PTC331 2012 EXPLANATORY: DETAILS OF UPDATES OF PTC331 PART C FROM ISSUE 2 (2001) to ISSUE 3 (2012)

OVERVIEW

PTC331 is the technical specification of the No.7 Signalling interface on Telecom's PSTN/ISDN Point of Interconnect exchanges used for interconnection with other NZ networks. It covers the Message Transfer part (MTP) [PART B of PTC331] and ISDN User Part (ISUP) [PART C of PTC331] of No.7 Signalling, as applicable to the control of calls that pass between Telecom and other networks. Networks that interconnect with Telecom need to demonstrate compliance with PTC331 through a process of supplying technical compliance statements for their Points of Interconnect exchanges and interoperability testing.

PTC331 was last revised and published in 2001 as ISSUE 2. There have subsequently been a number of enhancements made to the interconnect interface on Telecom's exchanges (e.g. to support Number Portability) but these have yet to be formally included in the PTC331 document. In mid 2012 Telecom will upgrade the No.7 Signalling software in its exchanges and this will bring further enhancements to the interconnect interface. The process of testing other networks' compliance to PTC331 over recent years brought to light a number of issues that require clarification to the wording of parts of PTC331.

Accordingly, PTC331 has been revised and updated to cover the above points. The updates relate only to ISUP and therefore impact only PART C of PTC331. The opportunity has also been taken to update the baseline document to align with the latest ITU-T recommendations (primarily Q.763 and Q.764 published in December 1999 and subsequent amendments).

It should be noted that this revision does not impose any new technical requirements on existing or future networks interconnected with Telecom. The technical changes add additional <u>optional</u> capability, or remove existing limitations, to the interface that may be exploited by interconnected networks if required. Other changes to the text are made solely to add clarification.

The updates to PTC331 PART C are described in the following section under the following classifications:

The updates to PTC331 PART C are described below under the following 3 classifications:

- Additional functionality that will be added to the interconnect interface on Telecom exchanges in a forthcoming software release to POI exchanges in mid 2012.

- Additional functionality that has already been added to the interconnect interface on Telecom exchanges since the last release of PTC331 in 2001.

- Clarifications to the wording of some text, editorial corrections and alignment with latest ITU-T publications (no technical changes).

Details follow:

> - Additional functionality that will be added to the interconnect interface on Telecom exchanges in a forthcoming software release to POI exchanges in mid 2012.

1. Removal of the requirement that interconnected networks support receipt of CPG as first backward message.

Background

Some Telecom exchanges currently use an early (now obsolete) version of ITU-T procedures for Call Forward Unconditional and Call Forward Busy services whereby the first ISUP message sent backward from the forwarding exchange is the CPG. Subsequent ITU-T recommendations changed the procedure so that the ACM is now always shown as the first backward message sent. The former procedure is still referenced in ITU-T recommendation Q.732.2-5 para 2.5.2.1.1 as a "national option". The requirement to accept CPG as the first backward message has caused problems for some networks by preventing upgrades to later versions of ISUP.

Change

From mid 2012 all Telecom ISUP exchanges will comply with the latest ITU-T procedures in relation to message sequence for Call Forwarding; hence they will no longer send CPG as first backward message. Accordingly, interconnected networks will no longer need to support receiving CPG as the first backward message.

Telecom exchanges will retain the capability to receive CPG as the first backward message in case any other networks choose to send CPG first (although Telecom understands that no other networks in New Zealand still use this procedure). Where the Telecom network acts as an intermediate network between two other networks if CPG is received first the Telecom network will convert the CPG to ACM.

Reference: PTC331 ISSUE 2 Page C-104 Appendix 5 Note 2 and accompanying diagram on the Alternative Procedure for Call Forwarding has been removed (and Appendix 5 renumbered Appendix 4).

2. Optional support for additional Call Forwarding related parameters/fields.

Background

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Call Forwarding procedures in Telecom exchanges were developed prior to the addition of the following ISUP items to the ITU-T Call Forwarding recommendations.

- Call Diversion Information (CDI) parameter
- Redirection Number Restriction (RNR) parameter
- Optional Backward Call Indicators (OBCI) parameter bit B=1.

These parameters/fields are currently shown as not supported in PTC331 as they are not generated by Telecom exchanges and some Telecom exchanges respond by sending the ISUP Confusion (CFN) message on receiving CDI and RNR. The restriction on sending these parameters to Telecom has caused problems for some networks by preventing upgrades to later versions of ISUP.

Change

From mid 2012 all Telecom exchanges will be able to accept the above items of ISUP signalling, thereby allowing interconnected networks to use the latest ITU-T procedures for Call Forwarding when interworking with Telecom. Telecom exchanges will continue to not send the CDI and RNR parameters, including when they are received from another network when acting as intermediate network. Thus there will be no requirement for other networks to support these parameters, but they will be able to send them to Telecom without causing problems.

OBCI bit B=1 will be sent by Telecom exchanges when applicable for Call Forward No Answer calls (per ITU-T recommendations) and Telecom exchanges will be able to receive OBCI bit B=1. This change will not cause any issues with other networks as the OBCI parameter is already supported on the PTC331 interface, and although bit B=1 is not currently generated by Telecom exchanges it is currently transited with calls between other networks (via the Telecom network).

Reference:

PTC331 section 3.37 OBCI bit B=1 – "not applicable" shading has been removed.

PTC331 section 3.6 CDI "not applicable" shading retained but marked "receive only"

PTC331 section 3.47 RNR "not applicable" shading retained but marked "receive only".

- Additional functionality that has been added to the interconnect interface on Telecom exchanges since the last release of PTC331.

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3. Optional support for Connected Number signalling

Background

ISDN Connected Number Presentation/Restriction (COLP/COLR) service uses the Connected Number parameter and Optional Forward Call Indicators (OFCI) parameter. At the time of last publication of PTC331 Telecom exchanges did not support this service so the parameters are marked "not supported" in PTC331.

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<u>Change</u>

Support for this service has been added to Telecom exchanges. Use of the associated parameters with interconnect calls is optional and controlled by per-route configuration data setting on the PTC331 interface on Telecom exchanges. The default setting is "not supported". Use of these parameters on the interconnect interface with a given network is subject to commercial agreement and technical testing.

<u>Reference:</u>

PTC331 section 3.16 Connected Number – "not applicable" shading has been removed.

PTC331 section 3.38 OFCI – "not applicable" shading has been removed.

4. Optional support for Location Number parameter

<u>Background</u>

The Location Number parameter can be used to carry information on the geographical area of the origin of a call. At the time of last publication of PTC331 Telecom exchanges did not support this parameter which was marked "not supported"   in   PTC331.

<u>Change</u>

Support for Location Number was added to Telecom exchanges as part of the deployment of Number Portability services. Use of this parameter with interconnect calls is optional and controlled by per-route configuration data setting on the PTC331 interface on Telecom exchanges. The setting used with any given network is in accordance with the Number Portability Agreement between that network and Telecom.

<u>Reference:</u>

PTC331 section 3.30 Location Number – "not applicable" shading has been removed.

5. Optional support for Number Portability Forward Information parameter

<u>Background</u>

The Number Portability Forward Information (NPFI) parameter can be used to carry information on whether a Number Portability database lookup has been performed for a given call. At the time of last publication of PTC331 this parameter had not been designed by ITU-T. It therefore did not appear in PTC331 (2001).

<u>Change</u>

Support for NPFI was added to Telecom exchanges as part of the deployment of Number Portability services. Use of this parameter with interconnect calls is

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optional and controlled by per-route configuration data setting on the PTC331 interface on Telecom exchanges. The setting used with any given network is in accordance with the Number Portability Agreement between that network and Telecom.

Reference:

PTC331 section 3.101 NPFI parameter has been added.

6. Optional support for User Interactive Dialog parameters

Background

The User Interactive Dialog Capability Indicators (UIDc) and User Interactive Dialog Action Indicators (UIDa) parameters are used to control speechpath through-connection in the pre-answered call state to enable callers to engage in interaction with IVR type devices before their calls are answered, in accordance with ITU-T recommendation Q.1600 procedures.   At the time of last publication of PTC331 Telecom exchanges did not support these parameters which were marked "not supported" in PTC331.

Change

Support for the UIDc and UIDa parameters and the associated procedures have been added to Telecom exchanges. Use of these parameters with interconnect calls is optional and controlled by per-route configuration data setting on the PTC331 interface on Telecom exchanges. The default setting is "not supported". Use of these parameters on the interconnect interface with a given network is subject to commercial agreement and technical testing.

Reference:

PTC331 section 3.78 UIDa – "not applicable" shading has been removed.

PTC331 section 3.79 UIDc – "not applicable" shading has been removed.

7. Optional support for Echo Control Device indicators

Background

The Backward Call Indicators parameter bit N=1 and Nature of Connection indicators parameter bit E=1 are used to signal the inclusion of an incoming and outgoing echo control device respectively, on the call, in accordance with ITU-T recommendation Q.764 section 2.7 (Simple Echo Control procedures). At the time of last publication of PTC331 Telecom exchanges passed these parameter values to other networks on the interconnect interface when acting as transit nodes but did not set them or use them with Telecom originating and terminating calls.

Change

Increased use of echo cancellation within the Telecom network (e.g. with IP-based and mobile calls) means that calls originating and terminating on Telecom network nodes may signal the Backward Call Indicators parameter bit N=1 and

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Nature of Connection indicators parameter bit E=1. This change will not cause any issues with other networks as these values are already supported on the PTC331 interface, and although not currently generated by Telecom exchanges they are currently transited with calls between other networks (via the Telecom network).

Reference:

PTC331 section 3.5 Backward Call Indicators bit N=1 "not set by Telecom" shading has been removed

PTC331 section 3.35 Nature of Connection Indicators bit E=1 "not set by Telecom" shading has been removed.

> - Clarifications to the wording of some text, editorial corrections and alignment with latest ITU-T publications (no technical changes).

8. Nomenclature

Background

Clarification has been sought from some network operators and equipment vendors on the expected behaviour of interconnected nodes in relation to items of ITU-T signalling shaded to indicate they are "not applicable" in PTC331.

PTC331 section on "Relationship with ITU-T Recommendations" (renumbered 0.0.2) is revised and simplified. Additional explanation is added to clarify the meaning of shaded text in Tables 4 and 5.

9. Updated baseline

The underlying text that forms the basis of the PTC331 Part C document (sections 0.1 onwards) has been updated to the latest ITU-T published version of ITU-T recommendation Q.763 (12/1999) and subsequent amendments 1 to 6 and Recommendation Q.764 (12/1999) and subsequent amendments 1 to 5.

10. Editorial

Miscellaneous editorial corrections. The main one is in APPENDIX 1 where columns for systems 129 to 135 had been printed in error (CIC does not support more than 4095 channels in total) and have been deleted.

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