CDMA International Roaming Voice and SMS Technical Data Sheet

CDG Document 81

Version 1.2

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Revision History

Date	Version	Description
08 October 2002	1.0	Initial CDG release
05 November 2002	1.2	Change of TDS appendix to Excel worksheet format
07 January 2003	1.3	Include comments from CDG roaming team
14 February 2003	1.4	Add the billing portion
1 April 2004	1.0	Reformat and establish new baseline
1 May 2006	1.1	Expand to include new tabs and reformat
20 March 2007	1.2	Expand documentation to include how to fill out the document.

1. CDMA International Roaming Voice and SMS TDS

1.1 Introduction

This document provides an easy overview of what carriers have agreed should be in the Voice and SMS Technical Data Sheet and how to fill it out. It is a guideline for all CDMA network operators to use.

1.2 Acronyms and Abbreviations

Table 1-1 Acronyms and Abbreviations

Acronym	*Meaning*
CDG	CDMA Development Group.
CF	Call Forwarding.
HLR	Home Location Register.
IFAST	International Forum on ANSI-41 Standards Technology.
IMSI	International Mobile Subscriber Identity.
MCC	Mobile Country Code
MDN	Mobile Directory Number.
MIN	Mobile Identity Number.
MNC	Mobile Network Code
MSC	Mobile Switching Centre.
NID	Network Identification.
PRL	Preferred Roaming List.
SID	System Identification.
SMSC	Short Message Service Centre.
TDS	Technical data Sheets.
TLDN	Temporary Local Directory Number.
VLR	Visitor Location Register.

1.3 Technical Assistance

For any questions or comments regarding this document, contact CDG at the address on the cover of this document.

1.4 Structure of the Voice and SMS TDS

The following worksheets should be included in the Voice and SMS Technical Data Sheet (TDS) using Excel format:

- Operator ID and Updates Tab
- Network Elements Tab
- Numbering Tab
- Voice Preferred Roaming List (PRL) Tab
- SMS Tab
- Supplementary Services/Features Tab
- Device Information
- Miscellaneous Tab
- Contact Tab

Within each tab, carriers have agreed to include a minimum set of information using specific content and field names to ease exchange and understanding of a common set of data.

Following is an explanation of each of these tabs including how to properly format the TDS, where the information comes from, why it is included in the TDS and how to fill out your own TDS.

1.4.1 Operator ID and Updates Tab

This tab should include the following information:

– Name of the home operator
– Date of TDS release and distribution
– TDS contact - Name of the person that is responsible for the TDS for your company.
– Operators home country
– Operators website address
– TDS changes and updates including the effective date of each change

  - This should be a duplication of any changes in the other tabs of the TDS.
  - Please include all changes on this tab rather than have the recipients of the TDS search through the rest of the file to find any changes.
- Date of the next TDS update
- Version of the CDG document 81 format being used.
  - This will allow those using automated tools to know if the format has been changed.

1.4.2 Network Elements Tab

This tab should include the following information:

- Switch location –
  - What it is – A descriptive location for the Network Element, generally describing its coverage area
  - Where it comes from – An internal Network Operations group should be able to supply the locations of your MSCs.
  - Why this is included in the TDS – Some indication of the region covered may help your roaming partner to determine that a roaming problem reported to them relates to a specific switch in your network.
  - How to fill it out – Enter a city/state, or region description that best summarizes the coverage area of this switch

- Switch name/naming convention –
  - What it is – A descriptive name for the switch
  - Where it comes from – An internal Network Operations group will have a common way to refer to your switches.
  - Why this is included in the TDS – It is convenient to have a single descriptive name to refer to a network element for human communication, rather than using (for example) a point code.
  - How to fill it out – Use a descriptive name that will be understood by your own network personnel for troubleshooting, e.g. “Los Angeles MSC 2”

- Network element type –
  - What it is – This column is used to note what type of network element is being described. Since the Network Elements sheet is intended to describe only elements which provide service to inbound roamers, the element is expected to be an MSC. Most commercial MSCs also include a VLR, and some may also have HLR (or home subscriber) functionality. In these cases the use of “MSC” or “HLR/MSC” is sufficient.
  - Where it comes from – An internal Network Operations group should be able to supply this info.
  - Why this is included in the TDS – providing this information will help your roaming partners understand your network

  - How to fill it out – enter a name (or combination) from the list

– CLLI code - Common Language Location Identification (CLLI) Code
  - What it is – A CLLI Code is an eleven character alphanumeric descriptor used to identify switches, points of interconnection, and other categories of telephony network elements and their locations.
  - Where it comes from – All valid CLLI codes are created, updated and maintained in the Telcordia Central Location Online Entry System (CLONES) database.
  - Why this is included in the TDS – A CLLI code provides a unique name for a network element that can be easily referenced by network personnel for troubleshooting. In addition, some network elements may use the CLLI code in their office data tables.
  - How to fill it out – Enter the 11 character CLLI code for the network element. If a code hasn't been assigned, leave blank.

– Point code
  - What it is – The point code (PC) is a 14- or 24-bit identifier for a network element. It is the key identifier at the lowest layer of the signaling stack.
  - Where it comes from – Point codes are not internationally unique – they are allocated on a national basis by a national authority. Blocks of codes may be assigned to operators to administer by themselves.
  - Why this is included in the TDS – The PC is the primary piece of routing information used to address signaling messages. Where Global Title Translation or a Roaming Service Provider is not used, the PC of an element must be known to another element that wishes to signal to it.
  - How to fill it out – As per the notes on the spreadsheet, enter a 24-bit point code in "8-8-8" format, i.e. three hyphen-separated decimal numbers between 0 and 255, each representing 8 bits of the PC. For 14-bit point codes, enter in "0-6-8" format – three hyphen-separated decimal numbers: the first is 0, the second between 0 and 63 (representing the most significant 6 bits of the PC), and the third between 0 and 255 (representing the least significant 8 bits).

– MSCID – Mobile Switching Center Identity
  - What it is – The MSCID is the key identifier at the ANSI-41 layer for an MSC.
  - Where it comes from – The MSCID (as defined in ANSI-41) comprises two parts – the System ID, and the Switch Number. The System ID (SID) should be a value assigned to the operator by the relevant national authority, from a range assigned to that country by IFAST. This SID is often, but is not necessarily, the same value as that broadcast by the base stations attached to this MSC. The switch number is assigned by the operator from the range 0-255.
  - Why this is included in the TDS – This key identity is used by a home system to identify the location of a subscriber.

- How to fill it out – Enter the MSCID in a two part hyphenated decimal format: 5 digits (0 padded) to represent the SID part, and three (0 padded) digits to represent the switch number. For example: 00004-010. If the network element doesn't have a MSCID (e.g. an STP), leave blank.

– ESID
  - What it is – The ESID is an equivalent identifier to the MSCID, used by Lucent equipment. It consists of three parts: a switch identifier (aka DCS number, a sub node of the MSC in the Lucent implementation), the ECP number (equivalent to the MSCID switch number), and the SID (as in MSCID).
  - Where it comes from – The DCS number is assigned by the network operations. The other identifiers are as per MSCID.
  - Why this is included in the TDS – Lucent switches may require this format for configuration (although it can be derived from MSCID).
  - How to fill it out – Enter the decimal, hyphen-separated values. If the DCS number is not known, enter this part as 000. In every case the last two numbers should be equivalent to their counterparts in the MSCID column.

– TLDN range
  - What it is – Temporary Local Directory Numbers (TLDNs) are numbers assigned to mobile terminated calls. Since the mobile number itself does not indicate location, the TLDN can be used to route the call leg to the appropriate MSC. A TLDN is assigned by the serving switch, returned in ANSI-41 to the home system, then used as the Called Party Number for the subsequent call delivery leg. A TLDN is a dialable number.
  - Where it comes from – Operators typically assign a "pool" of TLDNs to each MSC out of a range assigned to them by the relevant national numbering authority.
  - Why this is included in the TDS – Home operators need to ensure that routing for the TLDNs of roaming partner MSCs is correctly defined to allow roamer-terminated calls to complete successfully.
  - How to fill it out – Enter the range of numbers assigned to the MSC. If the country code is sent by the MSC, include that. If the TLDN is sent in international format (e.g. the Nature of Number is set to International), then include a leading + symbol. Example: "+1 212 555 1000-1999". If the network element does not have TLDNs (e.g. an STP) then leave this blank.

– Switch vendor
  - What it is – The name of the vendor that supplied the equipment.
  - Where it comes from – There is often a logo or badge on the front of the network equipment. Alternatively, the name on large invoices around the time of network build out may provide a hint.
  - Why this is included in the TDS – Understanding the switch vendor may be useful for troubleshooting – e.g. the roaming partner notices that their

customers report a particular fault only in areas served by vendor X equipment.

- How to fill it out – Enter the vendor name.

– Switch software version
  - What it is – The software load (e.g. specific release number) running in the network element.
  - Where it comes from – An internal Network operations group will be able to provide the current release information.
  - Why this is included in the TDS – Knowing the software revision can assist with troubleshooting.
  - How to fill it out – Enter the software revision in a format that will be understandable by your own network personnel. If progressively rolling an upgrade throughout your network, consider the TDS release schedule carefully to avoid overloading your roaming partners with updates as each switch is upgraded.

– IS-41 revision level
  - What it is – The IS-41 standard has undergone a number of revisions since its original release. Of most interest are Revision A (introduced automatic roaming & call delivery) and Revision C (internationally formatted TLDNs, many additional services). ANSI-41-D is almost identical to IS-41-C. ANSI-41-E is the latest revision of the standard. Most switches today support IS-41-C/ANSI-41-D.
  - Where it comes from – An internal Network Operations group should be able to provide this information.
  - Why this is included in the TDS – Understanding the IS-41 revision level can be important for troubleshooting as well as knowing which services can be expected to be supported.
  - How to fill it out – Enter 0, A, B, C, D or E. If the element does not support IS-41 (e.g. an STP), leave this blank.

– SS7 Provider/RSP
  - What it is – Many CDMA operators use a Roaming Service Provider (RSP) for interconnection to their roaming partners. Depending on configuration, the RSP can “hide” many of the details of the network (e.g. point codes, MSCIDs) from the roaming partner, and represent all elements as a single identity. This greatly simplifies the configuration work required and minimizes the impact of network changes on roaming partners. In other cases, simple STPs from a third party provider are used. This does not hide the network details from the partner, but can provide a known common point for interconnection.
  - Where it comes from – An internal company source will know the details of your interconnection method.
  - Why this is included in the TDS – This information is important for roaming partners to understand how they will connect to your network.

  - How to fill it out – Enter the name of the RSP or STP provider. In some cases, there may be more than one. If you do not use one, enter "<none>".

– Authentication supported – This is a yes or no question asking if authentication is supported in this network element.
  - What it is – Authentication is a means of preventing cloning (copying of a legitimate subscriber's MIN-ESN combination to fraudulently obtain service). For more detail on authentication, see CDG Reference Document #138. In terms of this document, "support" for a serving element (i.e. MSC) implies that the global challenge is broadcast, and the element can request authentication from the home system. CAVE computation is not necessarily required.
  - Where it comes from – An internal Network group will be able to provide this information. Commercial considerations may also affect whether you choose to offer authentication to inbound roamers.
  - Why this is included in the TDS – Some operators will only allow their subscribers to roam to networks where they can be authenticated.
  - How to fill it out – Enter "Y" or "N" as appropriate.

– Authentication algorithm version
  - What it is – Authentication Algorithm Version (AAV) is a parameter defined in ANSI-41 to allow for different flavors of the CAVE algorithm. The value is used as one of the inputs in various CAVE calculations. In practice, only a single version (Hexadecimal C7, Decimal 199) is in use. Note that AAV applies only to CAVE – a different AAV value is not used to identify the AKA authentication method.
  - Where it comes from – This default value is defined in ANSI-41-D and S.S0053 "Common Cryptographic Algorithms". In the unlikely event that a different value is used, an internal network operations group or your network vendor will be able to advise. In general a serving network element should use the AAV value passed to it from the home system.
  - Why this is included in the TDS – If a non-default value were to be used without the far end system knowing, authentication results might be different to those expected, and an authentication failure may be erroneously declared, affecting subscriber service.
  - How to fill it out – Enter the AAV value used by the element, in hexadecimal format. In most/all cases, this value will be C7.

– Subsystem –
  - What it is – A subsystem number (SSN) is an identification of a specific user function within a certain signaling point. It is a part of the Signaling Connection Control Part (SCCP) signaling layer. In IS-41-A, only a single SSN (5) was defined. In IS-41-C onwards, different SSNs are defined for different functions (e.g. MSC, VLR).
  - Where it comes from – The values are defined in ANSI-41-D Ch5, §5.1.2 (see also IS-807 for the equivalent ITU definitions).

- Why this is included in the TDS – Closely related to the “IS-41 Revision” and “Network Element type” fields, this information can be used by Roaming Partners to correctly signal to your network elements.
- How to fill it out – Enter the SSN(s) supported by the network element, e.g “5, 7, 8”. If the element does not support ANSI-41, leave blank (entry of SCCP management SSN for STPs is not required).

1.4.3 Numbering Information Tab

This tab should include the following information:

– General numbering information
  - Are some or all of your MINS allocated by IFAST?
    - Non-NANP operators, enter “some”, “all” or “none”
    - NANP operators should enter “NANP” to emphasize that IFAST compliance is not applicable to them.
    - If you entered “some” or “none”, please specify the MIN ranges not assigned by IFAST in column "O."
  - Are your IMSIs True IMSIs?
    - True IMSIs are IMSIs whose least significant 10 digits do not represent a valid MIN/IRM. Currently CDMA international roaming predominantly uses MIN-based IMSIs (i.e. not True IMSIs)
  - How many digits are used for your subscribers’ MDNs?
    - Enter the digit count (or count range) used for your subscribers’ MDNs. If country code digits are included in the value transmitted by your network towards the roaming partner, include those digits in the count.
  - Does your network support Number Portability (NP) or use split MDN/MSID?
    - If the MIN and MDN of your subscribers are always the identical digit string, enter “No”. This setting is expected to be unusual, as the MIN/IRM may not fit a non-NANP’s national numbering plan, and NP is now in place in North America
    - If your subscribers’ MINs and MDNs are different, but there is a simple rule that relates the two (e.g. MIN 145xxxxxxx → MDN 53xxxxxxx), enter “Yes (Rule-based)”, and consider providing an annotation describing the rule.
    - If there is no rule to relate a subscriber’s MIN and MDN, enter “Yes (no rule)”
    - If Number Portability has been implemented (typically implying that there is no rule relating MINs & MDNs, at least for in-ports), enter “Yes (NP)”
    - If NP disrupts an otherwise rule-based or equal MDN-MIN relationship, enter “Yes (NP)”, but consider making an annotation

describing the old rule, which may still hold in the majority of cases.

- If not using Number Portability now, what is the expected timeline for number portability?
- If moving to Number Portability, what is the expected MDN length?
  - Other operators in your country may use a different MDN/MSISDN length. Enter the digit count (or count range) that would cover all possible subscribers one NP is launched.
- Please note any additional information to share concerning number portability.

– Province/State
  - What it is – This is the Province or State where the subscribers are homed. Some operators assign mobile numbers geographically (in which case this field is relevant), while others use a national number range with no further geographic subdivision.
  - Where it comes from – An internal network group can provide information about this field for each line range.
  - Why this is included in the TDS – This provides a convenient way to categorize number ranges.
  - How to fill it out – Enter the province or state information for each line range, as applicable for your country. If your numbers are not assigned geographically, either enter "National", enter the country name, or enter the province/state information for the physical location of the element on which they are homed.

– Market Name/Switch Name/Naming Convention
  - See equivalent field on the "Network Elements" tab

– Home Carrier SID/BID
  - What it is – This is a value used to populate CIBER records generated by the serving roaming partner.
  - Where it comes from – A home operator may use a SID they already own from a valid range assigned to them (by IFAST & National Authority), or use a BID assigned by CIBERNET. The expected value will be determined by the billing system.
  - Why this is included in the TDS – Correct population of this value ensures that billing records are sent to the correct operator
  - How to fill it out – Enter the "Home Carrier SID/BID" in 5-digit (zero padded) decimal format.

– MCC – Mobile Country Code
  - What it is – The MCC identifies a country according to the IMSI numbering plan. CDMA mobiles are identified by the IMSI, and therefore have an MCC value.

- Where it comes from – MCCs are defined (and allocated to countries) by ITU-T E.212. See the ITU website for a list of codes. Not all operators necessarily program their assigned MCC into their handsets.
- Why this is included in the TDS – Depending on network broadcast parameters, a mobile will include the MCC in its air interface identification. Some vendors' equipment may require this value to be defined in the serving switch to ensure MIN-based roaming. Population of MCC values may also be required to enable Global Title routing of roaming signaling.
- How to fill it out – Enter the three-digit decimal MCC value *that is programmed into your devices*.

– MNC – Mobile Network Code
- What it is – The MNC identifies a network (i.e. a network operator) within an MCC. It forms part of the IMSI structure. CDMA mobiles are identified by the IMSI, and therefore have an MNC value (also sometimes referred to as IMSI_11_12). Although MNC values can be 2 or 3 (decimal) digits, in practice only 2 digit MNCs are supported by current standards.
- Where it comes from – The MNC is allocated by a national authority. For reference, a list of known MNC codes is available on the ITU website. Not all operators currently program their assigned MNC into their devices.
- Why this is included in the TDS – Depending on network broadcast parameters, a mobile will include the MNC in its air interface identification. Some vendors' equipment may require this value to be defined in the serving switch to ensure MIN-based roaming. Population of MNC values may also be required to enable Global Title routing of roaming signaling.
- How to fill it out – Enter the 2-digit decimal MNC *that is programmed into your devices.*

– MBIs – MIN Block Identifiers, or IRM Network Identifier
- What it is –
  - For operators in the NANP area, The MBI is the most significant 6 digits of the MIN. It represents the typical block size (10,000 MINs) allocated to operators (although smaller divisions are possible). Before the advent of number portability, the term NPA-NXX was used. However, with the separation of the dialable number (MDN) from the identification used in the network (MIN), the term MBI was introduced, emphasizing that the MIN is not necessarily a dialable number.
  - For operators outside the NANP area, MIN assignment should be via the International Roaming MIN (IRM), managed by IFAST. The IRM Network Identifier is the most significant 4 digits of an IRM, representing one million MINs.
- Where it comes from – MBIs are allocated by the North American Numbering Plan Administration (NANPA). IRMs are allocated by IFAST.
- Why this is included in the TDS – This is the primary identifier of a subscriber number range, which must be defined in the serving switch to enable roaming.

  - How to fill it out – Enter the 6 (for MBI) or 4 (for IRM) digit decimal value. If your IMSIs are True IMSIs, leave this blank.

– Low Line range
  - What it is – Each row on the spreadsheet represents a range of MINs, IRMs, or IMSI_Ts. This column represents the lower bound of the range described.
  - Where it comes from – In most cases an operator will be assigned the entire MBI or IRM identifier, and the lower bound will be all zeros. In some cases however, the block is “shared” and may start at a different number. The exact ranges will be defined by the codes available to the operator, and possibly restricted to only those ranges actually containing active subscribers.
  - Why this is included in the TDS - Together with the previous and next fields, this field defines the primary identifier of a subscriber number range, necessary for roaming.
  - How to fill it out – Enter the least significant 4 or 6 digits for the lower bound of an IRM or MIN range, respectively. Example: “000000”. If your IMSIs are True IMSIs, enter the lower bound as an (up to) 10 digit number.

– High Line Range
  - What it is – Each row on the spreadsheet represents a range of MINs, IRMs, or IMSI_Ts. This column represents the upper bound of the range described.
  - Where it comes from – In most cases an operator will be assigned the entire MBI or IRM identifier, and the lower bound will be all nines. In some cases however, the block is “shared” and may finish at a different number. The exact ranges will be defined by the codes available to the operator, and possibly restricted to only those ranges actually containing active subscribers.
  - Why this is included in the TDS – Together with the previous two fields, this field defines the primary identifier of a subscriber number range, necessary for roaming.
  - How to fill it out – Enter the least significant 4 or 6 digits for the upper bound of an IRM or MIN range, respectively. Example: “999999”. If your IMSIs are True IMSIs, enter the upper bound as an (up to) 10 digit number.

– Point code
  - See the equivalent field on the “Network Elements” tab

– CLLI Code
  - See the equivalent field on the “Network Elements” tab

– MSCID
  - See the equivalent field on the “Network Elements” tab

– ESID
    - See the equivalent field on the “Network Elements” tab

– Address for MO SMS
    - What it is – When a roaming mobile originates an SMS, the message must be sent back to the subscriber’s home Message Center (MC). The serving network element must know in advance where to send the message to.
    - Where it comes from – The address will be defined by an internal network operations group. It will often be a point code.
    - Why this is included in the TDS – This information is required for Mobile-originated SMS.
    - How to fill it out – If entering a PC, use the formatting described above for the Point Code field. If using an RSP, an acceptable entry is “RSP Common PC”. If Global Title Routing is used, enter details of the Global Title here, e.g. Global Title Indicator, Address (e.g. MIN), Translation Type, Numbering Plan etc.

– Clearing house Carrier ID code –
    - What it is – Billing Clearinghouses assign ID codes to their customer carriers.
    - Where it comes from – This value is assigned by your clearinghouse
    - Why this is included in the TDS – The information can be useful for troubleshooting billing issues.
    - How to fill it out – Enter the clearinghouse vendor in parentheses and code, e.g. “(Syniverse) 0123”.

– Not assigned by IFAST
    - What it is – Non-NANP operators should use IRM ranges assigned by IFAST to ensure global uniqueness. This field serves to identify any ranges in use by a (non-NANP) operator which is not IFAST-assigned. This range could potentially clash with another operator’s MIN/IRM.
    - Where it comes from – The range of MINs/IRMs listed can be compared against the allocation table available on the IFAST website to identify any gaps.
    - Why this is included in the TDS – Highlighting non-IFAST ranges can indicate to operators the potential for a conflict, and the need to take special care if/when loading these ranges.
    - How to fill it out – For non-NANP operators, enter an “X” in this field if the range is not assigned by IFAST. Otherwise (including NANP operators) leave blank.

1.4.4 Voice PRL Tab

This tab should include the following information:

- City/Market – Market name or city which is covered by the broadcast SID or the BID if BIDs are used.
- State/Province or National Coverage – The state or province where the broadcast SID or BID covers. If one SID and BID cover the entire country please enter "national coverage."
- Regulatory market breakdown
    - What it is – A description of how your country is broken out from a telecommunications regulatory perspective.
    - Where it comes from – This generally comes from the government agency that regulates wireless telecommunications in your country.
    - Why this is included in the TDS - This information assists carriers in understanding where the market boundaries are so they can develop their PRL and customer support tools accordingly.
    - How to fill it out – Create a new tab for the TDS worksheet which describes your country's geographic divisions. Enter the corresponding description in the field.

City/ Market	State or Province/ National Coverage	Regulatory Market Breakdown	MCC	MNC	Is MCC MNC currently broadcast ?	Broadcast SID	BID	NID
Albany	NY	**MTA-1 BTA-7**	310	27	Y	4162	30925	65535
Dallas	TX	**MTA-7 BTA-101**	310	27	Y	4154	30647	65258

Figure 1-1 Using regulatory boundaries with a United States example

Example: United States of America - Major Trading Areas (MTA)/Basic Trading Areas (BTA) – For a better understanding of these boundaries within the United Sates of America please reference this website. http://wireless.fcc.gov/uls/utilities/mta.html#crossref

City/ Market	State or Province/ National Coverage	Regulatory Market Breakdown	MCC	MNC	Is MCC MNC currently broadcast?	Broadcast SID	BID	NID
Tijuana	BCN	**Region 1**	334	2X	Y	24615	30859	65535
Cancun	QROO	**Region 8**	334	2X	Y	24593	30925	65535
Mexico City	DF	**Region 9**	334	2X	Y	1525	30924	65535

Figure 1-2 Using regulatory boundaries with a Mexico example

Example: Mexico Wireless Regions as defined by COFETEL. http://210.54.118.1/mediawiki-1.5.3/images/8/8c/Mexico_Wireless_Regiones_COFETEL.pdf

– Mobile Country Code (MCC) and Mobile Network Code (MNC)
  - o What it is
    - The MCC is a numerical description unique to the country in which the network is operated. There will usually be only one MCC unless the network operates in multiple countries.
    - The MNC is unique to a specific network. A carrier may have more than one MNC but it is most desirable (from a roaming partner perspective) to have only one.
  - o Where it comes from
    - The MCC is specified by ITU E.212. Following is the link to the update as of July 2005. http://www.itu.int/dms_pub/itu-t/opb/sp/T-SP-E.212A-2005-PDF-E.pdf.
    - An MNC (IMSI 11_12) is to be defined for each operator and generally is controlled by a national regulatory body or their agent. A list of MNCs can be found on the ITU website at http://www.itu.int/opb/publications.aspx?lang=en&parent=T-SP-OB.837-2005. Downloading this document may not free unless you are an ITU member.
  - o Why this is included in the TDS – This information must be exchanged in order for carriers to utilize Enhanced PRLs (EPRL). If using EPRL, the home partner will need this information entered into their own PRL in order to acquire the serving network. For more information on EPRL go to http://www.cdg.org/members_only/ref_doc.asp, scroll to the roaming documents CDG reference document #86.
  - o How to fill it out
    - Enter the unique, officially assigned MCC and MNC in the fields and indicate if the assigned MCC MNC are currently being broadcast.
    - If multiple MCC MNCs are being used and broadcast, indicate each one on a separate line with correlating markets and/or national market breakdown.

City/ Market	State or Province/ National Coverage	Regulatory Market Breakdown	MCC	MNC	Is MCC MNC currently broadcast?	Broadcast SID	BID	NID
Odessa	MO	MTA 34 BTA 226	**310**	**27**	**Y**	24615	30859	65535

Cleveland	OH	MTA 16 BTA 84	**310**	**28**	**N**	24593	30925	65535

Figure 1-3 Using Multiple MCC MNCs

– Broadcast/Transmitted SID
  - o What it is
    - ▪ A System Identification code (SID) is a 15-bit binary number that can be represented by a five-digit decimal number.
    - ▪ The SID is used by a network to identify itself. Each SID is globally unique and assigned to a particular operator.
    - ▪ The SID is also used within the MSC identity and to properly route roaming call records for billing among roaming partners.
    - ▪ A SID is allocated to a carrier by its national telecommunications authority or an appointed agent.
  - o Where it comes from – IFAST http://www.ifast.org/ assigns SIDs to countries and each national regulatory agency assigns SIDs to carriers.
  - o Why this is included in the TDS – Roaming partners require knowledge of the serving partners SIDs in order to know what to put in the home carrier PRL for roaming system acquisition.
  - o How to fill it out
    - ▪ Only transmitted/broadcast SIDs should be included in the TDS. If a carrier has been assigned a SID which is currently not being broadcast, do not include it in the TDS.
    - ▪ Please use one entry for each SID or BID per technology type. For example, if you use the SID 4162 for both analog and CDMA the TDS should have two lines. See Figure 1-4.

City/ Market	State or Province/ National Coverage	Regulatory Market Breakdown	MCC	MNC	Is MCC MNC currently broadcast?	Broadcast SID	BID	NID	Mode of Operation (AMPS, CDMA, TDMA)	Freq (MHz)
Albany	NY	MTA-1 BTA-7	310	27	Y	4162	30925	65535	**CDMA**	1900
Albany	NY	MSA-1 RSA-7	310	27	Y	4162	30924	65535	**AMPS**	800

Figure 1-4 Multiple technology entry

– BID – Billing identifier
  - o What it is
    - ▪ Similar to a SID, a BID is a five digit decimal number. A BID can exceed the 15-bit constraint because a serving carrier's cell site does not broadcast BIDs.

        - The intent of a BID is to either segment a carrier's subscriber base, or to further segment a geographic area defined by a SID for billing purposes.
    - Where it comes from – BIDs are assigned and maintained by Cibernet. http://www.cibernet.com
    - Why this is included in the TDS
        - Some carriers use BIDs for data analysis and to map out cost savings.
        - BIDs are not to be used in the PRL content but can assist carriers in determining which transmitted/broadcast SIDs should go into the PRL.
    - How to fill it out
        - BIDs should be correlated with SIDs. There may be more than one BID associated with a SID or vice versa. If this is the case, separate rows should be used for each BID/SID combination.
        - If BIDs are not being provided please enter NP (not provided) in that column.

– NID – Network Identification Number
    - What it is – A NID is a 16-bit binary number that can be represented by a five-digit decimal number. The use of a NID, by the mobile device, to identify a network is optional. The NID is used to subdivide the SID namespace. Each NID is unique to a particular SID.
    - Where it comes from - A NID is locally assigned and administered by the operator owning the SID.
    - Why this is included in the TDS – The NID is a subset of a SID which can be used in conjunction with a SID to provide greater granularity in system selection.
    - How to fill it out
        - Please create a separate entry/row for each unique NID.
        - If NIDs are not being provided please enter NP (not provided) in that column.

– Mode of operation (AMPS, CDMA, TDMA) – Please indicate what the technology is for each broadcast SID.
    - Why this is included in the TDS –Some carriers have more than one technology in their network for example, CDMA and AMPS. Roaming partners may choose to only roam on certain technologies so it is important to distinguish between SIDs that are CDMA and those that are AMPS. This allows a partner to utilize only the specific information they need for their own PRL.
    - How to fill it out – If multiple technologies are present in your network, include a line item for each technology and each SID/BID and NID related to that technology. See Figure 1-4.

– Frequency spectrum of operation (MHz)

- What it is – This indicates what frequency is used such as 1900, 800, 450.
- Where it comes from – A carrier makes this selection.
- Why this is included in the TDS – Operators must understand what frequency is used on the serving network in order to ensure inbound devices can acquire the serving network.
- How to fill it out – If multiple frequencies are present in the network, include a line item for each frequency and each SID/BID and NID related to that frequency. See Figure 1-5.

City/ Market	State or Province/ National Coverage	Regulatory Market Breakdown	MCC	MNC	Is MCC MNC currently broadcast ?	Broadcast SID	BID	NID	Mode of Operation (AMPS, CDMA, TDMA)	Frequency spectrum of operations (MHz)
Albany	NY	MTA-1 BTA-7	310	27	Y	4162	30925	65535	CDMA	**1900**
Albany	NY	MTA-1 BTA-7	310	27	Y	4160	30924	65535	CDMA	**800**

Figure 1-5 Multiple Frequencies

– Block/Band
- What it is – The block is a grouping of channels inside a band class. It is an indicator to the mobile device as to which PCS block or blocks to search for CDMA service.
- Where it comes from – Blocks are described in the 3GPP2 document C.S0057-A v1.0 http://www.3gpp2.org/Public_html/specs/C.S0057-A_v1.0_060112.pdf
- Why this is included in the TDS – This information is required to build a PRL to access a roaming network. Some operators are used to working with blocks and others will prefer channels so specifying both will fit all needs.
- How to fill it out – Please only enter one block in each row. If more than one block applies to one market please use multiple rows so it is clear which channel goes with which block.

Block/ Band	Band Class	PRL required channels Primary Access Channel No. (center freq)	PRL required channels (beyond primary access channel)	Other Channels (not required to be in partner PRL)	Hash/ redirect Yes or No	Minimum P Rev
D	*1*	*325*	*xx*	*350*	*yes*	*IS 2000 Rel A*
E	*1*	*325*	*xx*	*350*	*yes*	*IS 95 B*
A	*0*	*200*	*xx*	*25*	*yes*	*IS 95 B*

Figure 1-6 PRL Blocks, Bands and Channels

– Band Class
  - What it is – Band class is the term used to describe the standards segmentation of the frequency spectrum. Every CDMA system operates on a particular frequency, or more specifically, a particular channel within a particular band class. Band classes and channels are described in the 3GPP2 document C.S0057-A v1.0 http://www.3gpp2.org/Public_html/specs/C.S0057-A_v1.0_060112.pdf
  - Where it comes from – This is pre-designated based on your chosen frequency.
  - Why this is included in the TDS - This information is used to construct the PRL and to help select mobiles that are compatible with your network.
  - How to fill it out - Band Class should be populated with the number of the CDMA Band-Class (0,1,2,3,4, etc.). Examples of CDMA band classes are listed in Table 1-2. This is not an exhaustive list. 3GPP2 document C.S0057-A v1.0 should be referenced if an exhaustive list is required.

Band Class	Frequency
CDMA Band Class 0	800
CDMA Band Class 1	1900
CDMA Band Class 2	TACS
CDMA Band Class 3	JTACS
CDMA Band Class 4	Korea PCS
CDMA Band Class 5	450
CDMA Band Class 6	2000
CDMA Band Class 7	700
CDMA Band Class 8	1800
CDMA Band Class 9	900
CDMA Band Class 10	Secondary 800
CDMA Band Class 11	400 European PAMR
CDMA Band Class 12	800 PAMR
CDMA Band Class 13	2.5 IMT-2000 Extension
CDMA Band Class 14	US PCS 1.9
CDMA Band Class 15	AWS

Table 1-2 CDMA Band class and frequency

– PRL required channels, Primary access channel, number of center frequency
  - What it is – Channel describes an allocation of a portion of bandwidth within a band class; channel number only has meaning in the context of a band class. The bandwidth of a channel varies across band classes. List all the channels that need to go into a roaming partner's PRL in order to properly acquire service.
  - Where it comes from – Band classes and channels are described in the 3GPP2 document C.S0057-A V1.0 http://www.3gpp2.org/Public_html/specs/C.S0057-A_v1.0_060112.pdf
  - Why this is included in the TDS – Roaming partners require channel information in their PRLs in order to properly acquire the visited network.
  - How to fill it out – List only the number of the center frequency of the primary access channels which should be included in your roaming partner's PRL. If no one channel is broadcast everywhere in the coverage area, then enter multiple channels. Please use one column per channel so if more than one channel is required add a column per channel.

– PRL Required Channels, Beyond Primary Access Channels
    - What it is – In most cases, a single channel will be sufficient for a mobile to acquire service on the network, even if the network is broadcasting on more than one channel in that location. This is because the list of available channels is broadcast to the mobile, and the mobile and network agree on a channel to use from the list (a process called “hashing”). However in some cases (e.g. the mobiles uses a PRL with a wildcard SID and specific channels in the associated acquisition record, or the network does not advertise all channels in the CDMA Channel List Message), there may be a need to explicitly define the other channels used by the network.
    - Where it comes from – An internal radio engineering group will be able to provide the list of channels
    - Why this is included in the TDS – For the reasons listed above, operators may sometimes require more details about the available channels that a network is broadcasting.
    - How to fill it out – Enter the channel numbers as defined in C.S0057 in a comma separated list.

– Other Channels Not required to be in Partner PRL, Reserve channels
    - What it is – Channels that a carrier plans to use in the future but are not currently in use. These are channels that the roaming partner doesn't need to put in their PRL for acquisition unless something out of the ordinary is going on such as using a wildcard in the PRL. If a carrier uses a wildcard SID all channels must be known and in the visiting carrier PRL in order to properly acquire the network.
    - Where it comes from – An internal radio planning group may be able to provide projected future channel information, although this may be subject to change before actual implementation,
    - Why this is included in the TDS – For carriers who partner with carriers that use a wildcard SID. In this case it is necessary to properly populate their PRL to search for all possible channels.
    - How to fill it out – Please use one column per channel so if more than one channel is required add a column per channel.

– Hash/Redirect Yes or No
    - What it is – If the network includes all available channels in the CDMA Channel List, or otherwise uses Redirection messages to direct a mobile to another channel, fewer channels may be required in the PRL to reliably acquire the network.
    - Where it comes from – An internal Radio Engineering group should be able to provide this information. In most cases the answer will be “Yes”
    - Why this is included in the TDS – it may allow an operator to simplify their PRL.
    - How to fill it out – Indicate “Yes” if Network advertises all channels in the Channel List Message, or otherwise redirects mobiles across channels.

– Minimum P Rev.
    - What it is – Protocol revision of the network - i.e. IS-95A, IS-95B, IS2000 Rel. 0, IS2000 Rev A, etc. The network broadcasts its minimum protocol revision value. Any device with a revision below this will not acquire service.
    - Where it comes from – This information resides with the operator network team who should be able to provide it to the person completing the PRL tab. The specific protocol revision value is contained within each version of IS-95/2000.
    - Why this is included in the TDS – To ensure devices roaming onto the network are compatible.
    - How to fill it out – Please indicate the minimum P Rev. for each market.

1.4.5 SMS Tab

This tab provides a list of the technical information required to provision MO and MT SMS roaming including the following:

– Short Message Service Center (SMSC) Name
    - What it is – SMSC (also known as Message Center - MC) is a network element in the mobile telephone network which delivers SMS messages.
    - Where it comes from – This is a descriptive name used by the operator to identify their SMSCs. It has no actual configuration use in the network.
    - Why this is included in the TDS – It provides a convenient term of reference when discussing SMS implementation between carriers.
    - How to fill it out – Use the name commonly in use in your company to describe your SMSCs.

– SMSC Point code
    - What it is – The MTP signaling point code (SPC) used to address the SMSC. Formats may differ from country to country (e.g. 24-bit in US/China, 14-bit elsewhere).
    - Where it comes from – This is an essential identifier that must be present in the SMSC. Your own network team should be able to provide this information.
    - Why this is included in the TDS – If your roaming partner "sees" real point codes in your network, then they will need to know the SMSC point code in order to send traffic to it (e.g. for MO-SMS).
    - How to fill it out – There are several ways of representing point codes, which can look the same, causing confusion. Specific guidelines are still TBD. Note that in many cases today for international roaming, your roaming partner will never "see" this point code (or any others in your network), as all signaling appears to be with the RSP.

– SMSC CLLI Code
  - What it is – The Common Language Location Identifier (CLLI) code is an 11 (alphanumeric) character code used to identify an ANSI network element. It is essentially a standardized format of a descriptive name for the node.
  - Where it comes from – CLLI codes are administered by Telcordia. Only network elements with an ANSI point code will have a CLLI.
  - Why this is included in the TDS – Although the CLLI is not transmitted in any signaling message, some systems may use this in internal configuration data as an identifier. Also, some operators may prefer to use the CLLI to refer to a specific SMSC.
  - How to fill it out – If your SMSC has a CLLI, enter the 11 character code here. If you do not have a CLLI, enter "N/A".

– SMSC ESID
  - What it is – The ESID is a Lucent-specific identifier closely related to the MSCID. For SMSCs, the ESID (if defined) will probably be the MSCID with the parts reversed, e.g. SwitchNumber-SID
  - Where it comes from – See MSCID
  - Why this is included in the TDS – See MSCID
  - How to fill it out – Enter the ESID in decimal format.

– SMSC MSCID
  - What it is – In general, an MSCID is a key identifier in ANSI-41 networks, comprising SID and SwitchNumber parts. An SMSC need not have an MSCID - this parameter is not defined in ANSI-41 in relation to a MC. However, some MSCs may use a remote MSCID in their configuration data as an internal index to find routing information for the SMSC.
  - Where it comes from – An SMSC MSCID is not transmitted in any ANSI-41 signaling messages. If required, the MSCID will typically be allocated by the operator's Network Configuration/Translations group from a valid SID, with a switchnumber chosen so as not to clash with any "real" MSCIDs. If you don't have this requirement in your network, you may have never allocated an MSCID for your SMSCs. Your roaming partners would then presumably make one up themselves with the same considerations for clashes as described above.
  - Why this is included in the TDS – Some operators may need this information as part of defining routing from an MSC to the SMSC.
  - How to fill it out – Enter the MSCID in the form [SID]-[SwitchNumber], where both numbers are coded decimal. Example: 8580-20. Note that in many cases today for international roaming, the MSCID that roaming partners will define in their switches will be that of the RSP, as all signaling appears to be with the RSP.

– SMSC Subsystem
    - What it is – Subsystem numbers are used to identify applications within network entities which use SCCP signaling. Multiple subsystems may reside at a single MTP point code.
    - Where it comes from – ANSI-41 specifies the use of subsystem number (SSN) 11 for SMS when using ANSI SCCP. The value for ITU SCCP is left for carrier determination. An operator's network team should be able to advise the SSN used for the operator's SMSCs.
    - Why this is included in the TDS – This information may be required to ensure that the SMSC application is correctly addressed when signaled to by the roaming partner.
    - How to fill it out – Enter the SSN in decimal format.

– SMSC Vendor
    - What it is – The vendor name of your SMSC.
    - Where it comes from – Your network team should know the vendor.
    - Why this is included in the TDS – Some vendors configure things differently. Knowing the SMSC vendor of your partner can assist you with trouble shooting issues.

Correlated line ranges can be found on the numbering information tab.

1.4.6 Supplementary Services/Features

This tab provides a list of a home carriers available and requested supplementary services and the feature codes to activate and deactivate each service or feature.

– Services
    - What it is – A list of features or services that a home carrier wishes to support or wishes to request be supported by a serving carrier. Filling out the list in this document does not legally bind or obligate a carrier to support any feature or service. The contract should be referenced to understand what features a carrier has legally agreed to support.
    - Where it comes from – Use the list provided in the Excel template as a starting place and add additional services or features as desired.
    - Why this is included in the TDS –Including this in the TDS clarifies what services and features each carrier wishes to support or have supported for their subscribers.

Service	Action	As Serving Network[1] (Available / Not Available)	Request Services[2] (Support / Don't support)	Requested Feature Codes[3] (List Feature Code)
Call Origination.	N/A	Available	Support	N/A
Call Termination.	N/A	Available	Support	N/A
Call Forwarding Unconditional.	Registration	Available	Support	*72
	De-activation	Available	Support	
	Activation	Available	Support	
Call Forward Busy.	Registration	Not available	Support	*90
	De-activation	Not available	Support	
	Activation	Not available	Support	
Call Forward No Answer.	Registration	Available	Don't support	*92
	De-activation	Available	Don't support	
	Activation	Available	Don't support	

Table 1-3 Supplementary Services for Voice and SMS

– As Serving Network (Available/Not Available)
  - What it is – This column lists services for which a carrier is willing to work to support on their network as a serving carrier for inbound roamers. This is not a legally binding document. Reference the contract to understand what must be supported.
  - Where it comes from – Use the list provided in the Excel template as a starting place and add additional services or features as desired.
  - Why this is included in the TDS –Including this in the TDS clarifies what services and features each carrier wishes to support or have supported for their subscribers.
  - How to fill it out – Indicate “available” if as the serve carrier you are willing to try to support this feature for inbound roamers. Indicate “unavailable” if as the serve carrier you are unable or unwilling to attempt to support this feature.

– Request Services (Support/Don’t Support)
  - What it is – This column lists services which a home carrier expects or requests the serving carrier support.
  - Where it comes from – Use the list provided in the Excel template as a starting place and add additional services or features as desired.
  - Why this is included in the TDS –Including this in the TDS clarifies what services and features each carrier wishes to support or have supported for their subscribers.
  - How to fill it out – Indicate “support” if you wish for the serving carrier to try to support this feature for your roamers. Indicate “don’t support” if you do not want this feature supported for your roamers while on the serving partner network.

– Requested Feature Codes (List Feature Codes)
    - What it is – This column lists Feature Codes which the Home carrier requests to be able to use in the Serving carrier Network while outbound roaming. This should reflect the actual feature code dialed correlating with the feature expected. For example, *72 might be entered in the "call forwarding unconditional" row.
    - Where it comes from – Your network team should be able to provide a list of feature codes your customers are used to using on network. You may wish to mirror these for roaming.
    - Why this is included in the TDS –Including this in the TDS allows the serving carrier to implement these codes for the correlated services and features IF they have been agreed upon as required features in the contract.
    - How to fill it out – List the codes the home wishes the serve to implement.

1.4.7 Device information

This tab includes a list of questions from both the visiting and serving carrier perspective such as the following:

As Home Carrier

– Do you send CDMAServiceOptionList (Yes or No)
    - What it is – The CDMA Service Option List (SOL) is an optional part of the ANSI-41 subscriber profile. It lists the service options (e.g. vocoder types, 1X packet data) allowed for the subscriber, in descending order of priority
    - Where it comes from – The service option number values are defined in 3GPP2 C.R1001. An internal network group should know (or an examination of an outgoing ANSI-41 trace will tell) whether this parameter is transmitted.
    - Why this is included in the TDS – If this parameter is not sent, operators may not be able to allow packet data services for your subscribers.
    - How to fill it out – Enter Yes or No as appropriate.

– Applicable handset protocol used (MOB_P_REV) (sent by handset)
    - What it is – This setting (sent in various IS-2000/IS-95 air interface messages) advises the network which revision of the standard the mobile supports.

  - Where it comes from – The specific protocol revision value is contained within each version of IS-95/2000. An internal Handset group should be able to advise the correct value(s) for your devices.
  - Why this is included in the TDS – It is useful for a roaming partner to understand the general capabilities of your devices. It's no use trying to arrange 1X roaming if the devices are not 1X capable.
  - How to fill it out – Enter the applicable value(s), comma separated if more than one. If some values are considerably more common than others (e.g. the majority of phones support 1X with 5% legacy IS-95-A devices still in circulation), consider providing this information in an accompanying note.

– Handset vocoder setting for both originating and terminating calls. Include both the preferred and alternate settings.
  - What it is – when originating a call, a device will usually request a particular vocoder type (e.g. EVRC, 13k QCELP), and may also support other types via negotiation with the network. Similarly when paged, the device may accept the network-proposed vocoder or propose a different one.
  - Where it comes from – An internal handset team will know the vocoder capabilities of your devices. The vocoder types are defined as specific Service Options in C.R1001
  - Why this is included in the TDS – Carriers may need to allocate vocoder resources specifically for roamers if the type(s) supported by roamers differ form those in use by their own subscribers.
  - How to fill it out – Enter the vocoder types used in descending order of preference, e.g "EVRC, 13K QCELP, 8K QCELP". If the preference differs between originating and terminating calls, specify two lists.

As Serving Carrier

– Applicable protocol used (P_REV transmitted by network)
  - What it is – the network broadcasts its current protocol revision. The revision that is actually used between the device and network will be the lower of this value and MOB_P_REV (provided MOB_P_REV is not less than MIN_P_REV).
  - Where it comes from – the P_REV values are defined in each revision is IS-95/2000. An air interface trace or an internal network group should be consulted to determine the current value for your network.

  - Why this is included in the TDS – It provides a basic indication of the serving network's capabilities.
  - How to fill it out – Enter the broadcast value, e.g. 6.

– Minimum handset protocol accepted (MIN_P_REV transmitted by network)
  - See the equivalent field on the Voice PRL tab

– Do you honor a received Service Option List (Y/N)
  - What it is – Depending on configuration, a serving system may use the received SOL values to decide which Service Option to use when paging a mobile, and which ones to allow on mobile originations. Alternatively, the values may be overridden by locally assigned defaults.
  - Where it comes from – An internal network team should be able to provide this information.
  - Why this is included in the TDS – Operators may wish to understand the vocoder type and data service options their subscribers will receive, to better understand the quality experience to be expected by their customers.
  - How to fill it out – Enter Yes or No

– Network Service Negotiation Settings
  - What it is – IS-95/2000 provides for a negotiation mechanism by which devices and the network come to an agreement on the values of various settings used to define a traffic session, including most notably the Service Option to be used.
  - Where it comes from – The negotiation scheme is defined in IS-2000. An internal network configuration group should be able to provide the necessary information.
  - Why this is included in the TDS – It helps clarify how devices will behave in your network.
  - How to fill it out -
    - What service option do you use to page the mobile for a MT voice call? – this entry may be "SOL defined" or a particular vocoder type
    - If EVRC originated by handset will your network negotiate and if so to what? – typical answers include "EVRC accepted", "negotiate to 13K"
    - If 13k originated by handset will your network negotiate and if so to what?

- If 8k originated by handset will your network negotiate and if so to what?

– Handset Lab-Test required in your premises (Y/N)
  - o What it is – Some operators require a lab test of inbound roaming devices before allowing them to roam on their networks. This practice is generally discouraged as it places a heavy burden on home operators to test every single handset model in the roaming market before launch. This requirement is also difficult to enforce in practice.
  - o Where it comes from – This is a policy decision for your company.
  - o Why this is included in the TDS – To alert the home operator to the testing requirement, if present.
  - o How to fill it out – Enter Yes or No.

– Domestic Type Approval required for roaming handset(Y/N)
  - o What it is – Some country authorities require formal type approval (as opposed to operator testing as above) before allowing a particular handset model to roam in the country.
  - o Where it comes from – If in force, this requirement will be advised by the relevant national authority in the serving country.
  - o Why this is included in the TDS – To alert the home operator to the potential testing requirement.
  - o How to fill it out – Enter Yes or No.

1.4.8 Miscellaneous information

This tab provides detailed, miscellaneous information, useful for international roaming.

Dialing Plan information

This sheet contains example dialing strings in order to provide guidance to the home operator (and ultimately to the roaming subscribers) on how to make specific call types.

1. Dialing Plan	Dialing Action	Example from Mexico using a NANP roamer
Roamer to Roamer	(international LD call mobile to mobile)	001 XXX XXX-XXXX
Roamer to IDD Calls	(mobile to international landline)	001 XXX XXX-XXXX
	(mobile to international mobile)	001 XXX XXX-XXXX
Roamer to PSTN Calls	(mobile to landline local call)	XXX XXX-XXXX
Roamer to Mobile Calls	(local call)	044 XXX XXX-XXXX
Roamer to PSTN Calls	(domestic long distance call)	01 XXX XXX-XXXX
Roamer to Mobile Calls	(domestic long distance call)	045 XXX XXX-XXXX
Emergency Numbers		
Customer Service	Customer Care number for roamers	611
Other service numbers		

IRM/MDN conflicts

2. IRM Conflicts/MDN Conflicts - Please state any known conflicts and also report these to IFAST.

Conflict	Carrier with whom this information is in conflict	Country
e.g. MIN 212 555 xxxx		
e.g MDN 61 401 xxx xxx		

1.4.9 Contacts

This tab contains contact points for the roaming service agreement, roaming testing, technical support, billing, emergency support numbers and other contacts. Information regarding the time zone and Daylight Savings Time is also provided.

– Contacts
  - o What it is – A complete list of roaming team contacts.
  - o Why this is included in the TDS – This allows each carrier to have a complete list of roaming partner contacts.
  - o How to fill it out – Include all contacts which might need to interact with a roaming partner. The tab can be altered to fit the home carrier team but ensure each responsibility is called out so partners know who to call for what. This should be updated and sent to carriers each time a roaming contact changes.

1.4.10 General Requirements

Exchange frequency – A TDS should be updated and distributed each time information on the TDS changes. These changes should be reflected on the first tab, Operator ID and Updates, so recipients can easily identify changes.

Exchange format – Excel format is desired and the example template is in Excel. This format aids carriers that utilize automated tools to process TDS and for PRL development and testing.

Exchange method – Carriers often email TDS which sometimes get lost or overlooked. Missing TDS updates from a roaming partner can result in loss of service or degraded roaming service quality. The recommended method is to use the on line, free CDG CDMA Roaming Information Exchange Tool (C-RIET) which is found at this address: http://www.cdg.org/roamingteam.

1.5 Structure of the Voice and SMS Billing TDS

See CDG Reference Document #59, Billing Specifications for details of the Voice and SMS Billing TDS and template.

2. Appendix I, Network Voice and SMS Technical Data Sheet

Figure 2-1: CDMA International Roaming Voice and SMS Technical Data Sheet