COMMITTEE T1 - TELECOMMUNICATIONS

T1S1.3

Phoenix, Arizona – April 2-6, 2001

Contribution

TITLE:	**Assignment of ANSI SS7 Signaling Destination Point Code to Mobile Operators outside the United States**
SOURCE*:	**International Forum on ANSI-41 Standards Technology (IFAST). See attached list of member organizations.**
PROJECT:	**This contribution does not relate to any existing T1S1 work project.**
DISTRIBUTION TO:	**T1S1.3**

ABSTRACT

This contribution, agreed to at multiple IFAST meetings, proposes that a range of ANSI SS7 Signaling Destination Point Codes be allocated for assignment to cellular operators outside the United States, to facilitate interconnection with US-based Gateways for the offering of international roaming services between networks based in the IS 41 protocols.

NOTICE

(On contributions, use the source organization's disclaimer. On Committee documents, use the Committee T1 disclaimer shown below)

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1.   Introduction

As a general rule, non-GSM mobile networks make use of IS-41 protocols for mobility functions such as call delivery, authentication, messaging etc. To address SS7 messages IS-41 uses ANSI formatted Destination Point Codes (DPCs), which are assigned by Telcordia[1] to US-based SS7 Network Operators. Such assignments are accommodated by the ANSI SS7 Point Code Assignment Guidelines developed and maintained by Committee T1.

In order to establish mobility interconnection between US-based operators and other countries' operators, there must be signaling addressing, and, therefore, ANSI DPCs are utilized for this purpose.

Currently, given that ANSI DPC's are not assigned to non-US Operators, US-based signaling network operators and SS7 service providers are assigned the DPCs and are leasing a portion of their addresses to the interconnecting non-US Operators for the duration of their interconnection contracts. A non-US Operator that wants to change interconnecting signaling carriers must be aware that this requires a change in the DPC's that they are using. (See attached diagrams.)

A change of DPCs is a very significant task that involves changes in every switch (typically hundreds of them) of all the roaming partners at the same time. It is something to be avoided.

2.   Discussion

Cellular telephony networks must be interconnected. This is a basic aspect of the mobile telephony business.

International roaming is developing and, therefore, the number of agreements between mobility service providers in many countries is growing. Roaming services are a key factor in the growth of high-traffic business customers. In this context, the fact that DPC's are under the control of the signaling carriers creates a dependency that is against the free market and competition principles. Service providers find it onerous to have to change signalling addresses throughout their networks in order to change signalling service providers.

Operators should be able to choose freely the signaling carrier that best meets their needs, without the constraints of DPC control and the threat of an inevitable change of DPC's.

The fact that IS-41 is using DPCs in the ANSI format, instead of the international ITU format, imposes the use of ANSI conventions and assignment rules. This contribution proposes and requests modification of these rules so that a non-US Operator can be entitled to have unique DPC's assigned to themselves in order to provide international roaming services with US cellular operators in a fair and competitive environment.

In general, ANSI Networks are interconnected with ITU networks through a gateway, which does the translation between the ANSI signaling format and the ITU format. The fact that the Gateway could be located in the ANSI or in the ITU networks is not relevant because the ITU

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[1] Telcordia is the SS7 Point Code Administrator under contract to the Alliance for Telecommunications Industry Solutions (ATIS) and under the technical oversight of Committee T1 (T1S1.3).

signaling addresses must be mapped in the ANSI addressing field and vice versa, if an interconnection between both networks is required.

3.   Why Global Titles are Not a Short Term Solution…

Global titles are a long-term solution for providing a signaling connection between wireless systems on different national SS7 networks, but not a short term solution (i.e. within 5 years).

Several ANSI global titles have been defined for use by wireless systems (e.g. MIN to HLR, MIN to MC, E.212 IMSI to HLR, E.212 IMSI to MC, E.164 DN to HLR and E.164 DN to MC) but there is little implementation of these in the ANSI SS7 network. Even if these global titles were already implemented, they still would not ensure connectivity, as modifications to both international gateways and other national SS7 protocols are also required.

Every country that wishes to use wireless signaling on an SS7 network must provide compatible global titles to those defined for use in ANSI. To our knowledge this standardization process has not yet occurred.

International SS7 signaling gateways cannot route wireless signaling messages between national networks until compatible global titles are defined in both the origin and destination countries, and until a clear mapping is defined. This mapping will not be straightforward, especially when attempting to map onto E.164/DN based global titles that may be affected by number portability.

4.   Proposal

To avoid the limitations of the current situation, ANSI should allow signaling DPCs to be assigned to operators outside the US territory.

One thing must remain clear: There is no a real ownership of a DPC. Every operator is free to set up any DPCs in its network. The problem arises when networks are interconnected.

What we are proposing here is to regulate the use of a number of these signaling codes within the US Operators and signaling carriers, in order to improve the way that US networks are interconnected at an international level.

Specifically, this contribution requests that Committee T1 modify the SS7 Point Code Assignment Guidelines by allocating a block of Point Codes for non-US service providers in the above context. The modification of the Guidelines would then authorize the SS7 Point Code Administrator to assign codes from the allocated block to non-US providers. The authors of this contribution will gladly assist Committee T1 in the development of appropriate text and criteria for the Guidelines that will both satisfy the above-defined requirements and ensure that codes are assigned only in an appropriate, legal, and efficient manner.

On an overall Point Code allocation basis, the impact on the overall code utilization would be minimal.

Resources currently leased by the SS7 service providers would be returned, thereby making them available for reassignment, and a similar quantity of resources would be allocated to the non-US entities from the unique code block allocated for this purpose.

4.1   Benefits

Reduce the uncertainty in the signaling addressing: An Operator has a set of DPCs reserved, regardless of which signaling carrier is providing the transport.

Promote the growth of international roaming services and, therefore, cellular telephony business between the US and other countries.

Improve the free competition between signaling carriers.

Develop the industry, opening the use of ANSI standards, manufactured mainly in the USA, to other countries.

4.2   Risks

The IFAST is hard-pressed to identify any inherent risks with regard to a favorable response to this request.

The following paragraphs discuss the assignment of DPCs outside of the US in its different aspects, to show that potential concerns have been considered.

Legal aspects of the international assignment

As has been established before, this contribution is aimed to regulate the use of some signaling codes <u>within the USA</u>, and reserving them for the interconnection with certain foreigners operators, under a determined set of rules.

Can we run out of DPCs?

No. Today, the usage of signaling point codes is less than 50% of the total available, but in the medium term (two years), instead of a greater need for DPCs, a decrease in demand can be expected.

The introduction of Global Title will reduce the need for Signaling Point Code based addressing. What's more, the future enhancements of the TIA/EIA-41 Standard (IS 807, PN-4197) will allow ANSI and ITU encoding for the SCCP layer for each Global Title.

The introduction of 3G systems in the near future will also make it necessary to go to an international standardization which wouldn't make use of IS-41 protocols.

Is there any risk of fraudulent use of ANSI DPC's?

No. There is no real value of an ANSI signaling code out of the scope of the USA signaling network. The control of the assignment would always remain with Committee T1 and the assignment of the resources would always be in conformance with the SS7 Point Code Assignment Guidelines.

Situation if the Operator's SS7 Point Codes are mapped within Carrier's address field

US Operators

A1 A1 A1

A1 A1 A1

Carrier A

A1

Carrier B

A change of carrier requires the operator to change the SS7 signaling addresses in <u>all</u> cellular carriers' networks.

US Operators

B1 B1 B1

B1 B1 B1

Carrier A

Carrier B

B1
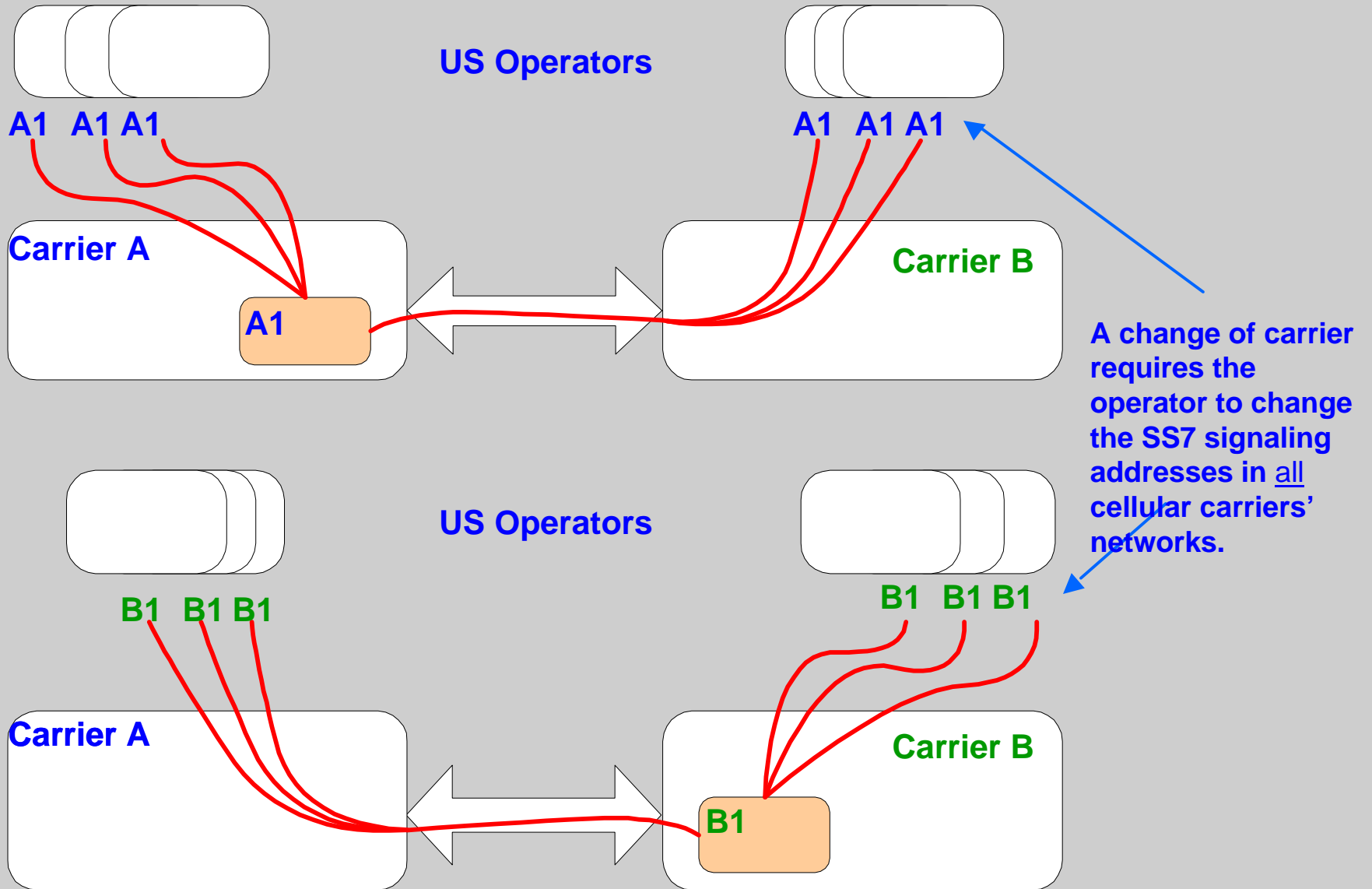
Situation when Operator's SS7 destination codes are directly assigned

US Operators

Carrier A

Carrier B

C1 C1 C1

C1 C1 C1

C1

A change of carrier only requires a change in the SS7 routing within signaling network.

The SS7 destination code remains unchanged in other cellular Operators' networks.

US Operators

Carrier A

Carrier B

C1 C1 C1

C1 C1 C1

C1
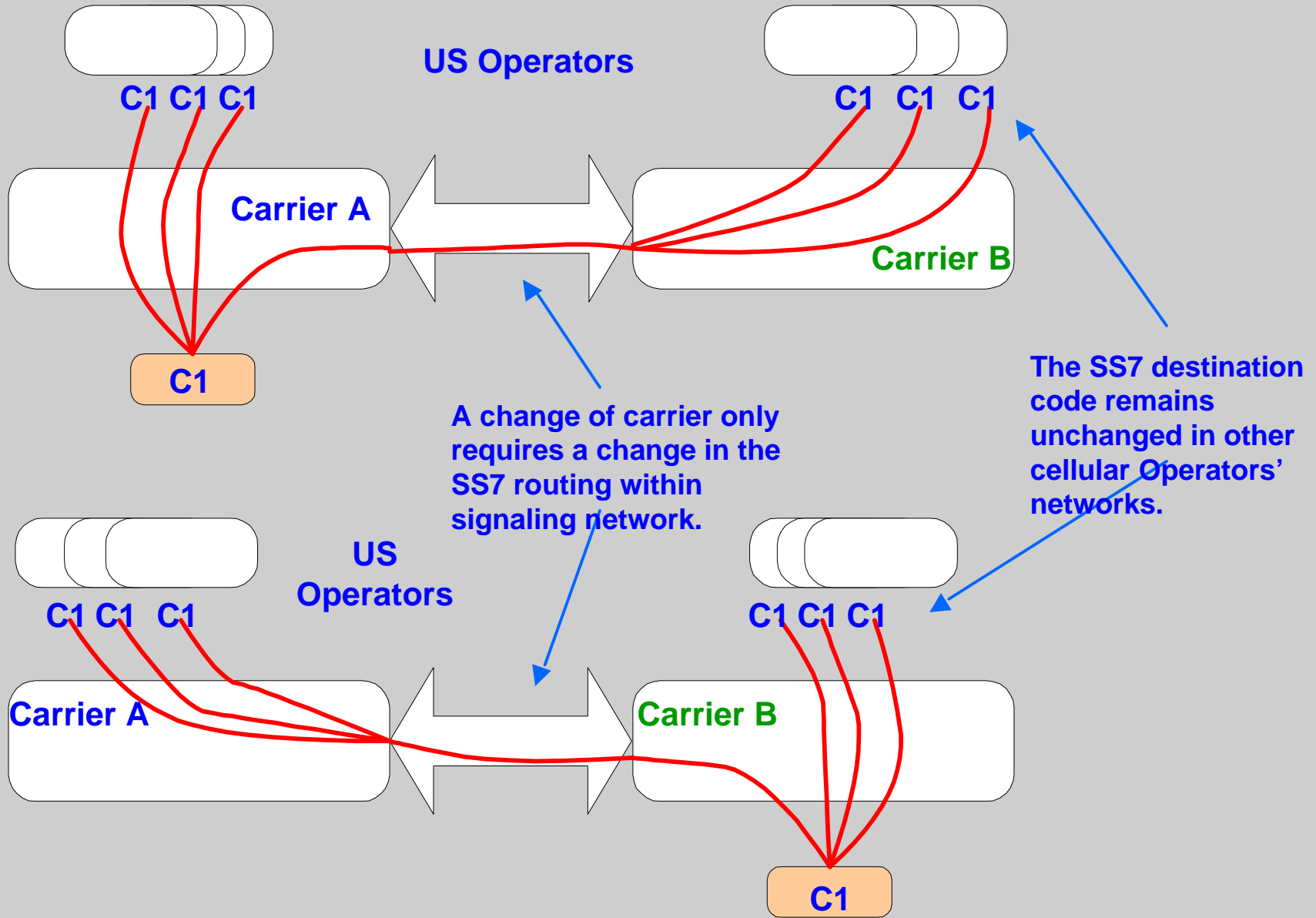
IFAST Member Companies

Company	Country
AAPT Wireless Pty. Ltd.	Australia
Abiatar	URUGUAY
Aeris Communications	USA
Algar Telecom Leste (ATL)	Brasil
Amazonia Celular	Brasil
Americel	Brasil
ANTEL	Uruguay
AT&T PrePaid Services	USA
AT&T Wireless Services	USA
ATIS	USA
BCP Sao Paulo	Brasil
BellSouth Argentina	Argentina
BellSouth Chile	Chile
BellSouth Ecuador	Ecuador
BellSouth International	USA
BellSouth Nicaragua	Nicaragua
BellSouth Panama	Panama
BellSouth Peru	Peru
Cable and Wireless	Republic of Panama
CapGemini Ernst & Young	USA
Celcaribe (Colombia)	Colombia
Cellcom	Israel
Cellemetry LLC	USA
Cellular Networking Perspectives, LTD	Canada
Cellular One Caribbean/Paradise Wireless	Netherlands Antilles
Cellular One of Boston/ HighwayMaster	USA
Celtel (Honduras)	Honduras
ChileSat	Chile
China Spacecom	China
Chunghwa Telecom	Taiwan
Cocelco	Colombia
Comcel	Colombia
Comcel (Guatemala)	Guatemala
Comite Gestor de Roaming	Brasil
Communications Authority of Thailand	Thailand
CRT	Brasil
CTI MOVIL	Argentina
CTIA	USA
CTMR Celular	Brasil
DACOM Corporation	Korea
DACOM Corporation	Korea

DDI	Japan
DETECON, Inc.	USA
Eflex Wireless	USA
Empresa Technologica Ericsson	Mexico
Entel Movil (Chile)	Chile
Ericsson	USA
Ericsson Telecom S.A. de C.V.	Mexico
Express Telecommunications	Philippines
Global Telecom	Brasil
Globalstar	USA
Globalstar Americas	Panama
Globalstar de Mexico	Mexico
Globalstar Middle East	Bahrain
GlobalStar South Africa	South Africa
HighwayMaster	USA
HNC Software/Systemslink	USA
Hutchison Telecom Australia, Ltd.	Australia
Hutchison Telecommunications (HK), Ltd.	Hong Kong
ICE	Costa Rica
ICO	USA
IDO	Japan
IMC/WorldCell	USA
IUSACELL	Mexico
KT Freetel	Korea
LG Telecom	Korea
Loral/DASA Globalstar	Russia
Loral/DATA Globalstar	USA
Lucent Technologies	USA
MACH Americas	USA
Maxitel	Brazil
Mobikom	Malaysia
MobileOne (Asia)	Singapore
Mobility Canada	Canada
Motorola, Inc.	USA
Motorola, Inc.	Japan
Movilnet	Venezuela
NACN/AT&T Wireless	USA
NBT (Norte Brasil Telecom)	Brasil
Nortel Networks	USA
NTT DoCoMo	Japan
Orbcomm	USA
Pelephone	Israel
Piltel	Philippines
Polycom Radio Communications	Curacao
Qualcomm, Inc.	USA

ReadyCom	USA
Rogers Wireless	Canada
SBC Communications, Inc.	USA
SBC Technology Resources, Inc.	USA
SERCOM	Guatemala
Setel	Netherlands Antilles
Shinsegi Telecom	Korea
SingTel Mobile	Singapore
SK Telecom	Korea
SystemsLink	USA
TCO Centro Oeste Celular	Brazil
TE.SA.M Peru	Peru
Telasa Celular	Brasil
TelCel	Venezuela
TelCell	Netherlands Antilles
Telcordia	USA
Telebahia	Brasil
Teleceara Celular	Brasil
Telecel (Bolivia)	Bolivia
Telecel (Paraguay)	Paraguay
Telecom Personal	Argentina
Telefonia Bonairiano N.V.	Netherlands Antilles
Telefonica de Guatemala	Guatemala
Telefonica del Peru	Peru
Telefonica del Salvador	El Salvador
Telefonica Movil (formerly CTCStartel)	Chile
Telefonica Moviles de Espana	Espana
Telefonica Moviles de Peru	Peru
Telemig	Brasil
Telemovil (El Salvador)	El Salvador
Telergipe	Brasil
Telerj	Brasil
Telesp	Brazil
Telest	Brasil
Telet	Brasil
Telpa Celular	Brazil
Telpar Celular	Brazil
Telpe Celular	Brazil
Telstra	Australia
Telstra	Australia
Tendler Cellular	USA
TESAM	France
TESAM	Argentina
TESS	Brasil
TruePosition	USA

TSI Connections	USA
Unicom	China
Unifon	Argentina
UPS	USA
Vimpelcom	Russia
VoiceStream Wireless Corp.	USA
Wireless carriers - Colombia	Colombia
Wireless carriers - Mexico	Mexico