Save.**

1.8 Document content

After the **first chapter** introducing the ITM, **chapter 2** called "Basic business mechanism" gives the elementary principles of the application. A few diagrams will be given such as understanding the main components of the application. **Chapter 3** shows two operating modes ("nominal case" where no error is raised during command processing and a "non-nominal case" where any problem could occur). **Chapter 4** gives the available tools which may be used to monitor the application. **Chapter 5** deals with an example of common use of the ITM and **chapter 6** explains the startup and shutdown of the application. **Chapter 7** presents how one SMS command will pass through the ITM. **Chapter 8** briefly explains how to deploy the application and the last two chapters deal with Troubleshooting and maintenance aspects.

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1.8.1 Pull-quotes

Pull-quotes are used in this document to clearly draw your attention to some part of the text. See below for the pull-quotes used in this document. The name of the pull-quote or symbol is on the left (For clarity, these appear in the margins, clear of the main body text) and its purpose is detailed to the right.

Note	Indicates: Further information, advice or exceptions etc…

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2. Basic business mechanisms

2.1 Services

In addition to SEP and NSM services, a set of services has been developed to meet the ITM requirements.
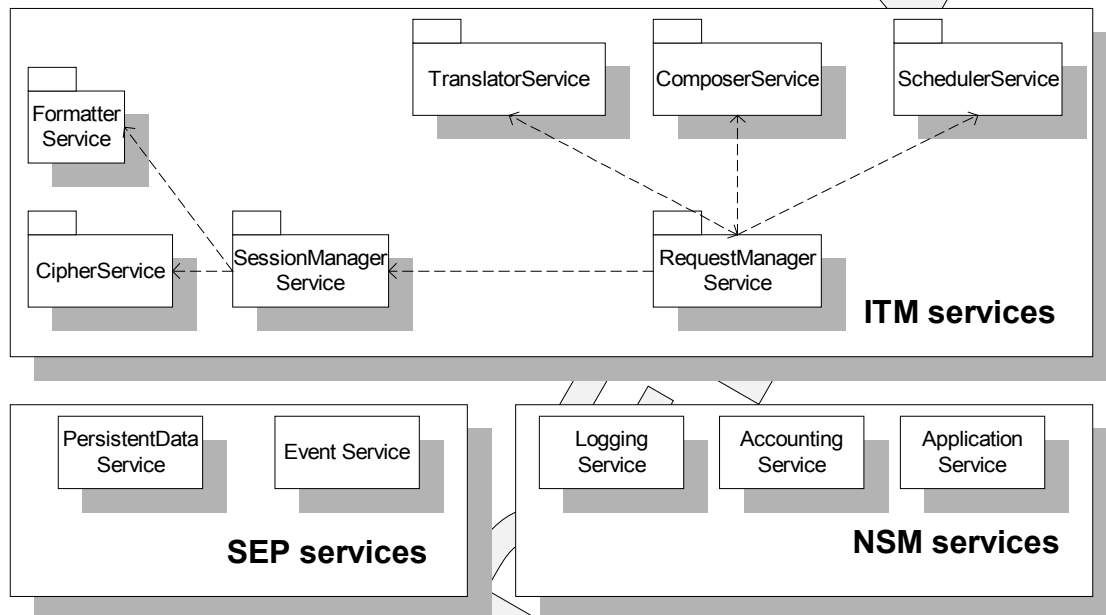
Fig. 2.1 - Services

ITM services

Formatter service: checks the format of commands and transforms them into internal representation.

Cipher service: secures messages.

Session manager service: manages the sessions in terms of communication and authentication.

Translator service: translates internal messages from a language to another one.

Composer service: arranges data in containers.

Scheduler service: lets create jobs with a given schedule.

Request manager service: manages the requests in term of ordering, scheduling and acknowledgements.

SEP services

Event service: offers a mechanism that reports application events. See [1] for a full description of this service.

NSM services

Logging service: offers a mechanism that logs the events. See [2] for a full description of this service.

Account service: manages the user accounts of the CAS system.

Application service: monitors the whole CAS application.

2.2 Components and processes

The following figure shows some components that will be used further on. The second figure is the ITM process's view.
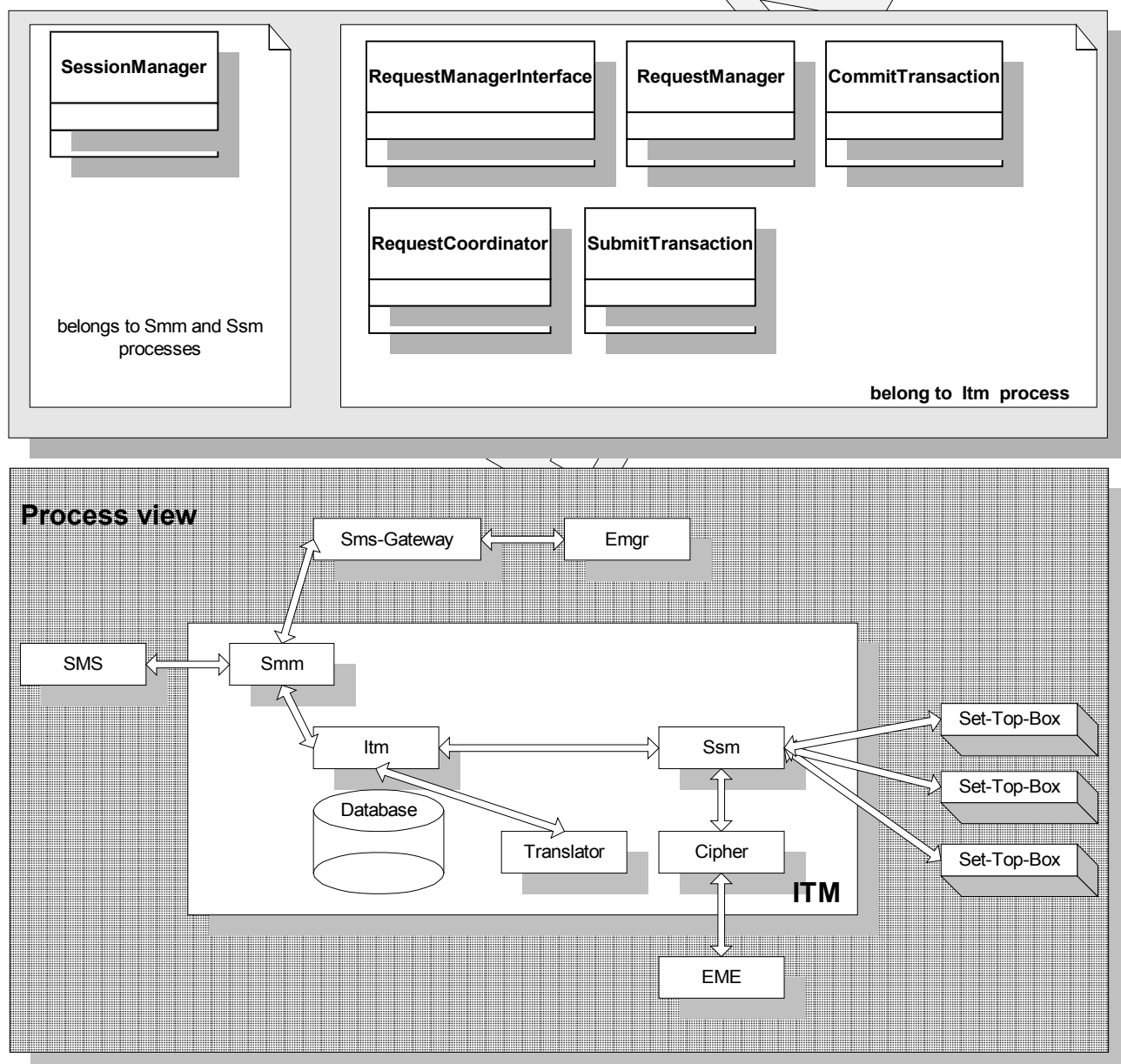
Fig. 2.2 - Components and processes

2.3 "2-Phase commit transaction" process

The "2-Phase commit transaction" (2PT) is used to execute functions without any present operator employee or subscriber. The functions that will meet this requirement are, e.g. typically:

- Adding rights
- Suspend STB
- Manage credit

The following figure shows the mechanism when processing a SMS command.
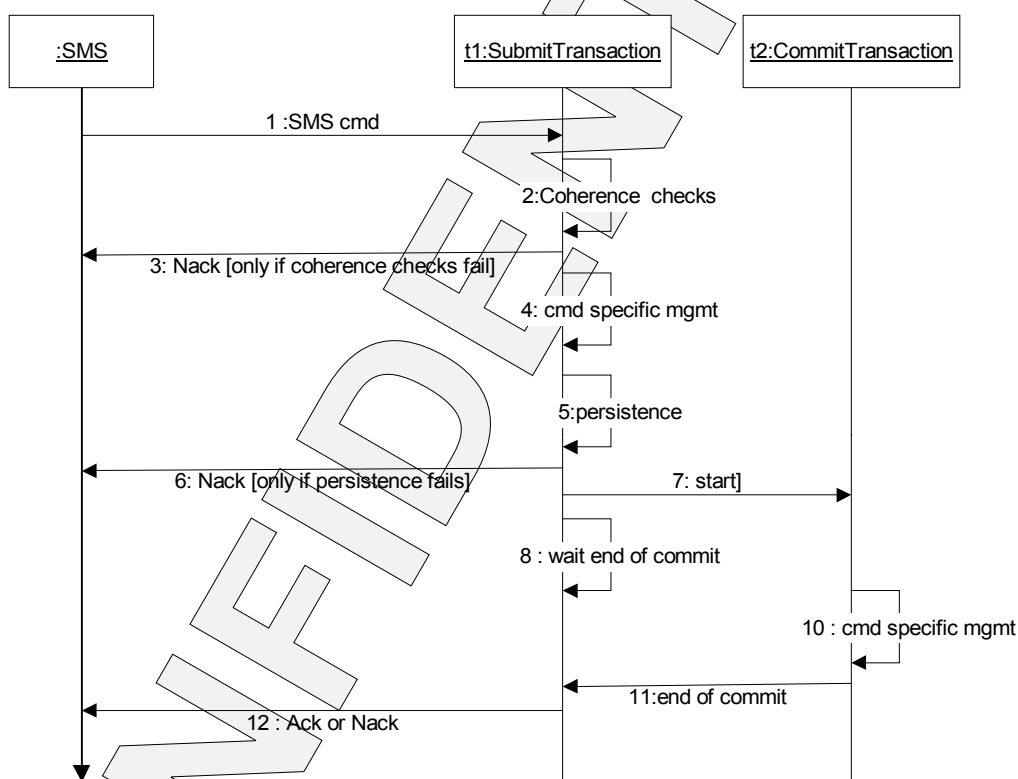
Fig. 2.3 - "2-Phase commit transaction" process

2.4 Request coordinator

On an incoming SMS command (as for a callback), the client creates a request and transmits it to an interface which is in charge of scheduling the execution of the request. Once the result of the request set, the synchronization is done through the "GetResult" method called by the client.
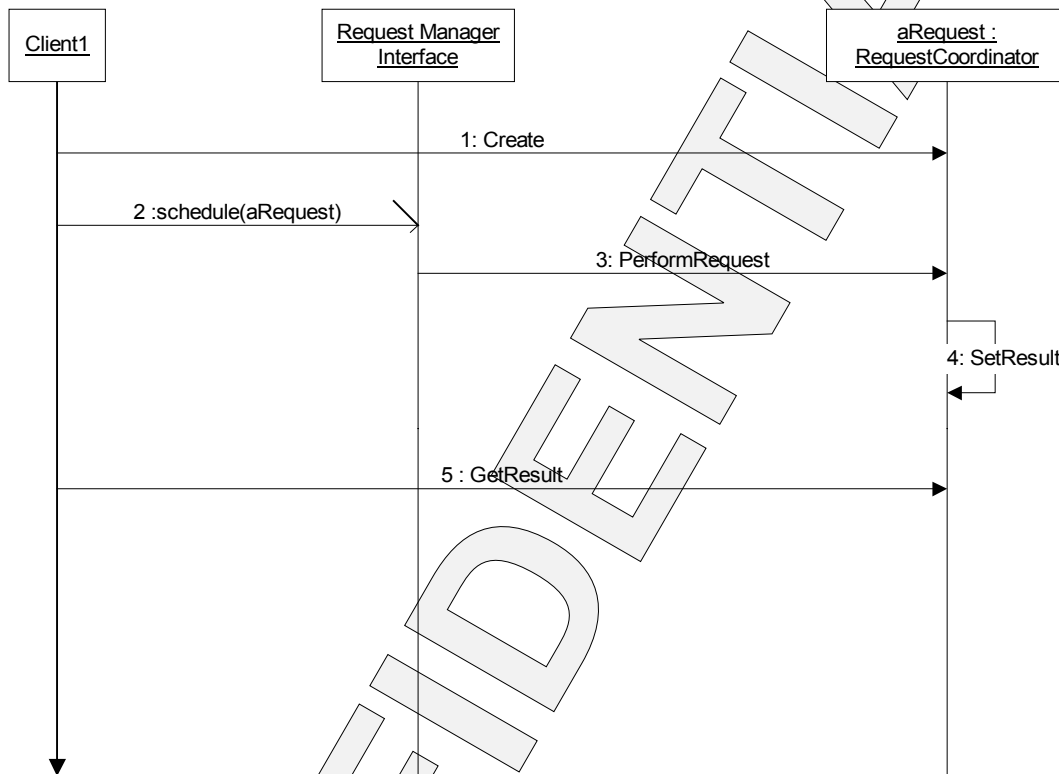
Fig. 2.4 - Request coordinator

2.5 Acknowledgement strategy

Two layers manage the acknowledgement strategy. A session manager performs the syntax checking and a transaction manager deals with the semantic check.
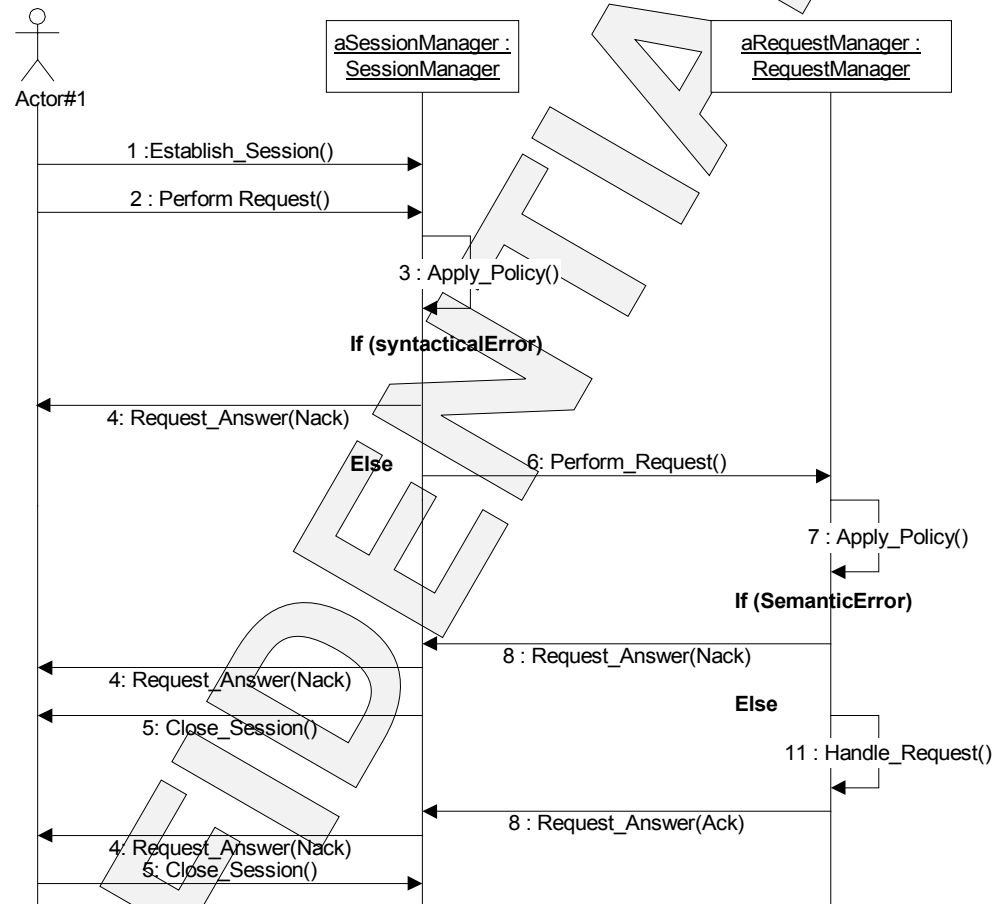
Fig. 2.5 - Acknowledgement strategy

2.6 Acknowledgement manager

When a feedback command is forwarded by the ITM to the SMS, a module called "ack manager" registers something called "ack coordinator" until the command has been acknowledged.
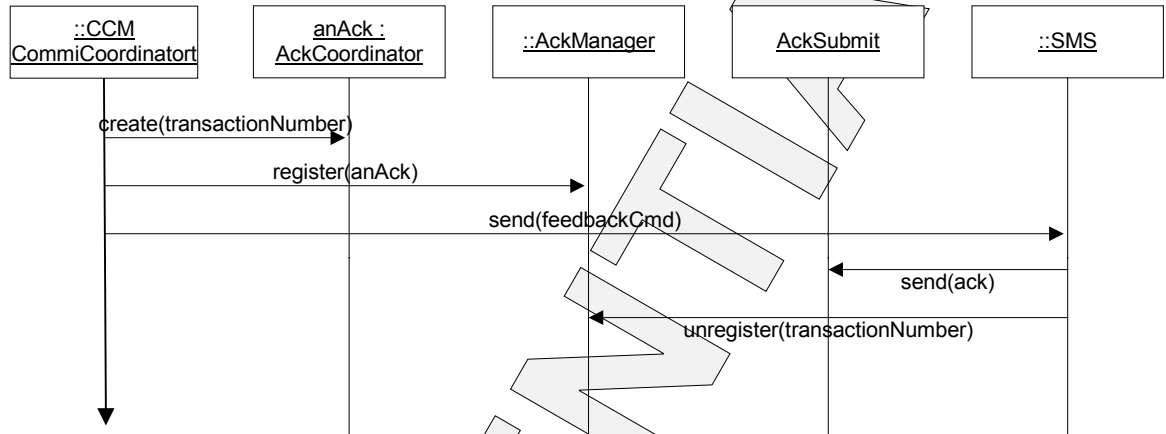
Fig. 2.6 - Acknowledgement manager

2.7 Connection and reconnection strategy

In case of communication loss, ITM components act as clients that connect to servers. In the following figure, an arrow from component c1 to c2 means that it's c1 that retries to connect to c2 when c1 cannot access c2.
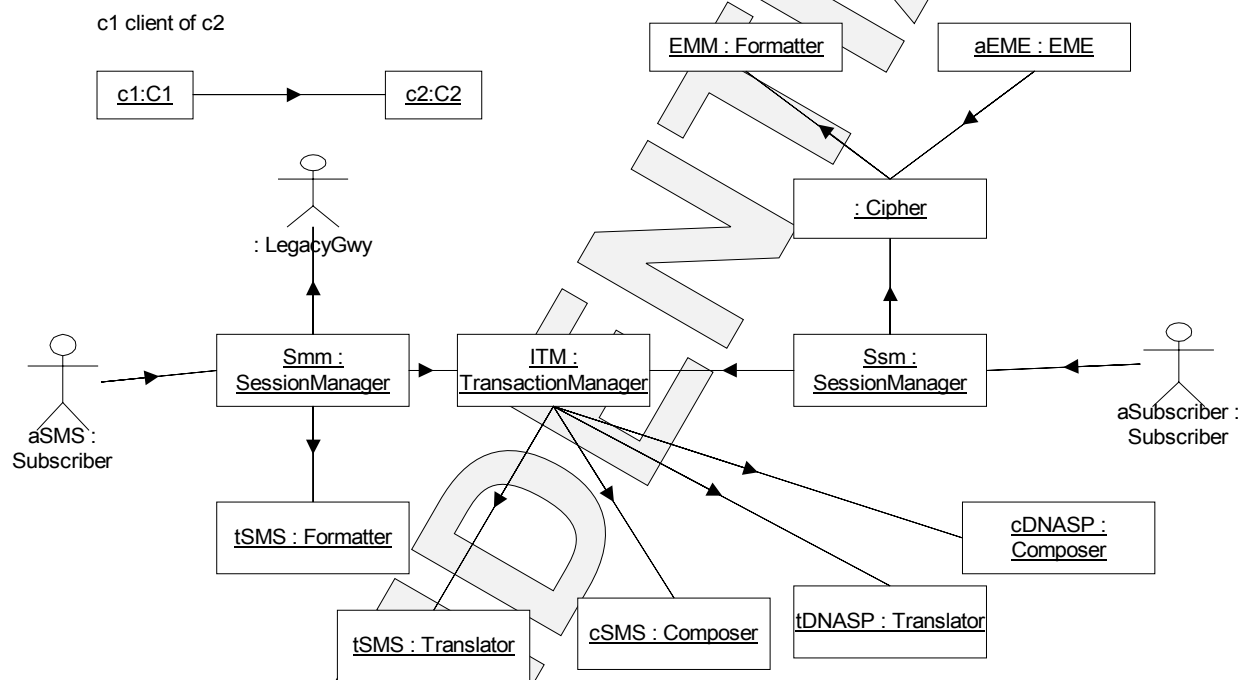
Fig. 2.7 - Connection and reconnection strategy

2.8 Smm routing table

When the SMS sends commands to Smm, the latter holds a table used to dispatch the commands to the SMS-Gateway and to the Itm. Some of them are only forwarded to the SMS-Gateway, some others are only forwarded to the Itm, and some to both SMS-Gateway and Itm.
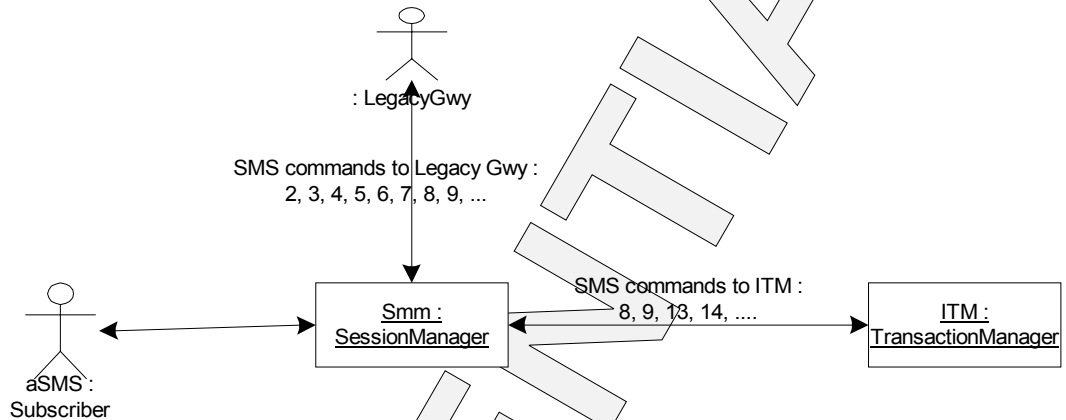
Fig. 2.8 - Smm routing table

2.9   SMS downtime management

For any unexpected reason, it may appear that the SMS could not be able to acknowledge the feedback commands. To handle such a situation, all the necessary information to build feedback commands have been persistently stored into the database. So, even if a callback is done during SMS downtime, the callback will be generated again later on. ITM configuration allows two ways of managing downtime management:

- Immediate mode

Feedback commands are generated at the callback. If the SMS does not acknowledge the command, the 2xx commands are built at the next callback.
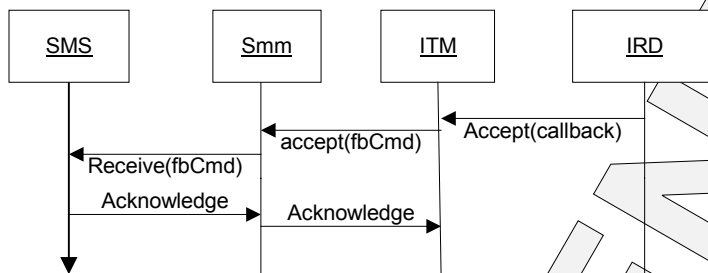
Fig. 2.9 – Immediate mode

- Batch mode

Every n minutes, a process wakes up and generates all the feedback commands of a subset of subscribers. On the next go, the process takes another subset and so forth.
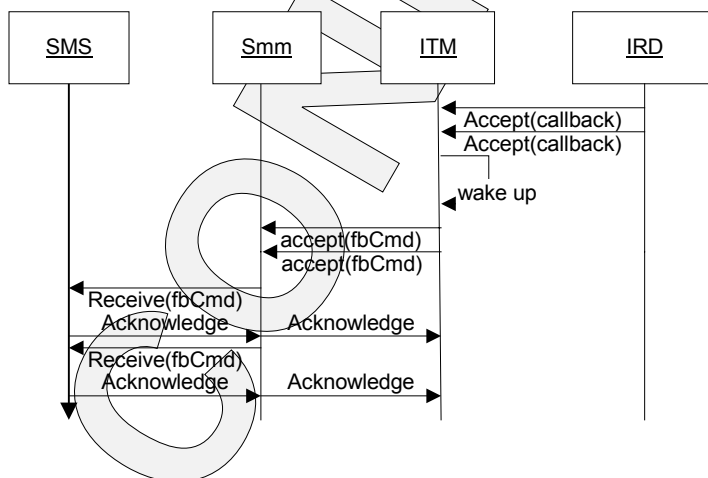
Fig. 2.10 – Batch mode

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2.10 ANI provider

ITM has been designed and implemented to work either with cable or phone return channel. In the first configuration, the set top boxes directly use TCP-IP protocol over the cable network. The other configuration is the one where the T1 protocol is implemented over the telephone line. To identify the caller, a module called "ANI provider" has been specially developed for that purpose. The following diagrams show the modules and the sequences involved during the IRD callback for the PSTN configuration.
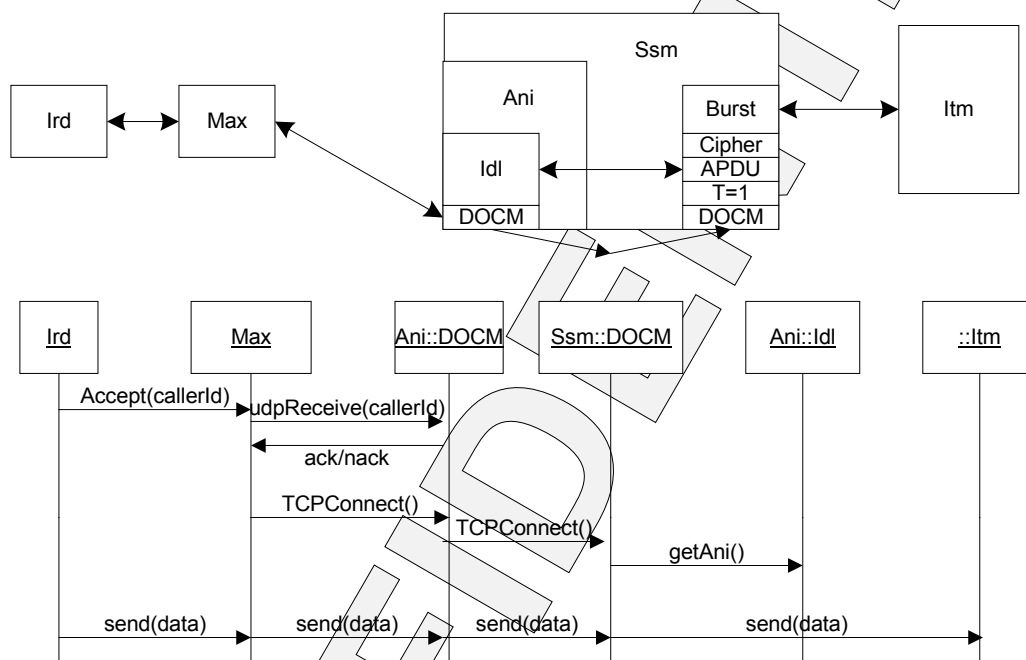
Fig. 2.11 – Ani provider

3. Operating modes

3.1 Nominal

In the nominal operating mode, the Smm only responds to SMS hits with positive acknowledgements (commands 1000), indicating that the command was successfully processed.

In that mode, the SMS also has to positively acknowledge the feedback commands returned by the Smm.
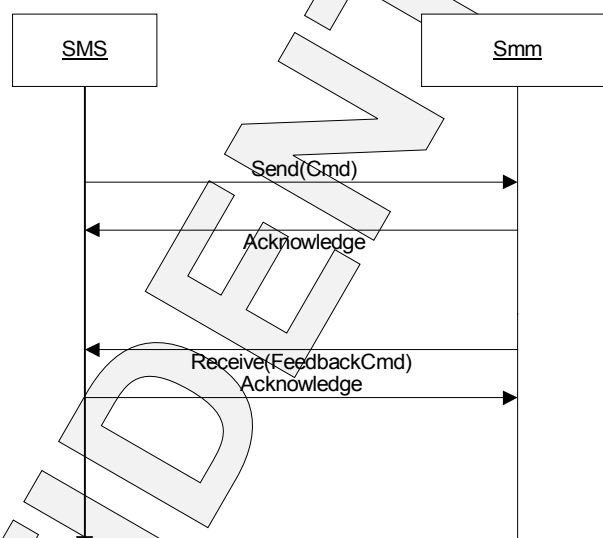
Fig. 3.1 - Operating mode: Nominal

3.2 Non-nominal

SMS to Smm

In the non-nominal situation, the Smm responds with negative acknowledgements (command 1001) to the SMS. It also may happen that the communication link is closed because of a missing SMS-Gateway.

The transaction number returned with the nack helps to know which was the component that generated the Nack:

- Transaction number = "0xxxxxxxx" when the Nack comes from the SMS-Gateway
- Transaction number = "5xxxxxxxx" when the nack comes from the Smm
- Transaction number = "6xxxxxxxx" when the nack comes from the Itm
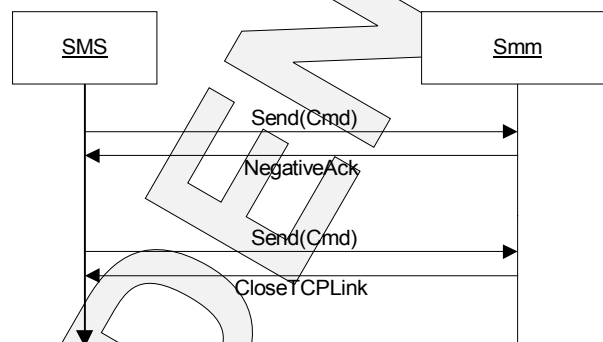
Fig. 3.2 - Operating mode, *SMS to Smm* : Non-nominal

Smm to SMS
For unknown feedback commands, the SMS will also have to respond with Nacks.
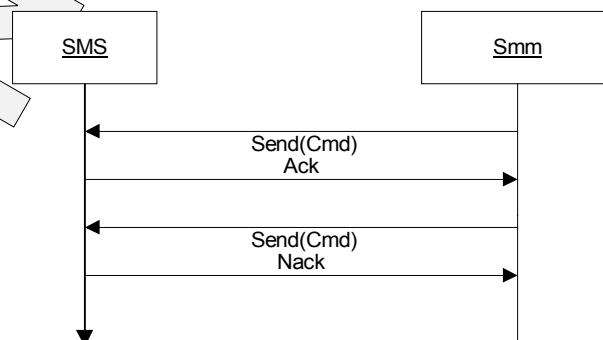
Fig. 3.3 - Operating mode, *Smm to SMS*: Non-nominal

4. Tools

Some tools are included in the ITM package, the main ones actually consist in:

- Checking the presence of the processes
- Monitoring the output of each component

4.1 Checking the processes

The command "sys_itmsoft" displays the ITM processes with their memory and their elapsed time.

4.2 Checking the whole application

The command "check_itmsoft" performs a full check of the application. Type "check_itmsoft -h" to have a brief description of the command.

4.3 Connection to Oracle server

The first thing done by the command "check_itmsoft" is to connect to the Oracle server to insert a given Ua into the database and to delete the IPPVs and callbacks if they exist. If no Oracle error appear at the startup, it means that ITM environment is correctly set to access the ITM database.

4.4 Complete execution of a callback

After the database initialization, the tool initiates a callback towards the Ssm. A message is informing that the callback is in progress and that it will take a few seconds. During this callback, a SMS simulator is launched and connects to the Smm to receive and to acknowledge the feedback commands. By that way, 17 IPPVs will be transmitted to the SMS and inserted into the database.

At the end of the execution, the message "check successfully done" ensures that the callback has been properly completed and that all the feedback commands have been positively acknowledged. In case of any error, the operator will get a message indicating the faulty step and some instruction to recover the situation.

4.5 Check the four callback reasons

Followed by the option "-f", the "check_itmsoft" command will generate callbacks covering the four call reasons, that's to say:

- Regular callback
- Low memory
- Low credit
- Immediate callback

As described above, these callbacks will inform the operator about the status of the check.

4.6 Troubleshooting

When the "check_itmsoft" fails, a message indicates the error and how to recover from any malfunction. The following situations are the most common:

- A SMS is already connected on the feedback port. The operator has to ask for stopping the SMS such as closing the TCP communication link.

- The connection to the Oracle server could not be done. Check the environment variables TWO_TASK, ORACLE_USER and ORACLE_PASS. Check also that the file "tnsnames.ora" from the $TNS_ADMIN directory contains the right section for the ITM instance.

- An ITM component is missing. Use one of the following commands to check that the corresponding process is running: "check_smm", "check_itm", "check_chipher", "check_ssm", "check_translator".

4.7 Monitoring the application

A command for each ITM process is available to observe the output of the processes. For example, the command "mon_itm" will show the output of the ITM process (the same for "mon_smm", "mon_ssm" and "mon_translator").

How to monitor the processes and the components of the ITM with the NSM console will not be described here in details because it is a future use. Nevertheless the following figure gives an idea of how it will work.
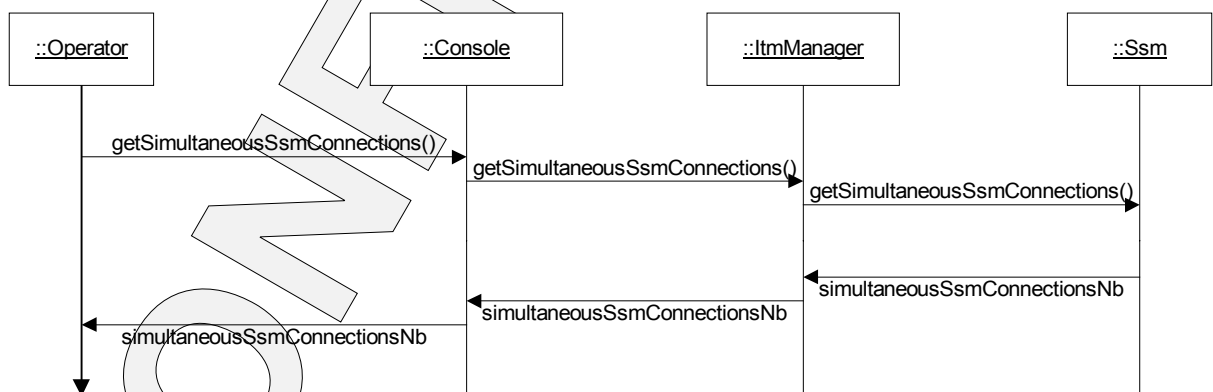
Fig. 4.1 - Monitoring the application

5.   Getting started

5.1   Generating a callback

The purpose of this section is to describe the ITM mechanism when a Set-Top-Box calls the CAS system.

5.1.1   Callback properties

Callback reasons
There are 5 reasons for a set top box to call the CAS system:

- *Immediate*: executed just after a request of the SMS.
- *Regular*: executed every n days.
- *Low memory*: generated if there is a lack of memory inside the ICC.
- *Low credit*: generated if the credit is under the credit threshold.
- *Maintenance*: not described here because customer specific.

The way to recognize the callback reason for a given Ua is to fetch data from the ITM database. This operation will be available in future through the NSM console.

Callback data
The data involved during a callback are CCMs and EMMs. CCMs are going from the IRD towards the ITM and EMMs are issued from the ITM to the IRD. For security reasons, the description of the fields of both messages (EMMs and CCMs) won't be given in the present document.

5.1.2   From Set-Top-Box to Itm

This section describes the data flow generated to the Itm during a regular callback. Another section will handle the data flow from the Itm to the SMS.

Set-Top-Box call
The first thing executed by the box is to connect to the ITM and to initialize a logon procedure. If this operation fails, the connection is closed by the ITM.
Once connected and identified, the box is able to send one or several CCM separated by APDU messages.

Message processing
The message processing mainly consists in exchanging CCMs, EMMs and feedback commands. At first, the CCM(s) is deciphered before being handled by the Itm. The latter uses the translator to return the EMMs and to generate the feedback commands. The following figure summarizes communication exchange involved during a callback.

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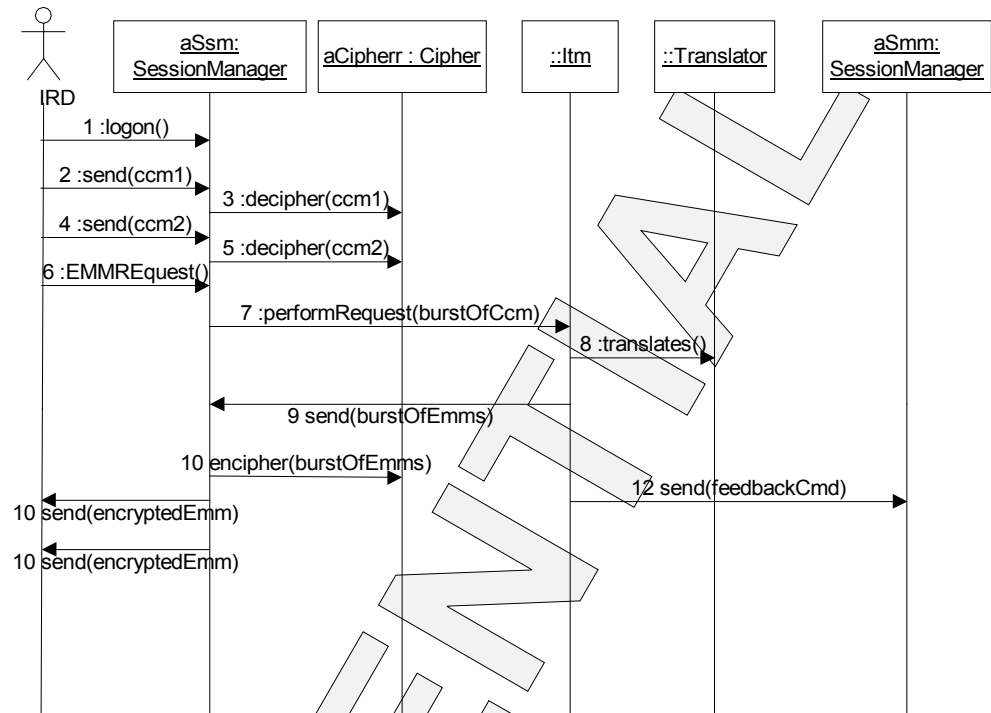
Fig. 5.1 - Data flow from Set-Top Box to ITM

Monitoring

Any relevant event (connection/disconnection, data hit, exceptions, …) is reported to an event reporting or a program that reads the output of the components.

5.1.3   From Itm to SMS

SMS connection

Before being able to retrieve one feedback command from a given TCP port, the SMS must identify itself by issuing a command 1002 where it gives its source id.

Note	• If the SMS does not send a command 1002 with the right source id, it won't be able to receive the feedback commands.

Message processing

When the Itm has processed a burst of CCMs, it is able to translate them into feedback commands and sends them to the Smm. The Smm then forwards these feedback commands to the right SMS.

Each feedback command will have to be acknowledged by the SMS. If the SMS responds with a negative acknowledgement, the command is not sent again by the ITM. The following figure shows this message processing.
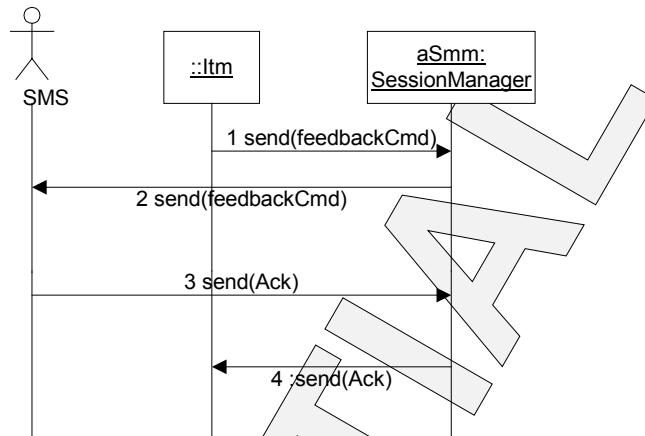
Fig. 5.2 - Data flow from Itm to SMS

Monitoring
When a feedback command is passing through the Smm, an event is generated and may be consequently traced in the event reporting.

5.2 Issuing a SMS command

The purpose of this section is to describe the ITM mechanism when a command is sent by the SMS.

5.2.1 From SMS to Smm

SMS connection
The communication protocol between the SMS and the CAS system is the DEVICE_IO protocol (a description of this protocol is given in [3]). In this protocol, the SMS is a client that connects to the CAS system and once the connections have been established, it's then possible for the SMS to issue business commands on one link as well as retrieving feedback commands on another link.

Note	• The entry communication point the SMS has to connect to are two parameters of the Smm component. Please ask for Nagra support to get these values.

Business commands
Once the "DEVICE_IO" connection has been established, the Smm is then ready to accept and process business commands. These commands will be dispatched in different ways over the CAS components, depending on their type. The description of each of these commands is given in [3].

Note	• The field "source_ID" the SMS has to use in any business command is a parameter of the Smm component. Please ask for Nagra support to get this value.

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Command acknowledgement
An acknowledgement (positive or negative) is generated when the CAS system receives a business command. On the other hand, operating commands are generated by the SMS to acknowledge feedback commands. Again, [3] gives a full description of theses acknowledgements returned to the SMS.

Note	• Acknowledgements returned to the SMS may be generated by the ITM components as well as the SMS-Gateway or by the EMGR.

SMS disconnection
To disconnect from the CAS system, the SMS will have to close the TCP-IP communication link it holds with the Smm.

Monitoring
All the events generated by the ITM components may be forwarded to one or several different event reporting. In this way, events such as SMS connection/disconnection or SMS commands hits are reported to the operator through the event reporting.

Error handling
Negative acknowledgements are the way to signal to the SMS any trouble with a given command. Nevertheless, some situations of trouble on the components themselves may bring to communication closure (if the SMS-Gateway or the Smm are down for example).

5.2.2   From Smm to SMS-Gateway

Smm connection
The connection between the Smm and the SMS-Gateway is automatically established after the first command sent by the SMS.

Command dispatching
One of the Smm tasks is to dispatch business commands received from the SMS. Some of them are only sent to the SMS-Gateway, some others only to the Itm and a few of them are forwarded to both of them (SMS-Gateway and Itm).

Monitoring
The commands forwarded to the SMS-Gateway and their relative acknowledgements are logged onto a file called SMS_GATEWAY_IO.LOG-X in the $acs_log directory. Use the command "sig 3 sms_gateway" to flush the last(s) processed command(s) onto the last version of the file.

Error handling
Any error raised by the SMS-Gateway or the EMGR generates a Nack that is returned to the SMS without affecting the ITM components.

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5.2.3   From Smm to Itm

Smm connection
The connection between the Smm and the Itm is automatically done at Smm startup.

Command processing
The commands received by the Itm mainly generate accesses to a database that stores data for the UA.

Monitoring
All the Itm processing can be monitored with the command "mon_itm" or through the event reporting.

Error handling
A Nack is generated for any problem raised during command processing of Itm component. If, for any reason, the Itm were down, a Nack is also generated with a status "POSTPONED".

6. Starting and exiting

6.1 Start up

The command "start_itmsoft" starts the whole set of ITM components. This command sequentially launches:

1. A cipher that makes the interface with the EME.
2. A Smm ready to accept SMS commands
3. A translator used by the Ssm
4. A Ssm ready to accept IRD calls
5. An Itm ready to process SMS commands and feedback commands.

Note that each of these components can be independently started with a corresponding command ("start_cipher", "start_smm", "start_translator", "start_ssm" and "start_itm").

6.2 Exiting

The command "stop_itmsoft" stops the whole set of ITM components. This command sequentially stops:

1. The Itm
2. The translator
3. The Ssm
4. The Smm
5. The cipher

Note that each of these components can be independently stopped with a corresponding command ("stop_itm", "stop_ssm", "stop_translator", "stop_smm", "stop_cipher").

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7. Example of use

7.1 Checking the ITM components

Before sending and tracing a SMS command, it is necessary to check that all the Itm components are up and ready.

For that, two things must be done:

1) Use the command "sys_itmsoft" to check that all the ITM processes are running.

2) Start a probe on the event reporting and check that no error event is generated by any component.

7.2 Checking the ACS processes

A check must also be done to be sure that the SMS-Gateway, EMGR and Pa processes are up and running. Type the command "sysacs" to observe that they are returned by the command.

7.3 Issuing and tracing "create credit for impulse purchase"

This section shows how the command "create credit for impulse purchase" is going through the CAS. This business command has been chosen because it is sent to the SMS-Gateway and to the ITM.

Starting a SMS simulator

Type the command "xsim SMS" from any terminal to start a SMS simulator.

| Note | • Starting the x simulator automatically opens a DEVICE_IO connection with the SMS-Gateway. So once started, it's necessary to choose **commands > disconnect**, then **commands > preferences** to redefine the port the simulator has to connect to. Ask for Nagra support to get the value of the "Host Name" field. The latter must look like "xxx.xxx.xxx.xxx/<port_number>.FTCP". |

Starting an ITM probe

The events passing through the event reporting may be displayed by an event viewer. How to start such an application is not described here.

Displaying the output of the Itm

In a new terminal, use the command "mon_itm" to display the output of the Itm component.

Building and sending the command

Before sending the command to the Smm, it's necessary to send the command 104 such as storing the initial data into the database. In the X simulator, choose:

Root header > Sms Cmd Header > source ID = 1234

Root header > Cmd Type = CONTROL

Apply

Command Header > EMM Header U > BRD EDATE = Date of tomorrow

Command Header > EMM Header U > UA MIN = 3

Apply

Command Body > Create CC ICC > UA = 3

Apply

header > Sms Cmd Header > source ID = 1234

Root header > Cmd Type = EMM

Apply

Command Header > EMM Header U > BRD EDATE = Date of tomorrow

Command Header > EMM Header U > UA MIN = 3

Apply

Command Body > Create Credit > CREDIT = 100

Command Body > Create Credit > THRESHOLD CREDIT = 50

Apply

The command is now ready to be sent to the Smm. Before doing that, open a new terminal and type the command "sms_probe". Check also that the terminal showing the output of the Itm is open.

In the X simulator, push the **Send** button to send the command to the Smm. The sms_probe will first show some activity indicating that the EMGR is processing the command. The output of the Itm also shows that it is handling the command.

In the X simulator, an Ack should be displayed (command id = 1000), indicating that the command was successfully processed.

8. ITM Deployment

8.1 Initial installation/upgrade

The installer "nagra_install" will be used to perform an initial installation or an upgrade of the ITM application. Please refer to [6] to have a full description of the ITM installation.

8.2 CC to ITM migration

When the ITM must replace an existing call-collector, a migration phase will be necessary to export the data from the legacy database to the new one. Because this migration may be customer specific, a separate document will describe in details such a migration. We give however the main operations to follow:

- Backup the CC database and stop the CC application
- Install the ITM application
- Load the data from the CC backup to the ITM database
- Start the ITM application

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9. Troubleshooting

9.1 Operating system problems

Because the ITM is installed under an ASE service (either imssoft, acssoft or itmsoft), all the ITM processes will automatically be restarted using the ASE redundancy. If a disk crash occurs on "oraserver" (the machine where the database server runs), the unique way to recover the data will be to restore the database backup. See chapter 10 to have a description of the maintenance of the ITM application.

9.2 Application problems

9.2.1 SMS connection

The following table gives the check-list to use when the connection between the SMS and the Smm cannot be established.

Check point	Action to perform	Action to recover
Smm started ?	Use the command "sys_smm" to see whether the process is running.	"start_smm" to start the process.
Communication port ready ?	Use the command "netstat –a / grep <port_number>" to see whether the port is in the "LISTEN" state.	If the port is in a "TIME_WAIT" state, stop the process and wait for 60 seconds before restarting it.
SMS-Gateway ready ?	Use the command "sysacs" to check that the process is running.	"start_smsgwy" to start the process.

9.2.2 Nack returned to the SMS

Next table deals with the situation where command 1001 (Nack) is systematically returned upon a business command issue.

Check point	Action to perform	Action to recover
What type of error is it ?	Look at the "error code" and "error code extension" fields of the command 1001 to have a better idea of the problem ([3] gives a whole description of the error codes and their extension).	Send the command again once the correction of every field of the command has been done.
Where does the Nack come from ?	Look at the value of the transaction_number. If it's like "'0xxxxxxxx", it means that the Nack has been generated by the SMS-Gateway. If it's like "5xxxxxxxx", it means that the Nack has been generated by the Smm. If it's like "6xxxxxxxx", it means that the Nack has been generated by the Itm.	If the error is generated by the SMS-Gateway, use the command gshow or cshow to get more information about the problem. If the error comes from the Smm, it's probably one of the command fields which has a syntax error. If the error is generated by the Itm, look at the output of the Itm to have a better idea of the problem.

| What caused the error ? | Look at the Itm's output. Depending on the displayed messages, the main problems are:
- syntax error
- semantic errors (ex : date out of range)
- Itm not running
- Oracle database error | First, try to restart the Itm. If an Oracle error is always raised, check on oraserver that the listener process is up and running. |

9.2.3   Ack/Nack not returned to the SMS

When the Smm does not respond to a command sent by the SMS, it is necessary to stop the Smm and Itm processes before restarting both of them.

9.2.4   Feedback commands not retrieved

If the SMS is not able to retrieve feedback commands, execute the following check list to solve the problem.

Check point	Action to perform	Action to recover
SMS connected ?	Use the command "netstat –a ¦ grep <port_number>" and check that the port is in the "ESTABLISHED" state.	SMS must connect to Smm.
Did SMS send command 1002 ?	See the log files of the Smm to know whether command 1002 has been sent with the right source id.	Once connected, the first thing the Smm has to do is to send the command 1002 with the right source id.
Is there any IPPV to retrieve?	Look at the IPPV table in the Oracle instance to check the presence of records to retrieve.	- Log on oraserver as Oracle user. - Export the ORACLE_SID variable - Open a sqlplus session - "Select count(*) from ippv;" - quit sqlplus session

10. Maintenance

10.1 Product support

Your entitlement to troubleshooting support and maintenance assistance is bound to the contractual terms and agreed conditions with NagraVision.

10.2 General

Apart from the backup of the Oracle database, the ITM needs no regular maintenance to maintain its performance.

10.3 ITM database maintenance

10.3.1 Database backup

The ITM database backup is an operation that must be manually and daily executed by the operator in charge of maintaining the system. Note that this operation does not require to stop the ITM application. The following commands must be entered in sequence:

command	Description
> rlogin –l oracle itmora	Logs on to the oracle account on the Oracle server.
> export ORACLE_SID=<ITM_SID>	Exports the ORACLE_SID environment variable to point to the <ITM_SID> of the ITM database.
> cd ~/upgrades/itm<ITM_SIDNb >/v< ItmDbVersion >/bin	Change to the directory containing the database scripts.
> ./db_backup ITM	Database backup. This operation generates a file which location is given at the backup's end.
Save data file on tape device	Copy the database file on tape device. This operation is not described in the present document because it depends on the site configuration

10.3.2 Database restore

Restoring the ITM database will have to be done in exceptional situations where a system crash has brought data into an unrecoverable state. This operation will have to be manually done and consists of the following operations :

command	Description
Restore data file from tape device	This operation is not described in the present document because it depends on the site configuration.
> rlogin –l oracle itmora	Logs on to the oracle account on the Oracle server.
> export ORACLE_SID=<ITM_SID>	Exports the ORACLE_SID environment variable to point to the <ITM_SID> of the ITM database.
> cd ~/upgrades/itm<ITM_SIDNb>/v< ItmDbVersion >/bin	Change to the directory containing the database scripts.
> ./db_restore SAS <ItmDbVersion> N Y	Database backup. This operation generates a file which location is given at the backup's end.

10.3.3 Database purge

The ITM database purge is also an operation that must be manually and daily done by the operator in charge of maintaining the system. Note that this operation does not require to stop the ITM application. The following commands must be entered in sequence:

command	Description
> rlogin –l oracle itmora	Logs on to the oracle account on the Oracle server.
> export ORACLE_SID=<ITM_SID>	Exports the ORACLE_SID environment variable to point to the <ITM_SID> of the ITM database.
> cd ~/upgrades/itm<ITM_SIDNb>/v< ItmDbVersion >/bin	Change to the directory containing the database scripts.
>sqlplus <itm_user>/<itm_pass>	Open
> ./ItmdbPurge	Database purge. This operation deletes old data stored in the database.
SQL > quit	Quits the sqlplus session.

10.4 Anomalies with functionality

10.4.1 Reporting anomalies to NagraVision

Before contacting NagraVision with the address "support@nagra-kudelski.ch", please write following information down:
- ITM version

Glossary of terms

Term	Definition
Conditional Access System (CAS)	System granting access rights to the subscribers.
Fields	In this document, the term "field" stands for the data contained in a SMS or IRD command.
Product	Regular subscription or pay per view (or set of them) a subscriber can watch on its TV.
Session	There are two types of sessions mentioned in this document : - IRD sessions, which is the mechanism the receiver uses to connect to the ITM. - Oracle sessions, which is the Unix logon as Oracle user.
Subscriber	A subscriber owns an ICC and an IRD.
Subscriber Management System (SMS)	Entity which sends and receives commands to the CAS system.

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