**Binary for Windows - MAP**

**Release Notes for Version 4.02**

## 1. Overview

This release enables the proprietary CHECK-IMEI service operation, introduced for MAP-V1 in the last release, for MAP-V2 application contexts. The release also fixes handling of Abort PDU data received in U-ABORT messages from the TCAP layer.

This release implements a new MAP service – AnyTimeModification. The new service is defined as per the 3GPP TS 29.002 v8.2.0 specification. It also supports the operation Extended-Begin-Subscriber-Activity service for V1.

This release changes the module operation so that dialogues are closed, if formatting or parameter errors are detected in TCAP messages. It also implements a new message to enable the user to query dialogue status.

This release also fixes a number of outstanding faults.

The improvements in Dialogue handling included in this release can affect the situations and ways a dialogue can be closed. This revised handling can be disabled. In other respects this release is backwards compatible with the previous release.

## 2. New functionality

### 2.1 Custom CHECK-IMEI handling for MAP-V2

The proprietary extensions to the CHECK-IMEI service introduced in the last release have been made available for MAP-V2. The operation and parameters for these extensions are the same as detailed, for MAP-V1, in the last release.

### 2.2 TCAP message errors cause Dialogue closure

In previous releases when the MAP module detected errors in the message formatting or parameters received from the TCAP network layer, the message just returned a status error and left the dialogue open. This could cause dialogues to be left open indefinitely.

This release has changed module operation on detection of TCAP received message errors. The module will now attempt to close the dialogue if errors are detected in the TCAP message. The following errors will cause this to happen –

- MAPSWE_INVALID_DLG_ID (for TCAP messages only)
- MAPSWE_TCAP_BAD_FMT
- MAPSWE_TCAP_MAND_MISSING
- MAPSWE_BAD_TCAP_PRIM
- MAPSWE_TCAP_PAR_FMT_ERR
- MAPSWE_TCAP_UNREC_PARAM

When the dialogue is closed, the module will send a U-ABORT message to TCAP with an Abort PDU of Provider Abort Info - Abnormal Dialogue. A P-ABORT message is also sent to the MAP-User (so long as the MAP-User is aware of the dialogue) with a Provider Reason of 'Abnormal MAP dialogue'. The module will continue to report the error by sending a MAP_MSG_ERROR_IND message and set an error code in the status field of any confirmation message.

For MAPSWE_INVALID_DLG_ID errors, MAP will send a minimal (no parameters) U-ABORT to TCAP to abort the dialogue and nothing to the MAP-User.

For users that do not want this functionality, a new option bit is defined that will instruct the module not to abort dialogs when TCAP errors are detected, i.e. to revert to the 'old' module operation.

| Bit | Mnemonic | Description |
|---|---|---|
| 4 | MAPF_NO_TCAP_PERR_ABORT | If set to 1, the MAP module will only report formatting or parameter errors detected in received TCAP messages by setting an error code in the message's status field. The associated dialogues are not closed.<br><br>If set to 0, the MAP module will attempt to close dialogues if formatting or parameter errors are detected in received TCAP messages by sending U-ABORT to TCAP and P-ABORT to the MAP-User.<br><br>It is recommended that applications set this option to 0. |

## 2.3 Extended-Begin-Subscriber-Activity-Operation

The Extended-Begin-Subscriber-Activity operation is now implemented for V1 as follows:

| Operation | Dec | Hex |
|---|---|---|
| MAPOP_Ext_BeginSubscriberActivity | 253 | 0xFD |

| Extended-Begin Subscriber Activity | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V1 |
| Invoke ID | M | V1 |
| MSISDN | M | V1 |
| IMSI | M | V1 |
| OriginatingEntityNumber | M | V1 |

**MAP – Parameter and Primitive Formats**

The following tables identify the format of primitives for the new MAP service

| Primitive | Mnemonic | Value (dec) | Value (hex) |
|---|---|---|---|
| MAP-EXT-BEGIN-SUBSCRIBER-ACTIVITY-IND | MAPST_EXT_BEGIN_SUB_ACTIV_IND | 114 | 0x72 |
| MAP-EXT-BEGIN-SUBSCRIBER-ACTIVITY-RSP | MAPST_EXT_BEGIN_SUB_ACTIV_RSP | 229 | 0xe5 |

The response can only be issued if the error UnexpectedDataValue is reported.

## 2.4 New custom parameter OriginatingEntityNumber

| Parameter | Mnemonic | Value (Decimal) | Value (Hex) |
|---|---|---|---|
| Originating Entity Number | MAPPN_origentitynumber | 516 | 204 |

| | |
|---|---|
| Parameter Name | MAPPN_origentitynumber |
| Parameter Length | Variable, 1 to 9. |
| Parameter Data | This parameter contains the VLR number. |

## 2.5 MAP Dialogue Status message

This message allows the user to query the MAP module to determine its current status of a dialogue. The user should send the message with the version initialized with all other fields set to zero.

The module sending the message should request that a confirmation message is returned by the MAP module after the message has been processed. This is achieved by setting the rsp_req field in the message header.  This will cause a confirmation message of the same format to be returned. The status field in this message is zero on success or an error code otherwise.

| MESSAGE HEADER | |
|---|---|
| **FIELD NAME** | **MEANING** |
| **type** | **MAP_MSG_R_DLG_STATUS** (0x67ef) |
| **id** | Dialogue id |
| **src** | Management module id |
| **dst** | **MAP_TASK_ID** |
| **rsp_req** | Sending layer's bit must be set |
| **hclass** | 0 |
| **status** | 0 |
| **err_info** | 0 |
| **len** | 50 |

| PARAMETER AREA | | |
|---|---|---|
| **OFFSET** | **SIZE** | **NAME** |
| 0 | 1 | version - must be set to zero |
| 1 | 1 | Dialogue state (see table below) |
| 2 | 2 | tcap_dlg_id |
| 4 | 1 | dest_address length |
| 5 | 18 | dest_address |
| 23 | 1 | orig_address length |
| 24 | 18 | orig_address |
| 42 | 2 | **num_invokes** - number of active invokes in a dialogue |
| 44 | 2 | Network Context |
| 46 | 1 | Application Context Name |
| 47 | 1 | Application Version |
| 48 | 2 | reserved – must be set to zero |

## Dialogue State

| Dialogue State Values | |
|---|---|
| **Name** | **Value** |
| DSM_S_IDLE | 0 |
| DSM_S_WAIT_INIT_DATA | 1 |
| DSM_S_WAIT_USER_REQ | 2 |
| DSM_S_DLG_INIT | 3 |
| DSM_S_DLG_PEND | 4 |
| DSM_S_DLG_ACCEPT | 5 |
| DSM_S_DLG_EST | 6 |
| DSM_S_END_COMP | 7 |
| DSM_S_WAIT_COMP | 8 |
| DSM_S_RXED_OPEN_RSP | 9 |
| DSM_S_DLG_TERM | 10 |
| DSM_S_CLOSE_WAIT_COMP | 11 |

## 2.6 Send-Authentication Mandatory Parameters for V3

According to the specifications, it is possible to resend this operation without parameters. This was not possible with mandatory parameters MAPPN_imsi and MAPPN_nb_req_vect. These parameters have now been made optional.

## 2.7 MAP_MSG_CONFIG and MAP_MSG_NC_CONFIG Tracing

Tracing has now been enabled for the Network Context Configuration message MAP_MSG_NC_CONFIG. A new non-primitive trace mask definition MAPNPM_NC_MSK (Value = 0x00000080) has been added to enable this tracing.

The Module Configuration message MAP_MSG_CONFIG can now be traced. As for other message tracing, tracing of this message is enabled by using the MAP_MSG_TRACE_MASK message. To enable tracing of the Module Configuration message, the 'non_prim_mask' parameter should have the MAPNPM_CFG_MSK bit (0x0002) set to 1.

## 2.8 MAP AnyTime Modification Service added

AnyTimeModification has been added to the services supported by the MAP module.

The following Service Type Primitives are added for the new service –

| Primitive | Mnemonic | Value (dec) | Value (hex) |
|---|---|---|---|
| MAP-ANYTIME-MODIFICATION-REQ | MAPST_ANYTIME_MOD_REQ | 115 | 0x73 |
| MAP-ANYTIME-MODIFICATION-RSP | MAPST_ANYTIME_MOD_RSP | 231 | 0xe7 |
| MAP-ANYTIME-MODIFICATION-IND | MAPST_ANYTIME_MOD_IND | 116 | 0x74 |
| MAP-ANYTIME-MODIFICATION-CNF | MAPST_ANYTIME_MOD_CNF | 232 | 0xe8 |

| ANY-TIME-MODIFICATION | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V3 |
| Invoke ID | M | V3 |
| IMSI[1] | C | V3 |
| MSISDN | C | V3 |
| GSM SCF Address | O | V3 |
| Modification Request for CF Info (O) | | |
| SS Code | O2[2] | V3 |
| Bearer Service | C2 | V3 |
| Teleservice | C2 | V3 |
| Ext SS Status | O2 | V3 |
| Forwarded to Number | O2 | V3 |
| Forwarded to Subaddress | O2 | V3 |
| No Reply Condition Time | O2 | V3 |
| MR CFInfo Notification to CSE | O2 | V3 |
| MR CFInfo Ellipsis | O2 | V3 |
| Modification Request for CB Info (O) | | |
| SS Code 2 | O2 | V3 |
| Bearer Service Code 2 | C2 | V3 |
| Teleservice Code 2 | C2 | V3 |
| Ext SS Status 2 | O2 | V3 |
| Password | O2 | V3 |
| Wrong Password Attempts Count | O2 | V3 |
| MR CBInfo Notification to CSE | O2 | V3 |
| MR CBInfo Ellipsis | O2 | V3 |
| Modification Request for CSI (O) | | |
| Requested CAMEL Subscription Information | O2 | V3 |
| MR CSI Notification to CSE | O2 | V3 |
| Modify CSI State | O2 | V3 |
| Additional Requested CAMEL Subscription Information | O2 | V3 |
| MR CSI Ellipsis | O2 | V3 |

[1] Either IMSI or MSISDN must be present.

[2] The ‘O2’ format used here indicates a parameter’s sub-table ‘nesting’, e.g. O3 = Parameter is Optional in sub-table which itself is nested in a sub-table.

| | | |
|---|---|---|
| Long Forwarded to Number Supported | O | V3 |
| Modification Request for ODB data (O) | | |
| ODB Data (O2) | | |
| ODB General Data | O3 | V3 |
| ODB HPLMN Data | O3 | V3 |
| ODB Data Ellipsis | O3 | V3 |
| MR ODB Data Notification to CSE | O2 | V3 |
| MR ODB Data Ellipsis | O2 | V3 |
| Modification Request for IP-SM-GW Data (O) | | |
| Modify Registration Status | O2 | V3 |
| MR IPSMGW Data Ellipsis | O2 | V3 |
| Ellipsis | O | V3 |

| ANY-TIME-MODIFICATION-ACK | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V3 |
| Invoke ID | M | V3 |
| Ext SS Info for CSE (O) | | |
| Ext Forwarding Info for CSE (C2) | | |
| SS Code | O3 | V3 |
| Ext Forwarding Feature List | O3 | V3 |
| Notification to CSE | O3 | V3 |
| Forwarding Ellipsis | O3 | V3 |
| Ext Call Barring Info for CSE (C2) | | |
| SS Code | O3 | V3 |
| Ext Call Barring Feature List | O3 | V3 |
| Password | O3 | V3 |
| Wrong Password Attempts Count | O3 | V3 |
| Notification to CSE | O3 | V3 |
| Call Barring Ellipsis | O3 | V3 |
| CAMEL Subscription Information | O | V3 |
| ODB Info (O) | | |
| ODB Data (O2) | | |
| ODB General Data | O3 | V3 |
| ODB HPLMN Data | O3 | V3 |
| ODB Data Ellipsis | O3 | V3 |
| ODB Info Notification to CSE | O2 | V3 |
| ODB Info Ellipsis | O2 | V3 |
| Ellipsis | O | V3 |
| **Where user error included:** | | |
| User Error | O | V3 |
| Provider Error | O | V3 |
| Unknown Subscriber Diagnostic | O | V3 |
| Call Barring Cause | O | V3 |
| Unauthorised Message Origination | O | V3 |
| SS Code | O | V3 |
| Bearer Service | O | V3 |
| Teleservice | O | V3 |
| SS Status | O | V3 |
| Ellipsis | O | V3 |

The following parameter names are defined for use in the ATM service primitive messages:

| Parameter | Mnemonic | Value (dec) | Value (hex) |
|---|---|---|---|
| SS Code 2 | MAPPN_ss_code_2 | 517 | 0x205 |
| Ext SS Status | MAPPN_ext_ss_status | 518 | 0x206 |
| Wrong Password Attempts Count | MAPPN_wrongpw_att_count | 519 | 0x207 |
| Modify CSI State | MAPPN_mod_csi_state | 520 | 0x208 |
| Modify Registration Status | MAPPN_mod_regn_status | 521 | 0x209 |
| Notification to CSE | MAPPN_notn_to_cse | 522 | 0x20a |
| Requested CAMEL Subscription Information | MAPPN_reqcamel_subinfo | 523 | 0x20b |
| Additional Requested CAMEL Subscription Information | MAPPN_add_reqcamel_subinfo | 524 | 0x20c |
| ODB General Data | MAPPN_odb_gen_data | 525 | 0x20d |
| ODB HPLMN Data | MAPPN_odb_hplmn_data | 526 | 0x20e |
| ODB Data Ellipsis | MAPPN_odb_data_ellipsis | 527 | 0x20f |
| ODB Info Notification to CSE | MAPPN_odb_notn_tocse | 528 | 0x210 |
| ODB Info Ellipsis | MAPPN_odb_info_ellipsis | 529 | 0x211 |
| Ext Call Barring Feature List | MAPPN_ext_callbar_feature_list | 530 | 0x212 |
| Password | MAPPN_password | 531 | 0x213 |
| MR CFInfo Notification to CSE | MAPPN_mr_cfi_notn_tocse | 532 | 0x214 |
| MR CFInfo Ellipsis | MAPPN_mr_cfi_ellipsis | 533 | 0x215 |
| MR CBInfo Notification to CSE | MAPPN_mr_cbi_notn_tocse | 534 | 0x216 |
| MR CBInfo Ellipsis | MAPPN_mr_cbi_ellipsis | 535 | 0x217 |
| MR CSI Notification to CSE | MAPPN_mr_csi_notn_tocse | 536 | 0x218 |
| MR CSI Ellipsis | MAPPN_mr_csi_ellipsis | 537 | 0x219 |
| MR ODB Data Notification to CSE | MAPPN_mr_odb_data_notn_tocse | 538 | 0x21a |
| MR ODB Data Ellipsis | MAPPN_mr_odb_data_ellipsis | 539 | 0x21b |
| MR IPSMGW Data Ellipsis | MAPPN_mr_ipsmgw_data_ellipsis | 540 | 0x21c |

| Parameter | Mnemonic | Value (dec) | Value (hex) |
|---|---|---|---|
| Ext SS Status 2 | MAPPN_ext_ss_status_2 | 541 | 0x21d |
| Ext Forwarding Feature List | MAPPN_ext_fwd_feature_list | 542 | 0x21e |

| | |
|---|---|
| Parameter name | MAPPN_add_reqcamel_subinfo |
| Parameter length | Fixed, set to 1 |
| Parameter data | Encoded as specified by TS 29.002, i.e.<br>0 – mt-sms-CSI<br>1 – mg-CSI<br>2 – o-IM-CSI<br>3 – d-IM-CSI<br>4 – vt-IM-CSI |

| | |
|---|---|
| Parameter name | MAPPN_ext_callbar_feature_list |
| Parameter length | Variable, in the range 1 to 220 |
| Parameter data | Coded as specified for Ext-CallBarFeatureList in TS 29.002. |

| | |
|---|---|
| Parameter name | MAPPN_ext_fwd_feature_list |
| Parameter length | Variable, in the range 1 to 220 |
| Parameter data | Coded as specified for Ext-ForwFeatureList in TS 29.002. |

| | |
|---|---|
| Parameter name | MAPPN_ext_ss_status |
| Parameter length | Variable, in the range 1 to 5 |
| Parameter data | Gives extended supplementary service status information, as defined in TS 29.002. |

| | |
|---|---|
| Parameter name | MAPPN_ext_ss_status_2 |
| Parameter length | Variable, in the range 1 to 5 |
| Parameter data | Gives extended supplementary service status information, as defined in TS 29.002. |

| | |
|---|---|
| Parameter name | MAPPN_mod_csi_state |
| Parameter length | Fixed, set to 1 |
| Parameter data | Encoded as a ModificationInstruction as specified by TS 29.002, i.e.<br>0 – Deactivate<br>1 - Activate |

| | |
|---|---|
| Parameter name | MAPPN_mod_regn_status |
| Parameter length | Fixed, set to 1 |
| Parameter data | Encoded as a ModificationInstruction as specified by TS 29.002, i.e.<br>0 – Deactivate<br>1 - Activate |

| | |
|---|---|
| Parameter name | MAPPN_mr_cfinfo_notn_tocse |
| Parameter length | Fixed, set to 1 |
| Parameter data | Applicable to the MofificationRequestFor-CF-Info table and encoded as a ModificationInstruction as specified by TS 29.002, i.e.<br>0 – Deactivate<br>1 - Activate |

| | |
|---|---|
| Parameter name | MAPPN_mr_cfinfo_ellipsis |
| Parameter length | Variable, in the range 2 to 220 |
| Parameter data | Ellipsis data applicable to the MofificationRequestFor-CF-Info table in TS 29.002. A series of parameters in tag, length, data format, as defined by the users. |

| | |
|---|---|
| Parameter name | MAPPN_mr_cbinfo_notn_tocse |
| Parameter length | Fixed, set to 1 |
| Parameter data | Applicable to the MofificationRequestFor-CB-Info table and encoded as a ModificationInstruction as specified by TS 29.002, i.e.<br>0 – Deactivate<br>1 - Activate |

| | |
|---|---|
| Parameter name | MAPPN_mr_cbinfo_ellipsis |
| Parameter length | Variable, in the range 2 to 220 |
| Parameter data | Ellipsis data applicable to the MofificationRequestFor-CB-Info table in TS 29.002. A series of parameters in tag, length, data format, as defined by the users. |

| | |
|---|---|
| Parameter name | MAPPN_mr_csi_notn_tocse |
| Parameter length | Fixed, set to 1 |
| Parameter data | Applicable to the MofificationRequestFor-CSI table and encoded as a ModificationInstruction as specified by TS 29.002, i.e.<br>0 – Deactivate<br>1 - Activate |

| | |
|---|---|
| Parameter name | MAPPN_mr_csi_ellipsis |
| Parameter length | Variable, in the range 2 to 220 |
| Parameter data | Ellipsis data applicable to the MofificationRequestFor-CSI table in TS 29.002. A series of parameters in tag, length, data format, as defined by the users. |

| | |
|---|---|
| Parameter name | MAPPN_mr_odb_data_notn_tocse |
| Parameter length | Fixed, set to 1 |
| Parameter data | Applicable to the MofificationRequestFor-ODB-data table and encoded as a ModificationInstruction as specified by TS 29.002, i.e.<br>0 – Deactivate<br>1 – Activate |

| | |
|---|---|
| Parameter name | MAPPN_mr_obd_data_ellipsis |
| Parameter length | Variable, in the range 2 to 220 |
| Parameter data | Ellipsis data applicable to the MofificationRequestFor-ODB-data table in TS 29.002. A series of parameters in tag, length, data format, as defined by the users. |

| | |
|---|---|
| Parameter name | MAPPN_mr_ipsmgw_data_ellipsis |
| Parameter length | Variable, in the range 2 to 220 |
| Parameter data | Ellipsis data applicable to the MofificationRequestFor-IP-SM-GW-Data table in TS 29.002. A series of parameters in tag, length, data format, as defined by the users. |

| | |
|---|---|
| Parameter name | MAPPN_notn_tocse |
| Parameter length | Fixed, set to 0 |
| Parameter data | Prescience of parameter indicates Notification to CSE. |

| | |
|---|---|
| Parameter name | MAPPN_odb_gen_data |
| Parameter length | Variable, in the range 2 to 4 |
| Parameter data | Bit encoded as specified by TS 29.002. |

| | |
|---|---|
| Parameter name | MAPPN_odb_hplmn_data |
| Parameter length | Variable, in the range 1 to 4 |
| Parameter data | Bit encoded as specified by TS 29.002, i.e.<br>Bit 0 = plmn-SpecificBarringType1<br>Bit 1 = plmn-SpecificBarringType2<br>Bit 2 = plmn-SpecificBarringType3<br>Bit 3 = plmn-SpecificBarringType4 |

| | |
|---|---|
| Parameter name | MAPPN_odb_data_ellipsis |
| Parameter length | Variable, in the range 2 to 220 |
| Parameter data | Series of parameters in tag, length, data format, as defined by the users. |

| | |
|---|---|
| Parameter name | MAPPN_odb_notn_tocse |
| Parameter length | Fixed, set to 0 |
| Parameter data | Prescience of parameter indicates Notification to CSE. |

| | |
|---|---|
| Parameter name | MAPPN_odb_info_ellipsis |
| Parameter length | Variable, in the range 2 to 220 |
| Parameter data | Series of parameters in tag, length, data format, as defined by the users. |

| | |
|---|---|
| Parameter name | MAPPN_password |
| Parameter length | Fixed, set to 4 |
| Parameter data | Encoded as Password specified in TS 29.002. |

| | |
|---|---|
| Parameter name | MAPPN_reqcamel_subinfo |
| Parameter length | Fixed, set to 1 |
| Parameter data | Encoded as specified by TS 29.002, i.e.<br>0 – o-CSI<br>1 – t-CSI<br>2 – vt-CSI<br>3 – tif-CSI<br>4 – gprs-CSI<br>5 – mo-sms-CSI<br>6 – ss-CSI<br>7 – m-CSI<br>8 – d-CSI |

| | |
|---|---|
| Parameter name | MAPPN_ss_code_2 |
| Parameter length | Fixed, set to 1 |
| Parameter data | Contains the code identifying a single supplementary service. |

| | |
|---|---|
| Parameter name | MAPPN_wrongpw_att_count |
| Parameter length | Fixed, set to 1 |
| Parameter data | Integer, in range o to 4 |

## 3. Faults cleared

### 3.1 Handling of Abort PDU data in TC-U-ABORT messages

In some circumstances previous releases do not handle received TCAP U-ABORT messages correctly. If the received U-ABORT message contained Provider Abort PDU data and MAP was not in the DIALOGUE_INITIATED state, an erroneous MAP_MSG_ERROR_IND (status value 0x6) error was reported. The MAP module should send a P-ABORT message to the MAP-User in this circumstance. This fault has now been corrected.

### 3.2 Handling of TC-U-ABORT messages when no Abort PDU data

The MAP specification is ambiguous on required operation in non-DIALOGUE_INITIATED states when the U-ABORT message contains neither Provider nor User Abort PDU data. Since some users are seeing such messages, the MAP module has been changed to handle

them. The MAP module will send a U-ABORT message to the MAP-User specifying a User Reason of MAPUR_unspecified_reason (5).

### 3.3 Parameters missing from some MAP operations

Previous releases excluded some parameters when they were received from TCAP. The following operations and parameters were affected,

For SEND_ROUTING_INFO for MAP V1 -
MAPPN_CUG_interlock

For SEND_ROUTING_INFO for MAP V2 -
MAPPN_CUG_CI_ellipsis

For SEND_ROUTING_INFO_ACK for MAP V2 -
MAPPN_CUG_CI_ellipsis,
MAPPN_fwd_data_ellipsis,
MAPPN_ellipsis

For SEND_ROUTING_INFO_FOR_SM for MAP V1 -
MAPPN_CUG_interlock

This has been fixed for this release and parameters are correctly received.

### 3.4 Correction to AC negotiation

When a dialogue is received from TCAP requesting an Application Context (AC) that is not supported by MAP, the U-ABORT message sent to TCAP should give an alternate version, if available. For previous releases this was not happening, the received AC was always returned to TCAP, indicating that no alternative AC is available.

This has now been corrected for all Application Contexts. If the requested AC version is not supported by MAP, but another version is supported, the alternative AC version is returned in the U-ABORT message (AC parameter) sent to TCAP. If more than one version is supported, then the highest supported version is returned as the alternative.

### 3.5 Dialogue ranges checked on module configuration

For previous releases, when the User and TCAP dialogue ranges were configured from the MAP_MSG_CONFIG message it was possible for dialogue ranges with identifiers exceeding the maximum value of 65535 (0xffff hex) to be configured. This release will reject Configuration messages that attempt to configure a User or TCAP range that would exceed the maximum. Invalid configurations will be rejected with MAPE_BAD_PARAM in the status field and the message offset to the invalid parameter in the ‘error_offset’ field.

### 3.6 MAP_MSG_CNF_TIM message parameter check

The module will now check the values received for the ‘t0’ parameter of the MAP_MSG_CNF_TIM message. If the parameter exceeds the maximum timer value of 409 seconds or is less than the minimum value of 1 second, the message will rejected and returns MAPE_BAD_PARAM in the status field.

### 3.7 HandoverControl AC for MAP V1

In previous releases the MAPOP_ActivateTraceMode operation was allowed under the HandoverControl AC for MAP V1. This was the only operation allowed for the AC. Since this operation is incidental to this AC, it is felt that leaving the operation may imply that the module fully supported this AC. The operation has therefore been removed for this release so that the HandoverControl AC for MAP V1 is now not supported.

### 3.8 Software Event during AC negotiation

When a dialogue is received but the application context is not supported, the dialogue is aborted and, if possible, an alternative application context name is included in the U-ABORT. If a component follows the BEGIN, there will be no dialogue in existence when the component is received by MAP (since the dialogue has been aborted) so a Software Event (invalid dialogue ID) will be reported.

The module will now not report the Software Event.

### 3.9 Send Routing Info Correction for MAPPN_net_sig_info

In the previous releases the ASN.1 table used for Send-Routing-Info for v1/v2 was incorrectly encoded in regards the MAPPN_net_sig_info parameter. This has been corrected. The encoding of the v3 was already correct is not affected.

### 3.10 Check IMEI v3 correction

A change has been made to the MAPPN_requestedequipinfo parameter to allow the permitted size to range between 2 and 8 octets. (Previously the permitted length of this parameter was fixed at 1 octet).

### 3.11 Changes to MAPPN_fwd_to_num and MAPPN_no_reply_condition_time parameters

The parameter MAPPN_fwd_to_num has been expanded to allow use of AddressString parameters with a range of 1 to 20 octets as specified by TS 29.002. Previously the parameter allowed only ISDNString parameters with a range of 1 to 9 octets.

The parameter MAPPN_no_reply_condition_time has been expanded to allow use of Ext-NoReplyConditionTime parameters (1 to 100) as well as original NoReplyConditionTime parametes (5 to 30).

Dialogic
13-Feb-09

**Binary for Windows - MAP**

**Release Notes for Version 4.03**

## 1. Overview

This release implements six new MAP services – Reset, SetReportingState, StatusReport, RemoteUserFree, RegisterCC and EraseCC. The release also enables the Interrogate-SS service for use with the MAP version 1 application context.

The release introduces a new method for MAP-Users to define and/or receive Primitive Service Types. Use of this new mechanism is required to permit use of the six new MAP services.

The release expands the Subscriber Information that can be requested by some services and adds some parameters to the UpdateLocation service. This release also fixes a number of outstanding faults. In other respects this release is backwards compatible with the previous release.

## 2. New Functionality

### 2.1 Extended Service Type parameter

The services introduced in this release require the use of a new method of specifying the Primitive Service Type. This change has been introduced to permit additional Service Type definitions for MAP services to be allocated beyond the existing single octet range. The new method allows Primitive Service types that use up to two octets.

A new Primitive Service Type definition MAPST_EXTENDED_SERVICE_TYPE is added together with a new parameter MAPPN_SERVICE_TYPE. A new configuration option flag MAPF_USE_TYPE_PARMS (0x0020) has also been added to support this facility. Refer to the *DSI MAP Programmer's Manual, Issue 12* or later, for full details on their use.

### 2.2 MAP new services

Six new services have been added:

| | |
|---|---|
| **RESET** | - MAP V1 and V2 |
| **SET-REPORTING-STATE** | - MAP V3 |
| **STATUS-REPORT** | - MAP V3 |
| **REMOTE-USER-FREE** | - MAP V3 |
| **REGISTER-CC-ENTRY** | - MAP V3 |

**ERASE-CC-ENTRY** - MAP V3

The new services are defined as per the 3GPP TS 29.002 v8.2.0 specification. All of the new services use the new Extended Service Type Parameter.

Refer to the *MAP Programmer's Manual*, for full details of the services and the parameters added to support them.

## 2.3 Interrogate-SS Service added for MAP Version 1

The Interrogate-SS service has been enabled for use with the MAP V1 application context.

The following tables define the expected parameters for Requests and Responses for the expanded service for both V1 and V2 Application Contexts:

| INTERROGATE-SS | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V1, V2 |
| Timeout (default = 30 seconds) | M | V1, V2 |
| Invoke ID | M | V1, V2 |
| SS code | M | V1, V2 |
| Bearer Service Code | O | V1, V2 |
| Teleservice Code | O | V1, V2 |
| Ellipsis | O | V1, V2 |

| INTERROGATE-SS-ACK | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V1, V2 |
| Invoke ID | M | V1, V2 |
| **Where user error is not included (version 1)** | | |
| SS status | C[1] | V1 |
| Forwarded To Number | C[1] | V1 |
| Basic Service List | C[1] | V1 |
| Forwarding Feature List | C[1] | V1 |
| **Where user error is not included (version 2)** | | |
| SS status | C[2] | V2 |
| Basic Service Group List | C[2] | V2 |
| Forwarding Feature List | C[2] | V2 |
| CLI restriction option | O[3] | V2 |
| Maximum entitled priority | O[3] | V2 |
| Default priority | O[3] | V2 |
| CCBS Feature List | O[3] | V2 |
| Ellipsis | O[3] | V2 |
| **Where user error is included** | | |
| User Error | M | V1, V2 |
| Network Resource | O | V1, V2 |
| Call Barring Cause | O | V1, V2 |
| Ellipsis | O | V1, V2 |

1. One of these parameters must be present.
2. One of these parameters must be present.
3. Can only be present if ‘SS status’ is present.

The following new parameter is defined for use in the service messages:

| Parameter | Mnemonic | **Value (dec)** | **Value (hex)** |
|---|---|---|---|
| Basic Service List | MAPPN_basic_service_list | 583 | 0x247 |

| | |
|---|---|
| Parameter name | MAPPN_basic_service_list |
| Parameter length | Variable, in the range 1 to 220 |
| Parameter data | Coded as specified for BasicServiceList in GSM 09.02 Phase 1. |

## 2.4 Requested Info and Subscriber Info enhancements

The information that can be requested by the Requested Info parameter (MAPPN_req_info) has been enhanced. This affects Subscriber Info table data returned in service responses. The changes affect 3 existing services : AnyTimeInterrogation (ATI); ProvideSubscriberInfo (PSI) and SendRoutingInfo for MAPv3.

Refer to the *MAP Programmer's Manual*, , for details of the services and parameters.

## 2.5 New parameters for Update Location Service.

The Update Location service for MAP v3 has been updated to add additional parameters to the request message. The added parameters are already defined in the MAP module for other services. The definition of the service is now as follows:

| UPDATE-LOCATION | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | Any |
| Timeout (default = 30 seconds) | O | Any |
| Invoke ID | M | Any |
| IMSI | M | Any |
| Roaming number | C[1] | V1 |
| MSC number | C[1] | Any |
| VLR number | M | Any |
| LMSI | O | Any |
| Supported CAMEL phase | O | V3 |
| VLR capability ellipsis | O | V3 |
| Solsa support indicator | O | V3 |
| IST Supported Indicator | O | V3 |
| Send Subscriber Data | C[2] | V3 |
| Subscriber Data Stored | C[2] | V3 |
| Long FTN Supported | O | V3 |
| Ellipsis | O | Any |

1. The selection is a choice between Roaming number and MSC number in MAP V1. MSC number is mandatory in MAP V2 and V3 and Roaming number is not allowed.
2. Either Send Subscriber Data or Subscriber Data Stored may be defined, but not both.

| UPDATE-LOCATION-ACK | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | Any |
| Invoke ID | M | Any |
| **Where user error is not included:** | | |
| HLR number | M | Any |
| Ellipsis | O | V2,V3 |
| **Where user error is included:** | | |
| User error | M | Any |
| Network resource | O | Any |
| Roaming not allowed cause | C[1] | V2, V3 |
| Unknown subscriber diagnostic | O | V3 |
| Ellipsis | O | V3 |

1. If the user error is set to ‘roaming not allowed’, then ‘roaming not allowed cause’ is mandatory.

## 3. Other Changes

### 3.1 Decoding of RequestedInfo

For previous releases, when the MAPPN_req_info parameter was coded with more than one bit set, only a single bit was ever sent in the output message. This affected the ATI and PSI services. For this release, the parameter is correctly encoded into the output message when more than one bit is sent.

*Note: that on this release the number of valid bits for encoding for this parameter has increased (as detailed in Section 2.4 above).*

### 3.2 Added parameters to ATI service

Previous releases allowed some parameters to be sent but they would be discarded if received. The parameters affected were MAPPN_selectedlsa_id, MAPPN_msc_num, MAPPN_geodetic_info, MAPPN_currenr_loc_retrieved and MAPPN_sai_present in the ATI, PSI and SRI v3 services. These parameters can now be received correctly for the services. New definitions for all of these services are listed in the MAP Programmer’s Manual

### 3.3 Change to permitted length of MAPPN_cell_id parameter

Previous code releases allowed the MAPPN_cell_id parameter have lengths between 5 and 7 octets. This is invalid according to TS29.002, the CellGlobalOrServiceAreaIdFixedLength variable should have a

fixed length of 7 octets. This release forces the parameter to have a length of 7 octets.

### 3.4 MAPPN_requestedequipinfo min size

The minimum size of this parameter has been altered from 2 to 1 octet. This is in accordance with MAP spec 29.002. The maximum size has been left as 8, for backwards compatibility.

### 3.5 Correct reception of SendAuthInfo when no parameters

For previous releases, Send-Authentication-Info v3 messages with no parameters where rejected by MAP when received from TCAP. This release corrects this behaviour; Send-Authentication-Info messages with no parameters are now accepted.

*Note: The IMSI and NumberOfRequestedVectors parameters for this service are normally Mandatory according to the specifications, however if the message is repeated the specifications state that the parameters can be excluded, thus a Send-Authentication-Info message with no parameters is valid.*

### 3.6 Support for dual license tokens

This release supports both the old style "INTEL" tokens and the new style "dialogic" tokens within the license file allowing it to function with existing deployed licenses and support future enhancements. It is the first release of this binary to support the Dialogic named license token. This change should be of no consequence to the user.

Dialogic
08-Oct-09

**Binary for Windows - MAP**

**Release Notes for Version 4.04**

## 1. Overview

This release makes the GetPassword and RegisterPassword services available under MAP V1 and allows Quality of Service (QoS) parameter data received from TCAP to be passed to the MAP-User.

The release also corrects the formatting of the response message sent to TCAP for some services.

The use of trial mode is now limited to one hour but in all other respects this release is backwards compatible with the previous release.

## 2. New Functionality

### 2.1 GetPassword and RegisterPassword for MAP V1

The MAP services GET-PASSWORD and REGISTER-PASSWORD are now available for use under MAP V1. The parameter area content tables for the services are now as follows:

| GET-PASSWORD | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V1, V2 |
| Timeout (default = 30 seconds) | O | V1, V2 |
| Invoke ID | M | V1, V2 |
| Linked ID | O | V1, V2 |
| Guidance Info | M | V1, V2 |
| Ellipsis | O | V2 |

| GET-PASSWORD-ACK | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V1, V2 |
| Invoke ID | M | V1, V2 |
| Current Password | M | V1, V2 |
| Ellipsis | O | V2 |

| REGISTER-PASSWORD | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V1, V2 |
| Timeout (default = 600 seconds) | O | V1, V2 |
| Invoke ID | M | V1, V2 |
| SS Code | M | V1, V2 |
| Ellipsis | O | V2 |

| REGISTER-PASSWORD-ACK | | |
|---|---|---|
| **Parameter** | **Class** | **Context** |
| Primitive type octet | M | V1, V2 |
| Invoke ID | M | V1, V2 |
| **Where user error is not included:** | | |
| New Password | M | V1, V2 |
| Ellipsis | O | V2 |
| **Where user error is included:** | | |
| User error | M | V1, V2 |
| Registration Failure Cause | O | V1, V2 |
| Network Resource | O | V1, V2 |
| Per Call Basis | C[1] | V1 |
| Notification To Held Retrieved Party | C[1] | V1 |
| User to User Service Indicator | C[1] | V1 |
| Maximum Conferees Number | C[1] | V1 |
| Hunt Group Access Selection Order | C[1] | V1 |
| Call barring cause | O | V2 |
| Ellipsis | O | V2 |

1. One or none of these parameters may be included when User Error is SS_Subscribion_Violation.

## 2.2 QoS Transparency

The MAP module can be configured to return any QoS information received from TCAP to the MAP-User. This is controlled via a new configuration option flag MAPF_QOS_TRANSPARENT.

| Bit | Mnemonic | Description |
|---|---|---|
| 6 | MAPF_QOS_TRANSPARENT | If set to 1, QoS parameter data received from TCAP is passed to the MAP-User in the MAPPN_qos (238) parameter. If set to 0, received TCAP QoS data is discarded. |

The option is applicable to the MAP_MSG_CONFIG and MAP_MSG_NC_CONFIG configuration messages, e.g. this facility is selectable for different MAP-Users via the Module and NC configurations. When the option is enable, whenever QoS data is received from TCAP it will be returned to the MAP_User in the next Dialogue Indication message, as detailed in the updated table below:

| Parameter | MAP Primitive | | | | | | |
|---|---|---|---|---|---|---|---|
| | OPEN_IND | CLOSE_IND | DELIMITER-IND | U-ABORT-IND | P-ABORT-IND | OPEN-CNF | NOTICE_IND |
| Destination address | M | | | O | | O | |
| Destination reference | O | | | | | | |
| Originating address | O | | | O | | O | |
| Originating reference | O | | | | | | |
| Result | | | | | | M | |
| Refuse reason | | | | | | O[1] | |
| Release method | | | | | | | |
| User reason | | | | M | | | |
| Provider reason | | | | | M | O | |
| Diagnostic information | | | | O | | | |
| Application context name | M | | | | | O | |
| Source | | | | | M | | |
| Problem diagnostic | | | | | | | M |
| Quality of Service[2] | O | O | | O | O | O | |
| Ellipsis | O | | | | | | |
| Release confirm | | O | | | | | |
| Report cause | | | | | | | O |
| NC | O | | | | | | |

1. May only be used with MAP V2 and V3 dialogues.

2. QoS returned only if MAPF_QOS_TRANSPARENT option is set.

## 3. Other Changes

### 3.1 Correction to TCAP formatting of Response messages

For previous releases the TCAP formatting of the response messages for some services could be incorrect. This fault affected response messages where only an Invoke ID parameter was defined (no other parameters). This caused an invalidly formatted response message to be sent to TCAP. The following services were affected:

- AuthenticationFailureReport
- SetReportingState
- StatusReport
- Register-CC-Entry
- SendEndSignalling
- PrepareHandover
- SendAuthInfo (for MAP V3)

The fault has been corrected for this release and the response messages are correctly formatted when sent to TCAP

### 3.2 Trial Mode

When operating in trial mode (using the –t command line option), the period of operation is now restricted to one hour after which the binary will terminate

Dialogic
29-Jan-10