

3GPP2 X.S0004-590-E
Version 1.0.0
Date: March 2004



**3RD GENERATION
PARTNERSHIP
PROJECT 2
"3GPP2"**

MAP Compatibility Signaling Protocols

Revision History

Revision	Initial Publication	Date
Rev. 0	Initial Publication	March 2004

PART 590

1 MAP COMPATIBILITY GUIDELINES AND RULES

While the following sections outline guidelines and rules which will in the near term be beneficial to implementation of this standard, other activities which may impact these rules are in progress. As such, the remainder of this Section, "MAP Compatibility Guidelines and Rules" may be subject to change and revision based on future TIA-41 recommendations.

This is to ensure that there is no long term impediment to Cellular Radiotelecommunications networks to evolve and implement significant new functionality. Also, to better allow for the longer term alignment of TIA-41 with emerging international standards.

1.1 ACHIEVING FORWARD COMPATIBILITY AND BACKWARD COMPATIBILITY

Following are some general considerations for enhancing and developing protocols.

1.1.1 Forward Compatibility

When developing a new protocol or enhancing an existing protocol, it is important to remember that a network entity using one version of protocol may, in the future, need to communicate with network entities using the enhanced version of the basic protocol. Hence, the protocol should be easy to enhance (e.g., easy to add new optional parameters). In addition, procedures should be built into the existing protocol to handle the situations when new messages, known messages with unknown parameters, or known parameters with unknown codes are received.

1.1.2 Backward Compatibility

When enhancing an existing protocol, it is important to keep in mind that a network entity using one version of protocol may need to communicate with network entities using older versions of same protocol. Hence, the protocol should not be changed abruptly into a form which the earlier protocol versions cannot even interpret. For example, one should not change a fixed length mandatory parameter to an optional parameter in an existing message.

1.2 GUIDELINES FOR FORWARD COMPATIBILITY

TIA-41 MAP shall contain a mechanism for forward compatibility. The following list and table contain the basic requirements of the mechanism:

1. These guidelines take precedence over the Abnormal Procedures section of TCAP (*ANSI T1.114-1988*, section 5).

2. Include the ability to send a TCAP REJECT component indicating that the received information was not understood when indicated by the following table.
3. Send this TCAP REJECT component to the network entity that transmitted the confusing information if the necessary routing information is available.
4. For existing protocols, state the action to be taken on receipt of spare or reserved values of defined parameters (e.g., treat as appropriate default values). If no default is explicitly specified, the action listed in the following table should occur.
5. Only send messages that require an acknowledgment a limited number of times (e.g., 3). If no response is received, the sending network entity should assume that the facility is not available and inform local management.
6. All messages may have new optional parameters added in any revision.

Table 1 Forward Compatibility Guidelines for Handling Incoming Messages and Parameters

	Problem	Response
1	Unrecognized Operation Code Identifier.	REJECT (Problem Specifier = <i>Unrecognized Operation Code</i>)
2	Unrecognized Package Type Identifier.	REJECT (Problem Specifier = <i>Unrecognized Package Type</i>)
3	Unrecognized Parameter Identifier at intermediate network entity.	Transit parameter unchanged
4	Unrecognized Parameter Identifier at end network entity.	Ignore parameter
5	Parameter with fixed length not the correct length.	REJECT (Problem Specifier = <i>IncorrectParameter</i>)
6	Variable length parameter has Parameter Length shorter than the minimum expected.	RETURN ERROR (Error Code = <i>ParameterError</i>)
7	Variable length parameter has Parameter Length longer than the maximum expected.	Ignore additional octets
8	Mandatory parameter missing.	REJECT (Problem Specifier = <i>IncorrectParameter</i>)
9	Optional parameter required by context of message is missing.	RETURN ERROR (Error Code = <i>MissingParameter</i>)
10	Optional parameter forbidden by presence or value of another parameter with stated precedence between them.	Ignore parameter
11	Optional parameter forbidden by presence of another parameter with no stated precedence.	RETURN ERROR (Error Code = <i>ParameterError</i>)
12	Parameter with known Parameter Identifier is not expected in this message.	Ignore parameter

Table 1 Forward Compatibility Guidelines for Handling Incoming Messages and Parameters (Continued)

	Problem	Response
13	Parameter value <i>No effect, Not applicable, Not specified, Not used, Reserved, or Unknown.</i>	Use default value, if specified, otherwise ignore the parameter
14	Parameter value otherwise unrecognized or invalid.	RETURN ERROR (Error Code = <i>UnrecognizedParameterValue</i>)
15	Recognized parameter with valid values included more times than expected.	Ignore additional occurrences of parameter. This may indicate that a parameter that occurs once in the current revision of <i>TIA-41</i> is allowed to occur multiple times in a later revision. For compatibility, any single occurrence has to be acceptable.

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1.3 GUIDELINES FOR BACKWARD COMPATIBILITY

All future revisions of TIA-41 MAP from *IS-41 Revision B* onward, shall contain a mechanism for backward compatibility. The following list contains the basic guidelines to be included.

1.3.1 Existing Messages

- a. The ability of receiving any existing messages shall be possible, since the removal of a message implies the removal of a function.
- b. The effect of receiving any existing message, parameter, or function in a new version, must be the same as that in previous versions. The effects of new parameters or parameter values shall thus be purely additive.
- c. For *TIA-41* the nature of a transaction shall not change to or from Unidirectional.

1.3.2 Parameters in Existing Messages

Message parameters in the Parameter Set consist of two basic types, mandatory and optional, and need not occur in pre-defined order. All mandatory and optional parameters have variable length, although some parameters may have specified their length.

The following guidelines shall apply:

- a. Optional parameters shall not become mandatory.
- b. Mandatory parameters shall not become optional.
- c. Additional mandatory parameters shall not be added to an existing message.
- d. Additional optional parameters may be added to an existing message.
- e. Existing mandatory parameters shall not be removed from existing messages.
- f. The range of any parameter for an existing message shall not be reduced.
- g. The meaning of any defined parameter value shall not be changed on an existing message.
- h. There are no restrictions on the parameters for new messages.
- i. The minimum length of the data portion of a variable length parameter is one octet, unless otherwise specified.
- j. CHOICES may be extended (e.g., a CHOICE OF (ParameterA, ParameterB) may be extended to a CHOICE OF (ParameterA, ParameterB, ParameterC)).

1.3.3 New Messages

- a. New messages may be added after a recommendation has been published; however, network entities that do not recognize these new messages shall reject them, indicating that the information was not recognized.
- b. The “information not recognized” message shall never be sent in response to a received “information not recognized” message (e.g., a REJECT message should never be sent in response to a received REJECT message), nor in response to other recognized messages received in the wrong call state. Appropriate default action shall be defined to handle these situations.

1.3.4 New Parameters

New optional parameters may be added to existing messages after a recommendation has been published; however, network entities that do not recognize these new parameters could ignore them.

Addition of new parameters may be subjected to Basic Encoding Rules (BER) restrictions, as defined in Parameter Type definitions.

1.3.5 New Parameter Fields

New fields may be added to, or spare fields may be used in existing parameters; however, network entities that do not recognize these new fields may either respond with a message indicating that the information was not recognized or use the default values specified for these parameters.

1.3.6 New Parameter Values

Previously spare, reserved, or unallocated parameter values may be used. These shall be treated at the receiving network entity as defined in item 4 of Section 1.2.

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