

# Cellular Networking Perspectives

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## In This Issue . . .

*FCC Cries 'Uncle' on 123-456-7890* ..... p. 1

The FCC has given up on their proposal to use the number 123-456-7890 to identify uninitialized emergency-calling mobiles, and has accepted the industry proposal to use the digits '911' followed by a 7 digit extract of the ESN or IMEI.

*CDMA and GSM Battle in India* ..... p. 2

Indian carriers have chosen cdma2000 technology for Wireless Local Loop. GSM carriers claim that this is just a back door method of obtaining cellular licenses without paying as much in licensing fees.

*Lawfully Authorized Surveillance for Wireless Packet Data – J-STD-025-B*..... p. 3

A summary of work on the latest version of the industry's LAES standard which now will cover packet data.

*3GPP TSG SA Update* ..... p. 4

The status of specification work being undertaken by 3GPP Technical Specification Group SA (Services & Architecture).

## FCC Cries 'Uncle' on 123-456-7890

In April 2002, the US FCC ordered that the number 123-456-7890 be used as a pseudo-callback number to identify uninitialized phones (see our *July 2002 issue*). They did not realize that the wireless industry, through joint ATIS/TIA standard J-STD-036, had previously recommended a more flexible alternative – to use the digits 911 followed by a 7-digit extract from the ESN or IMEI. This does not provide a completely unique identifier, but makes it highly unlikely that two emergency callers using uninitialized phones would transmit the same identifier.

This type of pseudo-callback number has two related purposes. The first is to program phones that are explicitly designed for emergency-calling only, whether sold directly to consumers or donated by carriers to charities, such as women's shelters. The second use is to be transmitted to a PSAP by an MSC when a phone is recognized as uninitialized (i.e. validation of its MSID fails). PSAP personnel and equipment can recognize this type of number and will know that callback is not possible. However, the pseudo-unique nature of the identifier makes it possible to distinguish callers, and may be useful in cases of abuse of the emergency calling system.

This order was appealed by ATIS ESIF in June 2002 and subsequently stayed by the FCC. On October 21<sup>st</sup> 2003, the FCC gave in and, in FCC 03-262, recommended the adoption of the industry's solution. This new order, released on November 3rd 2003, can be found at:

[hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-03-262A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-03-262A1.pdf)

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## CDMA and GSM Battle in India

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Indian Wireless Local Loop (WiLL) carriers launched CDMA mobile services less than a year ago and the phones have been selling like hot cakes. Nearly one million subscribers are being added every month. By September, 2003 there were 5 million subscribers.

The growth comes despite a simmering controversy that has dogged the US\$6 billion (annual revenues) telecom industry ever since CDMA mobile phones were launched in December, 2002.

CDMA (Code Division Multiple Access), the preferred wireless telecom standard in the US and in parts of Asia and South America, is pitted against the 8-year old GSM cellular network, the mobile telephony standard in over 120 countries. Indian GSM carriers are also adding over one million subscribers every month to a base of 18.3 million by September 2003. The battle between the two technologies is being fought not only in the marketplace but also on legal turf.

With a total industry gain of more than 2 million subscribers every month, this sounds like a very healthy scenario. But the internecine battle between companies on each side of the standards divide is stunting the growth of the industry.

### The Genesis of the Conflict

The technology conflict started in January 2001 when companies licensed to provide fixed line telephony were allowed to use wireless in local loop (WiLL) to reach subscribers. Government policy was based on the assumption that it would often be cheaper for telecom companies to reach new subscribers with wireless. Soon, former purely fixed line companies set up CDMA standard wireless networks and started offering wireless phones to subscribers.

WiLL was intended to provide service to fixed telephones using a radio link. Because a cellular protocol was chosen as the protocol for that link, there was no technical barrier to providing mobility services, such as nationwide or international roaming.

Using Mobile Switching Centers (MSCs) and Home Location Registers (HLR), carriers started offering semi-automatic roaming services, known as a 'Multiple Registration System' (MRS), to their subscribers. Someone travelling from Delhi to Bombay (nearly 1300 km or 800 miles apart) would

be given a new mobile directory number (MDN) in Bombay. Calls made to their old number were forwarded to the new.

This is not as convenient as purely automatic roaming, which would not require multiple directory numbers (except for the TLDN used for routing the call, which is invisible to subscribers) but is a lot more mobility than a basic WiLL system would provide with a wired phone connected to a radio transceiver.

GSM cellular companies claimed that this service encroached on their rights, since roaming was not permitted under the license terms of companies which had acquired a fixed line license.

GSM companies dragged their CDMA rivals in front of the Telecom Disputes Settlement Appellate Tribunal (TDSAT - [tdsat.nic.in](http://tdsat.nic.in)) telecom tribunal, to determine whether CDMA companies can use an MSC for their services.

In September 2003, the tribunal ruled that CDMA services were not to be treated as mobile services and their mobility should be restricted to within one of 2,648 small geographical areas, called short distance charge areas (SDCA). These are the divisions within the country that define where local calling ends (within the SDCA) and where long distance begins (any call that crosses an SDCA boundary).

The tribunal also asked the regulator and government to ensure that WiLL and GSM mobile services remain distinct, and ruled that operators were free to use any technology they wanted.

### The GSM Mobile Service

GSM mobile services started in India in 1995. It took the industry until November, 1999 to acquire one million subscribers, probably because subscribers were being charged a peak rate of (US) 40 cents per minute. After tariffs started falling, to the current peak tariff of only about 5 cents a minute, GSM carriers rapidly multiplied their subscriber base. Short messaging at about 1 cent per message has also increased the popularity of the service.

Studies by several research agencies like Gartner and Goldman Sachs predict that there will be 50 million wireless subscribers in India by the end of 2005.

GSM services in India operate in the original 900 MHz band. After more companies entered the fray, the government licensed operation in the 1900 MHz ('PCS') band. Most of these companies have been licensed for only 6.25 MHz of spectrum compared to the international average of around 17 MHz.

## The CDMA Mobile Service

When India decided to introduce mobile services in 1992, the government made it clear that it would accept only the GSM standard. The Telecom Policy of 1999 changed this decision and made the policy technology neutral.

In 1999, all telecom companies moved from a fixed license fee to a revenue sharing formula, which reduced their financial burden considerably. But by then, some companies had already acquired a fixed line telephone license.

When the government permitted the use of WiLL in January 2001, the companies started rolling out their networks using CDMA. These companies claim, and several experts support them, that they are more efficient in using spectrum, a very scarce resource in India. They argue that the government should encourage their service because of this.

WiLL mobile phones are attractive to consumers since they offer extremely low tariffs of less than one cent per minute for local calls. By comparison, GSM wireless has a minimum tariff for outgoing calls about three times higher.

The cheaper tariff is possible because GSM companies together paid US\$1.8 billion in license fees to the government, while the fixed line companies (including those offering WiLL service) have only paid about US\$320 million.

## Issues with Indian Telecom

India, a nation of a billion people, has historically had a very low teledensity. In 1991, when the economic reforms program was initiated, there were only six million fixed line subscribers. With the arrival of mobile telephony, the number of subscribers has multiplied many times. At present, there are a little over 60 million subscribers, and the number is expected to cross 200 million by the end of the decade.

To clean up the mess that the fight between wireless and wireline telecom companies has landed India into, the Telecom Regulatory Authority of India (TRAI – [www.trai.gov.in](http://www.trai.gov.in)), India's telecom regulator, has recently floated the idea of a unified telecom license.

GSM carriers oppose this, claiming that the issue is whether companies licensed for fixed line telephony, but also offering mobile services by using the CDMA standard, can continue their services. They want this settled first. Fixed line companies are obviously very keen to acquire a unified license. However, a final decision on whether or not the unified license will be offered is still to be taken.

Until this decision is made, Indian subscribers can only choose between wide area roaming with GSM at a higher cost, or regional roaming with CDMA at a lower cost.

## Lawfully Authorized Surveillance for Wireless Packet Data – J-STD-025-B

*Terri Brooks, Nokia  
Gary Pellegrino, CommFlow Resources*

In 1994 the Communications Assistance for Law Enforcement Act (CALEA) was released to give US law enforcement better access to electronic surveillance of digital and wireless communications. In 1997, TIA and ATIS Committee T1 published a joint standard, J-STD-025 Lawfully Authorized Electronic Surveillance (LAES), as a safe harbor for CALEA compliance. In 2000, a revision to the joint standard, J-STD-025-A, was published. The main focus of the new revision was the addition of six new areas of functionality referred to as “punch list” items.

Work on Revision B of the joint standard (J-STD-025-B) began in August 2001. The document was balloted in August and September of 2003, and is still undergoing ballot resolution within the TR-45 LAES Ad Hoc group. ATIS subcommittees T1S1 and T1P1 are holding co-located meetings with the joint ad hoc group during this ballot resolution period. The main focus of work on J-STD-025-B was to refine the packet data solution contained in previous revisions. The necessary refinements were identified in the FCC's Third Report and Order on CALEA (FCC 99-230, CC Docket 4/11/02.No. 97-213, Released 8/31/99).

Shortly after work started on J-STD-025-B, the consensus in the TR-45 LAES Ad Hoc group was that the Stage 1 (high-level description of the functionality required for CALEA compliance) for the previous revisions applies to both circuit mode and packet mode. It was also agreed that the packet mode requirements would require specification of additional functionality in some cases and clarifying text in others. Sections 4.9.3 and 4.9.4 include normative references to the T1P1 and T1S1 documents with the detailed requirements for GPRS/UMTS and Voice over Packet Technologies in Wireline Telecommunications Networks. Other minor modifications have been made to the document for maintenance, general cleanup and the addition of informative annexes.

When joint T1/TIA standards are balloted, separate ballots are sent out for voting by both the T1 and TIA Secretariats. Two disapproval votes were received from the T1 ballot: one from CIU (CALEA Implementation Unit – formerly ESTS), and the other

from Telcordia Technologies, previously under contract to CIU. No disapprovals were received on the TIA side. The initial ballot response resolution meeting was held September 29-30 in Arlington, Virginia. Neither CIU nor Telcordia Technologies was present at the meeting. A first pass was made through almost all the ballot comments, including the comments attached to the disapproval votes. Letters were sent to CIU and Telcordia Technologies, listing the main discussion points from the TR-45 LAES Ad Hoc group on each of their comments, indicating that if concerns still remained, their presence and a contribution showing detailed text changes for clarification would be welcome at the ad hoc group's October 22-23 meeting in Las Vegas.

The ballot of J-STD-025-B resulted in technical changes that require a 'default ballot'. This process allows a vote and comments only on portions of the specification to which significant technical changes have been made. Default ballot responses will be reviewed during a scheduled December 17-18 meeting in Florida. Publication will mostly likely occur early in 2004.

## 3GPP TSG SA Update

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3GPP TSG for Service and System Aspects (TSG SA) is responsible for the overall architecture and service capabilities of GSM and UMTS systems, including responsibility for cross TSG co-ordination. Any difficulty in this role is reported to the PCG.

Two TSG SA (#20 and #21) meetings have been held since the *last publication of this update*.

### TSG #20 Highlights

Stage 2 of TS 23.234 (3GPP system to Wireless Local Area Network (WLAN) Interworking; System Description) was presented for the second time. Scenario 2 (3GPP system-based Access Control and Charging) is now stable, so the related protocol definition work can be started in TSG CN working groups. Some issues are still open for Scenario 3 (Access to 3GPP system PS services). Security aspects of this work are addressed in the draft version of TS 33.234.

Stage 2 for the Generic User Profile (GUP), "the collection of user related data which affects the way in which an individual user experiences service and which may be accessed in a standardized manner", is now complete. The Stage 3 description can now be developed, with TSG T WG2 and TSG CN WG4 taking the lead role. Completion is planned by March 2004.

The remaining open issue on the Provision of User Equipment Specific Behavior Information to Network Entities (UESBI, also called Early User Equipment Handling) were closed. This will help infrastructure handle UE(s) already in the field that are facing problems supporting some features.

The 3GPP Work Plan has the Release 6 Functionality Freeze date set at March 2004. No new requirements should be introduced after September 2003, to allow completion of Stage 2 descriptions by December 2003 and Stage 3 by March 2004.

### TSG #21 Highlights

Stage 2 of TS 23.234 (3GPP/WLAN Interworking) was submitted for approval. The maturity of the TS was questioned, as there are still many open issues. The meeting confirmed full support for work to include scenario 2, and the current end-to-end Tunneling Solution for scenario 3 was accepted as a Working Assumption. SA WG2 was asked to verify that the tunneling solution supports:

1. PS Charging Capabilities,
2. PS-based services,
3. Regulatory requirements,
4. Future extensibility into scenario 4 and 5.

The TS was *not* approved.

The 3GPP SA Chairman presented the report from the joint 3GPP-OMA Workshop, held in Frankfurt, Germany on September 15, 2003. The major conclusions were:

- » Clearly identify the objectives of the collaboration. It was noted that 3GPP does not produce standards; the member SDOs produce standards based on the 3GPP specifications).
- » Compatibility of release schedules.
- » Visibility of each other's progress.
- » Avoiding additional and unnecessary requirements documents in 3GPP and 3GPP2.
- » Avoiding duplication of work.
- » How to approach any possible work cooperation and the transition of work between groups.

The chairman concluded that the above list could be considered a rough outline for cooperation between 3GPP and OMA. Transfer of work to and from 3GPP will be subject to agreement by TSGs and endorsement by the PCG. It was agreed that 3GPP should explicitly tell OMA what they need to provide to 3GPP for the common work and vice-versa.

## TSG SA WG1 (Services)

3GPP TSG Working Group 1 on Services (SA1) defines services and features. It provides high level requirements for the overall system in Stage 1 descriptions. These include:

- Definition of service and feature requirements,
- Framework for services,
- Specification of services (Stage 1),
- Specification of service capabilities (Stage 1),
- Identification of technical and operational issues to meet market requirements and
- Charging and accounting requirements.

The focus of recent meetings has been on IMS and Messaging.

WG1 has made progress on the Privacy Work Item, producing a draft version of TR 22.949. The group agreed that privacy information and personal data are the same. There was no agreement, however, on the definition of the “Secure Privacy Domain”.

The WG agreed on modifications to Emergency calling for Rel 99 and onward to address emergency numbers. In earlier releases, the list on the SIM was meant to contain additional emergency numbers only. Hence, pre-R99 SIMs in R99 or later phones may not recognize all emergency numbers as valid.

**Table 1: 3GPP TSG SA Working Group 1 (Services) Specification Update**

Document	Title	Status
TR 21.905	Vocabulary for 3GPP Specifications	Rel 5 and Rel 6 versions being revised.
TS 22.038	USIM/SIM Application Toolkit (USAT/SAT); Service Description; Stage 1	Rel 6 version being revised.
TS 22.041	Operator Determined Call Barring	
TS 22.071	Location Services (LCS); Service Description; Stage 1	Rel 4, Rel 5 and Rel 6 versions being revised.
TS 22.078	Customised Applications for Mobile Network Enhanced Logic (CAMEL); Service Description; Stage 1	Rel 5 version being revised.
TS 22.105	Services and Service Capabilities	Rel 6 version being revised.
TS 22.140	Multimedia Messaging Service (MMS); Stage 1	
TS 22.228	Service Requirements for the Internet Protocol (IP) Multimedia Core Network Subsystem; Stage 1	
TS 22.233	Transparent End-to-End Packet-Switched Streaming Service	
TS 22.240	Generic User Profile (GUP); Stage 1	
TS 22.243	Speech Recognition Framework for Automated Voice Services; Stage 1	
TS 22.246	MBMS User Service	Version 1.0.0 submitted
TR 22.800	IMS Subscription and Access Scenarios	Rel 6 version being published.
TR 22.934	Feasibility Study on 3GPP System to Wireless Local Area Network (WLAN) Interworking	Rel 6 version being revised.
TR 22.952	Priority Service Guide	Version 1.0.0 submitted for information

## TSG SA WG2 (Architecture)

3GPP TSG SA Working Group 2 on Architecture (SA2) produces Stage 2 network descriptions. Based on service requirements from SA1, it identifies the main functions and entities of the network and how they are linked. It describes the information they

exchange (with the exception of Stage 2 for the Radio Access Network, which is produced by TSG RAN). Stage 2 descriptions are used by groups defining the detailed Stage 3 protocol definitions.

Highlights of recent SA2 meetings include:

- A solution for a problem in Rel 99 GPRS in the Unsynchronized UTRAN and UE RRC states that can prevent the UE from receiving incoming circuit switched calls and short messages.
- For Rel 4, it was agreed to modify the Location Services (LCS) Stage 2 specification to align with the Stage 3.
- For Rel 5, several change requests were accepted for the UMTS architecture, UMTS QoS, Early UE handling, IMS and Location Services.
- For Rel 6, good progress has been made on MBMS, Push Service, and Policy Control, as well as the Charging and Network Sharing Work Items.

**Table 2: 3GPP TSG SA Working Group 2 (Architecture) Specification Update**

Document	Title	Status
tbd	Impacts of Speech-enabled Services on the IMS, PS and CS Domains	New work items.
	3GPP Enablers for services like Push to Talk over Cellular (PoC)	
	Interworking Aspects and Migration Scenarios for IPv4-based IMS Implementations	
TS 23.002	Network Architecture	Rel 5 and Rel 6 versions being revised.
TS 23.060	GPRS; Stage 2	Rel 99, Rel 4, Rel 5 and Rel 6 version being revised.
TS 23.107	QoS Concept and Architecture	Rel 5 version being revised.
TS 23.141	Presence Service; Architecture and Functional Description	Rel 6 version being revised.
TS 23.195	Early UE Handling	Rel 5 version being revised.
TS 23.207	End-to-End QoS Concept and Architecture	
TS 23.221	Architectural Requirements	Rel 5 and Rel 6 versions being published.
TS 23.228	IP Multimedia Subsystem (IMS); Stage 2	Rel 5 and Rel 6 versions being revised.
<b>TS 23.234</b>	<b>3GPP System to Wireless Local Area Network (WLAN) Interworking; System Description</b>	<b>Version 2.0.0 was submitted for Rel 6 approval, but was not approved because of too many open issues</b>
TS 23.240	3GPP Generic User Profile – Architecture; Stage 2	Rel 6 version being revised.
TS 23.246	3GPP System to Wireless Local Area Network (WLAN) Interworking; System Description	Rel 6 version being published
TS 23.271	Functional Stage 2 Description of LCS	Rel 6 versions being revised.
TR 23.825	Overall Architecture Aspects of IP Flow-Based Bearer-Level Charging; Stage 2	Version 1.0.0 submitted for information
TR 23.851	Network Sharing; Architecture and Functional Description	
TR 23.917	Dynamic Policy Control Enhancements for End-to-End QoS	
TR 23.976	Push Architecture	

### TSG SA WG3 (Security)

3GPP TSG SA Working Group 3 on Security (SA3) is responsible for the security of the 3GPP system. It analyzes potential security threats to the system, considers the new threats introduced by IP-based services and systems, and sets security requirements for the overall 3GPP system.

Highlights of the recent SA3 meetings include:

- Good progress on the Network Domain Security/ Authentication Framework Work Item. The work is about half complete, with the TS targeted for submission at the SA#22 meeting.
- Two Rel 5 change requests against the TS 33.103 Security Architecture to address the problem of “Early UE Handling” based on advice from SA2.

- Progress on the ‘Support for Subscriber Certificates’ work item. A joint meeting is planned with the OMA security group to address common issues.
- Progress on the WLAN Interworking Security work item. An email group is discussing the implications of the trust relationship between the cellular operator and the WLAN access provider.
- A conference call resulted in the production of a baseline TR draft of the ‘Feasibility Study on (U)SIM Security Reuse by Peripheral devices on Local Interfaces’.
- The presence work will be split into IMS Access Security and Presence Security. Relevant parts from the current Presence Security TR draft will be moved to a new TS for Presence Security. Others will be moved to IMS Access Security (TS 33.203).

**Table 3: 3GPP TSG SA Working Group 3 (Security) Specification Update**

Document	Title	Status
tbd	Management of Group Keys for Voice Group Call Services	New work item.
TS 33.102	3G security; Security Architecture	Rel 5 version being revised.
TS 33.107	3G Security; Lawful Interception Architecture and Functions	
TS 33.108	3G Security; Handover Interface for Lawful Interception	Rel 5 and Rel 6 versions being revised.
TS 33.203	3G Security; Access Security for IP-Based Services	Rel 5 version being revised.
TS 33.210	3G Security; Network Domain Security; IP Network Layer Security	Rel 5 and Rel 6 versions being revised.
TS 55.216	Specification of the A5/3 Encryption Algorithms for GSM and EDGE, and the GEA3 Encryption Algorithm for GPRS; Document 1: A5/3 and GEA3 Specification	Rel 6 version being revised.

### TSG SA WG4 (Codecs)

3GPP TSG SA Working Group 4 (SA4) specifies speech, audio, video, and multimedia codecs (coders/de-coders) for both circuit-switched and packet-switched environments. Other responsibilities of this group include quality evaluation, end-to-end performance, and interoperability aspects with existing mobiles and fixed networks (from the codec point of view).

Highlights of the last SA4 meeting include:

- Completion of remaining Rel 5 work, the last work item being a TR on the RTP usage model. This provides additional information to characterize the Packet Switch (PS) Streaming Service.
- Continued discussion on the Packet Switched Streaming work item. The discussion focused on Bit-rate Adaption, Quality Metrics and Consideration for New Codecs. The results of the discussion was updated working drafts for TS 26.234, TS 26.244, TS26.245 and TS 26.246.
- Progress on the ‘Performance Characterization of Default Codecs for PS Conversational Multimedia Application’ work item. Test Plans covering AMR narrowband and AMR wideband (WB) codecs were submitted, and other subjective tests were scheduled from mid-September until late November 2003. The TR is targeted for March 2004 approval.
- There are two Speech Enabled Service codec candidates for the ‘Codec Work to Support Speech Recognition Framework for Automated Voice Service’ work item, with a selection to be made at the December 2003 TSG SA #22 meeting:
  1. Digital Speech Recognition from ETSI
  2. The AMR and AMR-WB codecs.
- A partial draft of TS 26.141 (Media Codec and Formats for IMS Messaging and Presence) was introduced.
- A partial draft for the ‘Definition of Teleservice using Multimedia Broadcast and Multicast Service (MBMS)’ work item was introduced. This work is guided by the ongoing SA1 requirements work which are only about half complete.

**Table 4: 3GPP TSG SA Working Group 4 (Codec) Specification Update**

Document	Title	Status
TS 26.073	ANSI-C Code for the Adaptive Multi Rate (AMR) Speech Codec	Rel 5 version being revised.
TS 26.132	Narrow Band (3,1 kHz) Speech and Video Telephony Terminal Acoustic Test Specification	
TS 26.173	ANSI-C Code for the Adaptive Multi Rate (AMR) Wideband Speech Codec	
TS 26.204	ANSI-C code for the Floating-Point Adaptive Multi-Rate Wideband (AMR-WB) Speech Codec	
TS 26.234	Transparent End-to-End Packet Switched Streaming Service (PSS); Protocols and Codecs	
TS 26.236	Packet Switched Conversational Multimedia Applications; Transport Protocols	
TR 26.937	Transparent End-to-End Packet Switched Streaming Service (PSS); Real-Time Transport Protocol (RTP) Usage Model	Rel 5 version being published.
TR 26.976	Performance Characterization of the Adaptive Multi-Rate Wideband (AMR-WB) Speech Codec	Rel 5 version being revised.
TS 28.062	Inband Tandem Free Operation (TFO) of Speech Codecs; Service Description; Stage 3	

**TSG SA WG5 (Telecom Management)**

3GPP TSG SA Working Group 5 on Telecom Management (SA5) provides the management framework and requirements for management of the 3G system, the architecture of the telecommunication management network (TMN) and coordination of all work pertinent to the 3G system telecom management across TSGs.

Highlights of recent SA5 meetings includes:

- Continuing cooperation with 3GPP2 TSG-S which is referencing SA5 TSs in its specification S.S0028-B “OAM&P for cdma2000 (3GPP2 R5 Delta Specification)”. This documents some exception areas as well as providing specifications for cdma2000 Network Resource Models.
- The TSG SA plenary agreed to cancel the ‘User Equipment Management’ work item because of lack of progress and support.
- The ‘Subscription Management’, ‘OAM&P’ and ‘Charging Management’ work items are scheduled for completion in March 2004.

**Table 5: 3GPP TSG SA Working Group 5 (Telecom Management) Specification Update**

Document	Title	Status
TS 32.101	3G Telecom Management: Principles and High Level Requirements	Rel 5 version being revised.
TS 32.102	3G Telecom Management Architecture	Rel 4, Rel 5 and Rel 6 versions being revised.
TS 32.111-4	Telecommunication Management; Fault Management; Part 4: Alarm Integration Reference Point: CMIP Solution Set	Rel 4 and Rel 5 versions being revised.
TS 32.140	Telecommunication Management; Services Operations Management; Subscription Management Requirements.	Rel 6 version being published.
TS 32.141	Telecommunication management; Services operations management; Subscription management architecture	



**Table 5: 3GPP TSG SA Working Group 5 (Telecom Management) Specification Update (continued)**

Document	Title	Status
TS 32.200	Telecommunication Management; Charging management; Charging Principles	Rel 4 version being revised.
TS 32.205	Charging Management; Charging Data Description for the Circuit Switched (CS) Domain	
TS 32.215	Charging Management; 3G Charging Data Description for the Packet Switched (PS) Domain	Rel 4 version being revised.
TS 32.235	Charging Management; Charging Data Description for Application Services;	Rel 5 version being revised.
TS 32.251	Charging Management; Packet Switched (PS) Domain Charging	Version 1.0.0 submitted for information
TS 32.270	Charging Management; Multimedia Messaging Service (MMS) Charging	
TS 32.271	Charging Management; Location Service (LCS) Charging)	
TS 32.298	Charging Management; Charging Data Record (CDR) Parameter Description	
TS 32.303	Configuration Management (CM); Notification Integration Reference Point (IRP): CORBA solution set	Rel 4 version being revised.
TS 32.350	Communication Surveillance (CS) Requirements	Version 1.0.0 submitted for information
TS 32.361	Entry Point (EP) Integration Reference Point (IRP): Requirements	
TS 32.362	Entry (EP) Integration Reference Point (IRP): Information Service	
TS 32.363	Entry (EP) Integration Reference Point (IRP): CORBA Solution Set	
TS 32.401	Telecommunication Management; Performance Management (PM); Concept and Requirements	Rel 6 version being published.
TS 32.403	Performance Management (PM); Performance Measurements - UMTS and Combined UMTS/GSM	Rel 4, Rel 5 and Rel 6 versions being revised.
TS 32.411	Telecommunication Management; Performance Management (PM) Integration Reference Point (IRP): Requirements	Rel 6 version being revised.
TS 32.615	Telecommunication Management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP): eXtensible Markup Language (XML) File Format Definition	Rel 5 version being revised.
TS 32.624	Telecommunication Management; Configuration Management (CM); Generic Network Resources: Integration Reference Point (IRP): Common Management Information Protocol	
TS 32.632	3G Configuration Management: Core Network Resources IRP: Network Resource Model	Rel 4 and Rel 5 versions being revised.

**Table 5: 3GPP TSG SA Working Group 5 (Telecom Management) Specification Update (continued)**

Document	Title	Status
TS 32.644	Telecommunication Management; Configuration Management (CM); UTRAN Network Resources Integration Reference Point (IRP): Common Management Information Protocol	Rel 5 version being revised.
TS 32.645	Telecommunication Management; Configuration Management (CM); UTRAN Network Resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) File	
TS 32.652	Telecommunication Management; Configuration Management (CM); GERAN Network Resources Integration Reference Point (IRP): Network Resource Model (NRM)	
TS 32.653	Telecommunication Management; Configuration Management (CM); GERAN Network Resources Integration Reference Point (IRP): Common Object Request Broker Architecture	
TS 32.654	Telecommunication Management; Configuration Management (CM); GERAN Network Resources Integration Reference Point (IRP): Common Management Information Protocol	
TS 32.655	Telecommunication Management; Configuration Management (CM); GERAN Network Resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) File	
TS 32.674	Telecommunication Management; Configuration Management (CM); State Management Integration Reference Point (IRP): Common Management Information Protocol (CMIP)	
TS 32.681	Inventory Management (IM) Integration Reference Point (IRP): Requirements	Version 1.0.0 submitted for information
TS 32.695	Inventory Management (IM) Integration Reference Point (IRP): XML File Format Definition	
TS 32.711	Transport Network (TN) Network Resource Model (NRM) Integration Reference Point (IRP): Requirements	
TS 32.712	Transport Network (TN) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service	Rel 6 version being published.
TR 32.815	Charging Management: On-line Charging System (OCS) Architecture Study	

## Meeting Schedule

The most recent plenary meeting of TSG T was held from September 16<sup>th</sup> – 19<sup>th</sup> 2003 in Frankfurt, Germany. Upcoming meetings are scheduled for:

- December 15<sup>th</sup> – 18<sup>th</sup> 2003 in Hawai'i, USA.
- March 15<sup>th</sup> – 17<sup>th</sup> 2004 in Phoenix, Arizona.
- June 7<sup>th</sup> – 9<sup>th</sup> 2004 in Seoul, Korea.
- September 13<sup>th</sup> – 15<sup>th</sup> 2004 in the United States.
- December 13<sup>th</sup> – 15<sup>th</sup> 2004 in Athens, Greece.

For a complete schedule of 3GPP meetings consult:

[www.3gpp.org/Meetings/meetings.htm](http://www.3gpp.org/Meetings/meetings.htm)

### Comments

We welcome comments on the format or contents of *Cellular Networking Perspectives*. We can be reached via email at:

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