



GSM IMEI SYSTEM & TAC Allocation

GSM IMEI系统与TAC分配

MWC July 2016 Shanghai China

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日程安排

- 45 minutes training of the TAC / IMEI allocation requirements
- 45分钟 培训TAC/IMEI 核发管理要求
- 30 minutes break – Tea & Coffee are provide. This time is for you to talk with the GSMA & TAF staff about any concerns you have with the process.
- 30分钟茶歇 参会人员与GSMA、TAF工作人员进行交流
- 20 minutes on the changes made in TS.06 Version 10.0
- 20分钟 讲解TS. 06程序文件第10版的最新变化
- 20 minutes on new changes that will be made over the next 6 months
- 20分钟 介绍2016年下半年最新调整变化

什么是IMEI?

International Mobile Equipment Identifier (IMEI) 3GPP TS 02.16

国际移动设备识别码 (IMEI) 3GPP TS 02.16

It is used by Network Operators for the following:

网络运营商在以下方面使用IMEI:

- Identifies an individual mobile terminal to a GSM or UMTS network
- 对联接GSM或UMTS网络的每个移动终端进行标识
- Can be used to generate statistics about mobile phone usage
- 可用于统计手机使用情况的相关数据
- Can be used to prevent a stolen phone accessing a network and being used
- 可用于防止被盗手机入网使用
- Can be used for content provisioning, provision of services & marketing
- 可用于对内容、服务和营销的预测

TAC 分配

- The TAC is the first 8 digit of the IMEI and is used to identify the device make and model
- TAC是IMEI的前8位数字，用于识别设备的来源和型号
- TACs are allocated, as part of the IMEI number ranges, to device manufacturers
- TAC作为IMEI号码的一部分，被分配给设备制造商
- GSMA has responsibility for globally administering the TAC allocation process
- GSMA负责管理全球TAC分配过程
- The GSMA has been involved with the TAC allocation since 1991
- 从1991年起，GSMA开始负责TAC分配

行业商定的 TAC 分配原则

- Industry agreed from the outset that GSMA's allocation of TACs must adhere to the following principles:
- 行业从一开始就同意GSMA的TAC分配必须遵循以下原则：
 - Process must be open, fair and transparent to allocate TACs in a non-discriminatory manner and with the minimum of delay
 - TAC分配过程必须公开、公平、透明、非歧视和最小延迟
 - Process must allocate unique TACs that can be universally used by manufacturers to ensure global network access
 - 必须分配独一无二的TAC，可被制造商普遍用于接入全球网络
 - Allocation of finite TAC resources must be done in an efficient manner that ensures future availability
 - 必须对有限的TAC资源进行有效的分配，确保未来的可用性
 - There should be clearly defined processes
 - 应该是单一定义的过程

GSMA 职责

- Coordinate the overall allocation of equipment identifiers
- 全面协调设备标识码的分配
- Appoint Reporting Bodies to allocate equipment identifiers in accordance with agreed procedures
- 指定 “审核机构” 依照商定的步骤分配设备标识码
- Define and maintain equipment identifier (TAC/IMEI) allocation processes
- 制定和维护 “设备识别码” (TAC/IMEI) 的分配过程
- Ensure adherence to agreed allocation processes
- 确保遵守商定的分配过程

GSMA 职责

- Resolve disputes related to the allocation of equipment identifiers
■ 解决与设备识别码分配有关的纠纷
- Maintain 24x7 globally accessible near real time Database for network operators as demand/volume dictates
■ 全天候维护数据库，确保网络运营商按需或按量在全球范围内实时访问
- Provide GSMA Device Database (MSR) to parties deemed eligible to receive lists of IMEI allocations
■ 向被认为有资格接收IMEI数据的各方提供GSMA IMEI数据库报告（MSR）
- Provide expertise and advice on allocation and IMEI issues where appropriate
■ 在适当情况下提供有关TAC分配和IMEI问题的专业知识和建议

IMEI 对各利益相关方的重要性



Operators

- Enables network operators to control access to their networks
- Enables remote loading of patches to avoid device inter-working issues
- Aids effective marketing by identifying devices to support value added services
- Facilitates market research by identifying & cross referencing usage patterns
- Identifies and prevents fraudulent use in a proactive way
- Critical to the success of EIR

运营商

- 能让网络运营商控制对网络的接入
- 支持补丁远程加载，避免设备互联问题
- 识别设备是否支持增值服务，有效支持营销
- 识别和相互参考使用模式，促进市场研究
- 主动识别和防止欺骗性使用
- 对移动设备识别寄存器（EIR）取得成功至关重要

Importance of IMEI for Variety of Stakeholders

IMEI 对各利益相关方的重要性



Manufacturers

- Meets increased regulatory expectations that devices can be identified and barred
- Identifies grey market and counterfeit devices
- Identifies and targets devices that may require remote patching
- Enables blacklisting of devices stolen from production sites/delivery channel
- Allows operators to recall terminals on behalf of manufacturers
- Use of test IMEIs enables proper live testing prior to product launch

制造商

- 满足日益增长的设备可识别和禁用的监管要求
- 识别灰色市场和假冒设备
- 识别和瞄准可能需要远程修补的设备
- 能把从工厂和流通渠道被盗的设备列入黑名单
- 允许运营商代表制造商召回终端
- 产品上市前使用测试IMEI可进行实时测试

Importance of IMEI for Variety of Stakeholders

IMEI 对各利益相关方的重要性



Regulators

- Allows exclusion of non-approved terminals, which is a license obligation in some markets
- Identifies handsets for lawful interception and criminal prosecution by customs, security forces, and police

监管部门

- 允许剔除未经准入的终端，某些市场需要进网许可
- 为海关、安全部门和警方的合法监听和刑事检控追踪手机

Importance of IMEI for Variety of Stakeholders

IMEI 对各利益相关方的重要性



Consumers

- Allows consumers conduct stolen handset checks and upholds integrity of used handset market
- Facilitates proof of purchase for warranty purposes
- Helps with device recovery

消费者

- 允许消费者查验被盗手机，维护二手手机市场的良好信誉
- 为保修提供购买凭证
- 有助于找回设备

Importance of IMEI for Variety of Stakeholders

IMEI 对各利益相关方的重要性



Other Industry Users

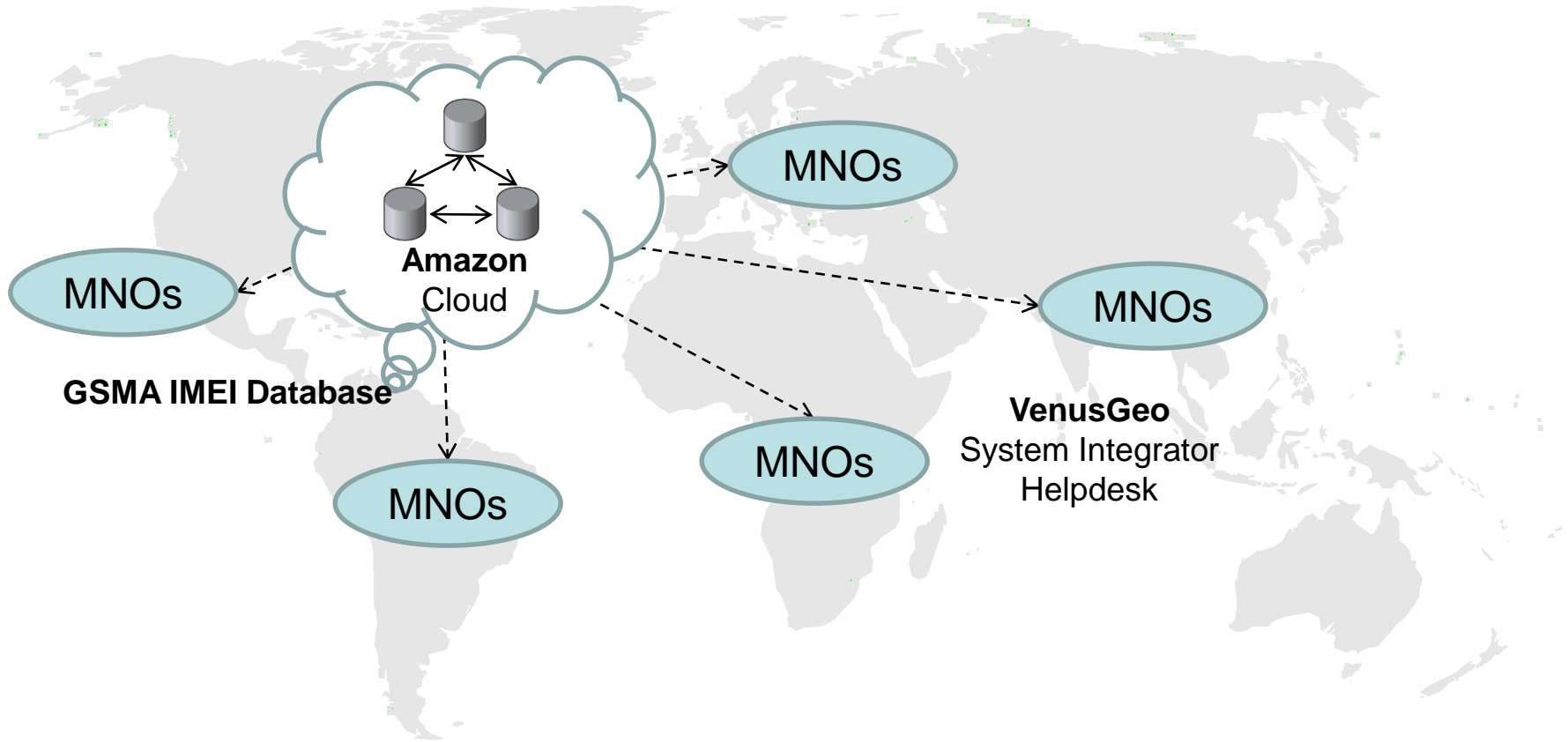
- Recycle center's check if devices have been blacklisted before purchase
- Insurance company check to see a device have been blacklisted before paying out on a claim

其他行业用户

- 回收中心在收购前检查设备是否已被列入黑名单
- 保险公司在支付索赔前检查设备是否已被列入黑名单

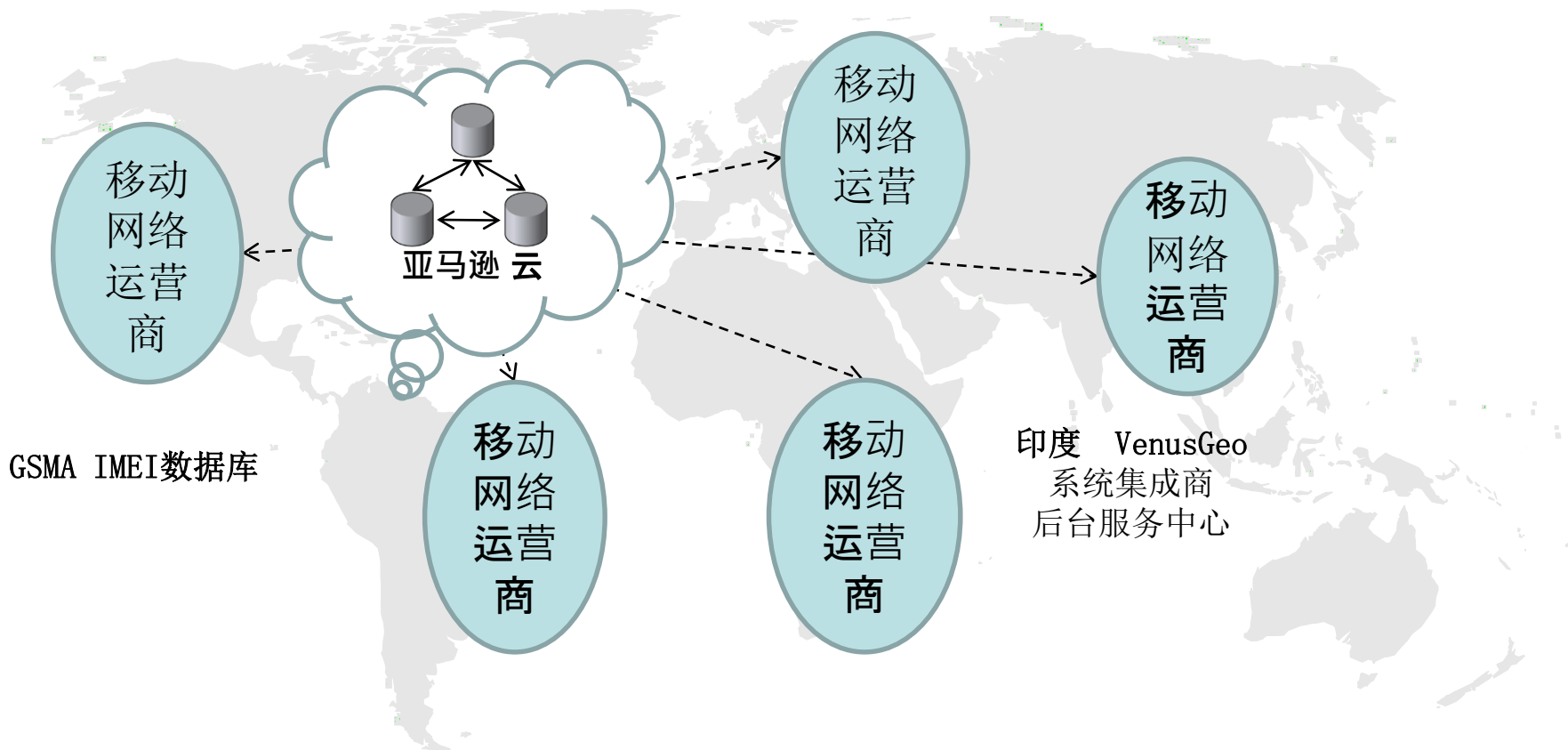
Importance of IMEI for Variety of Stakeholders

GSMA TAC 运维



GSMA TAC Operations

GSMA TAC 运维



TAF/GSMA 合作成果

- Agreement between the GSMA & TAF signed Dec 2010
 - TAF appointed as GSMA RB in China
- 2010年12月，GSMA与TAF签署协议
 - TAF被指定为GSMA的中国区审核机构
- Chinese manufacturers benefit from GSMA Global IMEI Database
- 中国制造商受益于GSMA全球IMEI数据库
- Chinese language web frontend developed
- 开发中文网站前端
- Service provided by TAF direct to Chinese manufacturers
- TAF直接向中国制造商提供服务

对中国制造商的好处

- TAF can meet Chinese device manufacturers requirements for valid global IMEI numbers
- TAF可满足中国设备制造商使用全球范围内有效IMEI的需求
- Chinese manufacturers benefit from inclusion within and conformity with global IMEI system operating across all export markets
- 中国制造商受益于加入且与所有出口市场都在使用的全球IMEI系统相一致
- TAF verification of TAC applicants enhances global integrity of IMEI system
- TAF对TAC申请的审核增强了IMEI系统的全球完整性



对中国制造商的好处

- Automation greatly increases efficiency and accuracy of the allocation process and ensures more speedy updates of the TAC allocation database
- 自动化大大增强了TAC分配过程的效率和准确性，确保了TAC分配数据库更新更快
- The GSMA provide the device data to operators so that devices can be exported and will work everywhere in the world
- GSMA向运营商提供IMEI数据，便于设备出口并在世界各地通用
- 120 EIRs operational and 20 more in test mode
- 120个可使用的移动设备识别寄存器（EIR），还有20多个用于测试模式
- Many recyclers and law enforcement agencies reliant on accurate IMEI for stolen phone management
- 许多回收和执法机构依靠准确的 IMEI 对偷窃的手机进行管理
- Hundreds of thousands of IMEI checks performed per day
- 每天有数以十万计的IMEI被验证

Benefits to Chinese manufacturers

IMEI 数据库

- Used to create the white list of the Central Equipment Identity Register (CEIR) which, in turn, is used to update network operator's Equipment Identity Register (EIR)
- 用于创建中心移动设备识别寄存器（CEIR）白名单，名单用于更新网络运营商的移动设备识别寄存器（EIR）
- Server, process and data managed by GSMA. TAC allocation administered by the Reporting Bodies
- 服务器、分配流程和数据由GSMA管理，TAC分配由各个审核机构负责

IMEI 数据库

- Data input by online web page
- 数据通过在线网页输入
- Access restricted to authorised users approved in advance and issued with an identification code. This includes Network Operators and Government Regulators. (i.e. Customs)
- 访问仅限于事先批准并颁发识别代码的授权用户，包括网络运营商和政府监管部门（如海关）
- Contains all TAC allocations issued since 1992 (approx. 130,000)
- 包含自1992年起分配的所有TAC（大约130,000个）

IMEI 号码结构

- The TAC number identifies the Brand name owner and the model. It is the TAC number that is allocated by the Reporting Bodies via the IMEI database
- TAC用来标识品牌所有者的名称和型号。TAC由审核机构通过IMEI数据库进行分配。

TAC - Type Allocation Code		Serial Number	Check Digit
NN	XXXXYY	ZZZZZZ	A
Reporting Body Identifier	Type Identifier	Number range allocated by Reporting Body but assigned to individual mobile stations by the manufacturer.	Defined as a function of all other digits (calculated by the manufacturer)

TAC - 型号分配代码		序号	校验位
NN	XXXXYY	ZZZZZZ	A
审核机构标识码	型号标识码	号码范围由审核机构分配，序号由制造商分配给各移动站	被定义为所有其他数位的函数 (由制造商计算)

审核机构

- The Country in which the company is based determines which Reporting Body is to process the application via the IMEI database
- 公司所处国家决定了由哪家审核机构通过IMEI数据库处理该公司的TAC申请
- There are 5 Reporting Bodies:
- 全球共有五家审核机构：
 - TAF ——位于中国
 - MSAI ——位于印度
 - BABT ——位于英国
 - CTIA ——位于美国
 - TIA ——位于美国

谁可以申请 TAC ?

- Since the Network Operators need to know the model and the company placing that model on the market, the GSMA do not accept applications from OEM manufacturers, only Brand Name owners
- 网络运营商需要知道型号和将其投放市场的公司，因此GSMA不接受OEM生产商的TAC申请，只接受品牌所有者的TAC申请
- Evidence that the company owns the brand name specified in the application is required
- 公司需要提供TAC申请所填品牌的商标注册证明

谁可以申请 TAC ?

- If an OEM were allowed to apply for a TAC to a model, they could sell the product and TAC to multiple companies under different brand names and model names. The Network Operators would not be able to identify the model or brand name owner
- 如果允许一家OEM生产商为某一型号申请TAC，那么他们可能将同一个TAC用在多家公司的不同品牌和不同型号的产品上。这将导致网络运营商可能无法识别该产品型号或品牌所有者。
- An OEM can only apply for a TAC for the Brand Name that they own if it will be sold using this brand name
- OEM生产商只有在生产自有品牌的产品时，才能为该品牌申请TAC。

谁可以申请 TAC ？

- Since the Network Operators, Regulators & Government Agencies need to know the model and the company placing that model on the market, TAC can only be obtained by the following:
- 由于网络运营商、监管部门和政府机构需要知道产品型号和将其投放市场的公司，因此TAC只能通过以下途径获得：
 - a mobile device manufacturer, manufacturing and marketing their own devices;
 - 制造和销售自有设备的移动设备制造商；
 - Example – The manufacturer is RIM – The brand name is Blackberry. RIM request the TAC as they own the brand name
 - 例如 - RIM是制造商 - 黑莓是品牌。RIM作为黑莓品牌所有者来申请TAC

谁可以申请 TAC ？

- Since the Network Operators, Regulators & Government Agencies need to know the model and the company placing that model on the market, TAC can only be obtained by the following:
- 由于网络运营商、监管部门和政府机构需要知道产品型号和将其投放市场的公司，因此TAC只能通过以下途径获得：
 - a company distributing, marketing or offering devices for sale under their own brand name
 - 分销、营销或销售自有品牌设备的公司
 - Example – An operator (China Mobile), the operator must request the TAC
 - 例如 - 运营商（中国移动），运营商必须申请TAC

谁可以申请 TAC ?

- The company selling the devices **MUST** be the same as the company requesting the TAC. If they are not then:
- 产品销售公司**必须**和TAC申请公司一致。如果不一致，那么：
 - Regulators will not approve the devices as it is seen as being counterfeit
 - 监管部门将认为此设备为假冒而拒绝准入
 - Custom and/or the police impound or confiscate the devices as it is seen as being counterfeit
 - 海关/警方将认为此设备为假冒，将其扣押或没收

谁可以申请 TAC ?

- If an operator does not know the correct details of devices on their network they cannot offer the correct services to their customers
- 如果运营商不知道设备在网的准确信息，就不能向用户提供准确服务
 - Example – operators only offer application services to customers who have a device where applications can be download & used. This would be of no use to a customer with a basic device which only support voice & SMS
 - 例如 - 运营商只向拥有可下载或运行应用设备的用户提供应用服务。这对仅使用支持语音和短信功能的基础设备用户是没用的

对多模块终端的要求

The GSMA has the following policy regarding devices containing multiple transceivers:

- If a device contains two or more transceivers, each transceiver needs to be separately identified on networks
- If two or more transceivers within the device are identical (e.g. same chipset, same frequency bands), then each transceiver can use the same TAC, but different IMEI

对于多模块终端，GSMA有以下管理要求：

- 如果终端含有两个或多个模块，则每个模块需要在网络上独立识别
- 如果终端内的两个或多个模块是相同的（如相同的芯片组、相同的频段），则各模块可使用相同的TAC，但IMEI不同

(TS.06 IMEI Allocation and Approval Process v10 Document)

(TS.06 IMEI核发程序文件第10版)

Devices Containing Multiple Transceivers

对多模块终端的要求

The GSMA has the following policy regarding devices containing multiple transceivers:

- If the transceivers are different (e.g. different chipset, different frequency bands), then the transceivers have different TACs
- A single transceiver may have more than one (U) SIM. If only one (U)SIM can connect to the network at any time then only one IMEI is required

对于多模块终端，GSMA有以下管理要求：

- 如果模块不相同(如不同的芯片组, 不同的频段)，则不同的模块使用不同的 TAC
- 单模块可支持多张(U)SIM卡。如果在任何时候都只有一张 (U)SIM 卡可联接网络，那么仅需一个 IMEI

(TS.06 IMEI Allocation and Approval Process v10 Document)

(TS.06 IMEI核发程序文件第10版)

Devices Containing Multiple Transceivers

- The same IMEI MUST NOT be put into more than one device.
- 同一个IMEI **不能** 写入多个设备。

- It is the manufacturers responsibility to ensure that once an IMEI has been put into a device it cannot be changed by anyone.
- 制造商的职责在于，必须确保IMEI一旦写入设备，将不能被任何人更改。
 - This is a legal requirement in many countries.
 - 这在许多国家已形成了法规。

- Regulations in various countries are being put in place that will make duplicate IMEIs illegal and operators are being pushed to remove duplicate IMEI from their networks.
- 目前许多国家的法规正在落实将重复的IMEI视为非法，并且还将促使运营商把重复的IMEI从其网络中删除。
- Device based kill switches are being required where network IMEI blocking is not considered sufficient due to IMEI weakness.
- 考虑到IMEI的弱点，单从网络上屏蔽IMEI还不够，还将要求设备启用防御机制。

一个型号一个 TAC

- TS.06 Section 8a TS.06 第8条第a款
 - Each ME Model must have its own TAC. One ME Model can have one or more TAC
 - 每个移动设备型号必须拥有自己的TAC。一个移动设备型号可以拥有一个或多个TAC。

- TS.06 Section 3.1 TS.06 第3条第1款
 - “ME Model” is defined as an ME which is different from other ME Models
 - 如何判断“移动设备型号”是否区别于其它型号：
 - By hardware design 按硬件设计
 - By transceiver 按模块
 - By control software 按控制软件
 - By frequency bands or 按频段，或
 - As it is manufactured or assembled or commissioned by different ME Owners 按由不同的ME所有者来制造、组装或委托制造设备

Using One TAC per Model



IMEI 数据库与联系方式

- IMEI Database website :-

IMEI数据库网址: <http://imeidb.gsm.org/>

- IMEI Database Helpdesk Email:-

IMEI数据库后台服务邮箱: imeihelpdesk@gsma.com

- IMEI Database Helpdesk phone:-

IMEI数据库后台服务电话: +91-877-2239133, +91-877-6456669



IMEI 数据库与联系方式

TAF team:-

TAF 团队：

- | | | |
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TS.06 IMEI Allocation and Approval Process Version 10.0

TS. 06 IMEI核发程序文件 第10版

Publish June 2016 2016年6月发布

Changes in this version 新版变化

新增生产商信息

- As the requirement is for Brand Owners selling the device, there are times when these are different from the manufacturer
- TAC申请主体是销售产品的品牌所有者，它可能与产品的生产商不一致。
- If the Brand Owner requesting the TAC is not the manufacturer then it will be required for YOU to add the manufacturers details to the TAC form
- 如果申请TAC的品牌所有者不是产品生产商，那么品牌所有者应该把生产商的信息添加到TAC申请表格中。
- This is so that the MNO's etc. can see which devices are made by the different manufacturer.
- 这有这样，移动网络运营等机构就能区分哪些设备是由不同生产商生产的。

TAC申请表格增加新字段

- eSIM – The TAC application form will soon contain fields where the applicant can add if the device will support eSIM and how many eSIM the devices will have.
- eSIM卡——TAC申请表将新增eSIM卡的字段。申请人可对设备是否支持eSIM卡进行勾选，并填写eSIM卡的数量。
- A device may also support a mixture of SIM & eSIM this can also be indicated on the TAC form.
- 一个设备可能既支持传统SIM卡，又支持eSIM卡，这一点也会在TAC申请表中有所体现。

TAC申请表格增加新字段

- The follow new OS have been added:-
- 新增了以下操作系统：
 - CyanogenMod
 - Mac OS
 - Nucleus
 - RTOS
 - S30
 - Sailfish
 - ThreadX
 - YunOS (Aliyun)
- If any new OS are required, please contact your RB with details and they can get them added.
- 如果产品支持的操作系统未在表格内，请向TAF提供相关信息，审核机构将把新操作系统加入表格中。

正在研发的其它调整内容

- The GSMA is developing a JSON interface which will allow OEM's who request large quantities of TAC per year to connect their own management system direct to the IMEI database allowing new TAC requests and up dates to existing TAC to be pushed between the different systems. The TAC certificate will then sent automatically to the OEM. This should help to reduce errors.
- GSMA正在开发一个JSON接口，该接口将使每年TAC申请量较大的OEM将自己的管理系统与GSMA的IMEI系统关联起来，允许两个系统间进行新TAC申请和TAC编辑的任务推送。TAC证明文件将自动推送给OEM，以减少错误。
- The process for RB review will remain the same as today
- 审核机构的核发流程将保持不变。
- The TAC certificate will then sent automatically to the OEM.
- TAC证明文件将由系统自动发送至OEM。
- The current manual process will also remain
- 当前的手动流程也将保持不变。

Under Development

Device identification requirements for Multi-Mode devices

多模设备的标识要求

3GPP / 3GPP2

对多模设备的要求

3GPP2 SC.R4002 - GHA (Global Hexadecimal Administrator) Assignment Guidelines and Procedures for Mobile Equipment Identifier (MEID)

3GPP2 SC. R4002 -
GHA（全球十六进制管理者）对移动设备识别码（MEID）的分配指南和流程要求

Section 5.4 on page 3 starting line 33
第5条，第4款，从第3页的第33行开始

In the case of MEIDs for terminals designed to comply with both 3GPP and 3GPP2 air interface specifications (i.e., multimode terminals), all of these fields are defined as decimal values. The following valid decimal ranges are globally assigned by the GHA for multimode terminals (Note: other multimode ranges are globally administered by the GDA from allocation space within other individual GDA RR decimal ranges):

如果终端的MEID同时符合3GPP和3GPP2的空中接口标准（比如多模终端），那么所有字段将定义为十进制值。以下有效的十进制号段由GHA向全球多模终端分配（注意：其它多模终端的号段由GDA通过分配其它前两位的十进制号段进行全球统一管理）：

Requirements for Multi Mode devices

对多模设备的要求

RR - valid range '99', '98', '97' – globally administered by GHA

XXXXXX - valid range 000000... 999999

ZZZZZZ - valid range 000000... 999999

C - valid range 0 ... 9 – not transmitted over the air

企业编码 (8 位)		序列号 (6 位)	校验数位
RR	XXXXXX	ZZZZZZ	C

RR——范围是 '99' , '98' , '97' - 由GHA全球管理

XXXXXX ——范围是000000-999999

ZZZZZZ ——范围是000000-999999

C ——范围是0-9——不在空中传输

对多模设备的要求

- What do these requirements mean?
 - Any TAC regardless of the prefix (35, 86, 91 or 99) can be used and they will work
- 这些要求是什么意思？
 - 不论TAC的前缀是什么，35、86、91或99，都可以被多模终端使用，且有效。
- What can the GHA allocate for multi-mode devices?
 - The GHA (TIA) can only allocate 99 series TAC.
- GHA可以给多模设备核发什么识别码？
 - GHA (TIA) 只能核发99开头的TAC。

对多模设备的要求

- What can the GDA allocate for multi-mode devices?
 - The GDA (GSMA) can allocate 35, 86, or 91 series TAC, this is via our appointed RBs, BABT, MSAI or TAF
- GDA可以给多模设备核发什么识别码？
 - GDA（GSMA）通过BABT、TAF、MSAI等授权审核机构核发35、86、91开头的TAC。
- What is required by LTE / CDMA operators and what will work on their networks?
 - All operator's multi-mode networks (3GPP/3GPP2) will work with all TAC allocated by the GDA or GHA
- LTE/CDMA运营商是如何要求的？他们的网络可以使用什么识别码？
 - GDA或GHA分配的所有TAC都能在所有运营商的多模网络（ 3GPP/3GPP2 ）中使用。

对多模设备的要求

- Can IMEI be put into the CDMA side of a multi-mode device in a hexadecimal format?
 - If a manufacturer is requested to put the IMEI into the LTE side of a device in a decimal format and then same IMEI in a hexadecimal format in the CDMA side of the device, then this is acceptable.
- 多模设备的CDMA模组所使用的IMEI是否可以写入十六进制格式？
 - 如果制造商被要求将设备中的LTE模组所使用的IMEI写成十进制格式，并将相同的IMEI在CDMA模组中写成十六进制格式，那么这种情况可以接受。
- The requirements for the use of TAC/IMEI in multi-mode devices are in accordance with TS.06 (One TAC per model)
- 多模设备的TAC/IMEI使用要求与TS. 06文件一致（一个型号一个TAC）

Thank you for listening

Any questions?

感谢聆听

欢迎提问

Questions?