



INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION
DEVELOPMENT BUREAU**

**Document 020-E
6 October 2006
Original: English**

5TH WORLD TELECOMMUNICATION/ICT INDICATORS MEETING, GENEVA, 11-13 OCTOBER 2006

SOURCE: Intercal Mondiale

TITLE: Towards Harmonization of indicators - Traffic Indicators

ITU – Towards Harmonization of indicators Traffic Indicators

13th October 2006

Bharat Vagadia

Intercai Mondiale Ltd
Regatta House
High Street
Marlow
Bucks SL7 1AB
T: +44 (0)1628 478470
F: +44 (0)1628 478472
admin@intercai.co.uk



www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

“Intercai Mondiale - The Business of Telecoms”

Intercai provides support for:

- **Telecommunications operators:** developing services and infrastructure in the face of rapid technological development, liberalisation, regulatory change and increasing competition, including:
 - business strategy, planning and marketing
 - product planning and service implementation
 - business case development
 - network planning, auditing and evaluation
- **Telecommunications industry Regulators:** economic analysis, financial modeling of telecommunications operators, defining markets and evaluating market power of individual operators and defining regulations
- **Government ICT Ministries:** policy and strategy definition for the telecommunications and ICT sectors, including implementation of telecommunications industry regulator



www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

2

Existing definitions

21	1311m	Local telephone traffic (minutes)	Local telephone traffic consists of effective (completed) fixed telephone line traffic exchanged within the local charging area in which the calling station is situated. This is the area within which one subscriber can call another on payment of the local charge (if applicable). This indicator should be reported in the number of minutes.
22	1312m	National trunk telephone traffic (minutes)	National trunk (toll) traffic consists of effective (completed) fixed national telephone traffic exchanged with a station outside the local charging area of the calling station. The indicator should be reported as the number of minutes of traffic.
22.1	1313wm	National fixed to mobile traffic (minutes)	Total outgoing minutes from the national fixed network to the mobile cellular network within the territory.
22.2	1311im	Internet Dial-up traffic (minutes)	The total volume in minutes of dial-up sessions over the public switched telephone network to access the Internet.

Would be useful to have split between calls within an RCU, within a local switch and calls that need to travel to another switch within the same charging zone

National trunk as an aggregate sum may not be useful when you may also have regional calls

What is the definition of fixed here? Does it exclude nomadic services?

Do we need to split of PSTN dial-up and ISDN?



www.intercai.co.uk

Copyright: Intercal Mondiale Ltd. No reproduction without permission

Intercal Mondiale

3

Existing definitions

23	133wm	Outgoing mobile minutes	Total number of minutes made by mobile subscribers (including minutes to fixed and minutes to other mobile subscribers).
23.1	1331wm	Outgoing/originating mobile minutes to same mobile network	Number of minutes made by mobile subscribers to the same mobile network.
23.2	1332wmf	Outgoing mobile minutes to fixed networks	Number of outgoing minutes made by mobile subscribers to fixed networks.
23.3	1332wm	Outgoing/originating mobile minutes to other mobile networks	Number of minutes made by mobile subscribers to other mobile networks.

What is the definition of mobile subscribers? Active subscriber? A split between pre and post paid would be useful – does total exclude international call?

Typically what is called On-net calls. May be a large skew towards off-peak calls which may be free, so a breakdown would be useful

What is the definition of fixed network – is this derived from the national numbering plan?

What is the definition of a mobile network? Is a MVNO a mobile network?
Would be useful to have break down of traffic between mobile infrastructure operators and MVNOs



www.intercai.co.uk

Copyright: Intercal Mondiale Ltd. No reproduction without permission

Intercal Mondiale

4

Existing definitions

24	132mb	International incoming and outgoing fixed telephone traffic (minutes)	Sum of international incoming and outgoing fixed traffic (i132m+i132mi).
24.1	132m	International outgoing fixed telephone traffic (minutes)	This covers the effective (completed) fixed traffic originating in a given country to destinations outside that country. The indicator should be reported in number of minutes of traffic.
24.2	132mi	International incoming fixed telephone traffic (minutes)	Effective (completed) fixed traffic originating outside the country with a destination inside the country. The indicator should be reported in number of minutes of traffic.

OK

Does this include non PSTN traffic?
Would be useful to have an indication of the destinations and % of traffic via VoIP

Identify of incoming calls would be useful
Would be useful to have an indication of % of traffic via VoIP

Existing definitions

25		Public data traffic (non-Internet)	Traffic from public data services such as X.25 and frame-relay (but excluding Internet) measured in megabytes per second (Mbytes).
26.1	1333wm	Outgoing/originating mobile minutes to international	Number of mobile minutes originating in a country to destinations outside that country.
26.2	1334wm	Roaming minutes (outside home network)	Total number of roaming minutes made by own mobile subscribers to make and receive calls when outside the country (outside home network), e.g., when traveling abroad.
26.3	1336wm	Roaming minutes in visited network (foreign subscribers)	Total number of minutes made by visiting (foreign) subscribers when making and receiving calls in visited network.
26.4	1335wm	Incoming international minutes to mobile network	Number of incoming minutes (fixed and mobile) received by mobile networks from another country.
26.5	133sms	SMS sent	Total number of mobile Short Message Service (SMS) sent.
26.6	133mms	MMS sent	Total number of mobile Multimedia Messaging Service (MMS) sent.
26.7	133rm	Number of countries with which there is a roaming agreement.	Total number of countries, with which there is a roaming agreement. If there are several operators with a different number of roaming agreements, the operator with the highest number of roaming agreements should be selected.

What are public data services?

What destinations?

Making and receiving calls has different charges – split would be useful

What destinations?

Split by network?

Where does Blackberry sit?

What is the purpose of this?

Existing definitions

27	132ib	International incoming and outgoing total telephone traffic (minutes)	Sum of international incoming and outgoing fixed and mobile traffic (i132m+i132mi).	OK - Simple addition
27.1	132t	International outgoing total telephone traffic (minutes)	This covers the effective (completed) fixed and mobile traffic originating in a given country to destinations outside that country. The indicator should be reported in number of minutes of traffic.	OK - Simple addition
27.2	132ti	International incoming total telephone traffic (minutes)	Effective (completed) fixed and mobile traffic originating outside the country with a destination inside the country. The indicator should be reported in number of minutes of traffic.	OK - Simple addition
28	132vp	VoIP	Definition not yet available. To be discussed: indicators to reflect rise in VoIP	Voice over Internet traffic using any of the following protocols – RTP, skype, eDonkey, Cisco Skinny etc Should be split between PC-PC, PC to PSTN, PSTN to PC and PSTN to PSTN using VoIP?

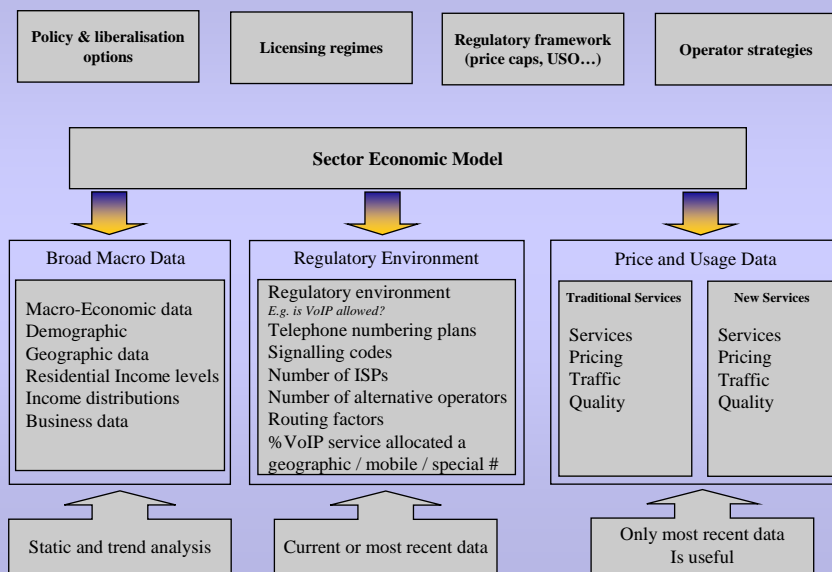
www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

7

Typical drivers for information and data



www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

8

Typical traffic related data required

- High >> • Price elasticities (growth in usage / traffic for reduction in price)
- High >> • Income elasticities (growth in usage / traffic for GDP growth)
- Migration of traffic from fixed to mobile (trend data)
- Migration of traffic from 2G to 3G (subscribers and traffic)
- Low >> • Use of telecom services by Residential, Government and Business type in minutes (if possible including data on busy hour call data)
- Low >> • Usage of fixed network: (peak and off peak) – if possible by rural vs urban
- Exists already High >> – Local, national, F-M, international (by destination), incoming international (by destination)
- High >> – Interconnection termination traffic
- Med >> • Usage of the mobile networks: (peak and off peak) – if possible by rural vs urban
- High >> – Prepay and Postpaid (minutes)
- High >> – 2G and 3G (minutes and Mbytes)
- Exists already High >> – M-M on-net, M-M off-net, M-F, international outgoing and incoming, roamers (in country and abroad) (minutes)
- High >> – Interconnection termination traffic (minutes)

www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

9

Typical traffic related data required cont'd

- Med >> • Usage of calling cards and payphones (national and international) (minutes)
- High >> • International traffic and bandwidth by technologies (fibre, satellite) – coverage and location points for these (minutes, Mbytes, % coverage or absolute Km²)
- Exists already Med >> • Usage of dial-up (Mbytes), broadband (by type and total Mbytes), # SMS sent, # MSM sent
- High >> • Type of broadband used (ADSL, ISDN, SDSL, Cable, Satellite, Fibre etc) and coverage (connections and % coverage)
- High >> • Number of leased lines by size and destination (national, international)
- Exists already • Other data service traffic
 - High >> – Global managed private circuits (by size bands)
 - High >> – Frame relay (total Mbytes)
 - High >> – X.25 (total connections and Mbytes)
 - High >> – ATM (total connections and Mbytes)
 - High >> – VSATs (total stations and Mbytes)

Increasing focus for operators in liberalised markets

www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

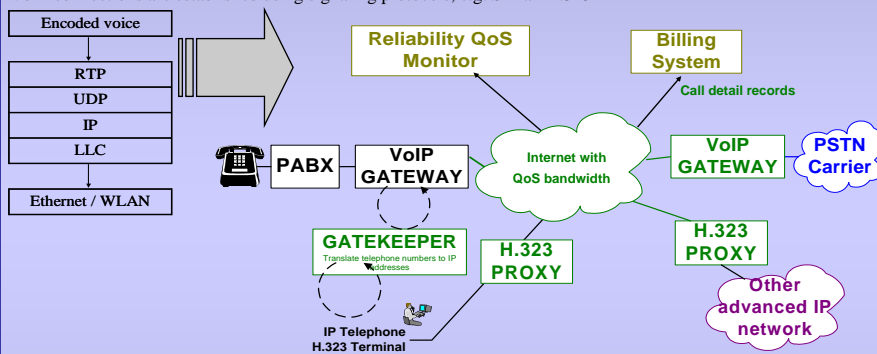
10

Expected additional data requirements in the near term

- High >> • VoIP outgoing traffic by residential and businesses subscribers
 - Local, national, international by destination
- High >> • VoIP incoming traffic by residential and businesses subscribers
 - Local, national, international by destination
- Med >> • On-demand video over broadband
- High >> • Broadcast video over broadband (IPTV)
- High >> • Wifi traffic
- High >> • Wimax traffic
- Med >> • Other wireless traffic
 - WLL
 - Bluetooth
 - ...
- Low >> • Traffic by content types
 - Traffic for streaming applications (real player)
 - Traffic for downloading MP3s etc
 - Traffic for web browsing etc
 - Traffic for applications (email etc)

VoIP/PSTN network call records provides a basis for traffic measurement

Transmission of voice traffic using an IP network => more overheads
 VoIP connections are established using signaling protocols, e.g. SIP an H.323



Version	IHL	Type of Service	Total Length
Identification		Flags	Fragment Offset
Time to Live		Protocol	Header Checksum
Source Address			
Destination Address			
Options		Padding	
Source Port		Destination Port	
Length		Checksum	
V=2	P	X	CC=II
Timestamp		Sequence Number	
Synchronization Source (SSRC) Identifier			

Realtime Transport Protocol (RTP) is one of the main protocols used to carry voice over IP networks – others are Skype, eDonkey, Cisco skinny.

VoIP traffic is identified by detection of one of these protocols.

Practical issues for consideration

- PSTN
 - Traffic captured in the switch through CDR records
 - Traffic collected at the retail and wholesale billing system
 - Reported traffic typically captured from the OUTPUT from the billing systems by reverse engineering the revenues by tariffs
 - » Charging may be done in units or increments
 - » Tariffs change over time, so using an average or latest will give incorrect traffic data
 - » If cost based pricing has not been implemented, actual traffic (e.g. local, national) may not be accurately calculated by reverse engineering
- Data and Internet
 - Captured due to possible requirement to pay carrier for aggregate traffic
 - Can be reported through aggregation of actual traffic at each router or modem for all licensed operators
- Voice over IP and Video over IP traffic
 - Typically not reported
 - In many cases not collected at a national level
 - Operators may use network management tools (sniffers) to detect, block or monitor VoIP traffic
 - Possible for regulators to enforce reporting obligations – easier in many of the less developed telecoms markets where only a few operators exist
 - Need to balance benefits of data versus cost imposition upon operators

Many countries do not report all traffic data or provide data which is unverified and inaccurate

www.intercai.co.uk

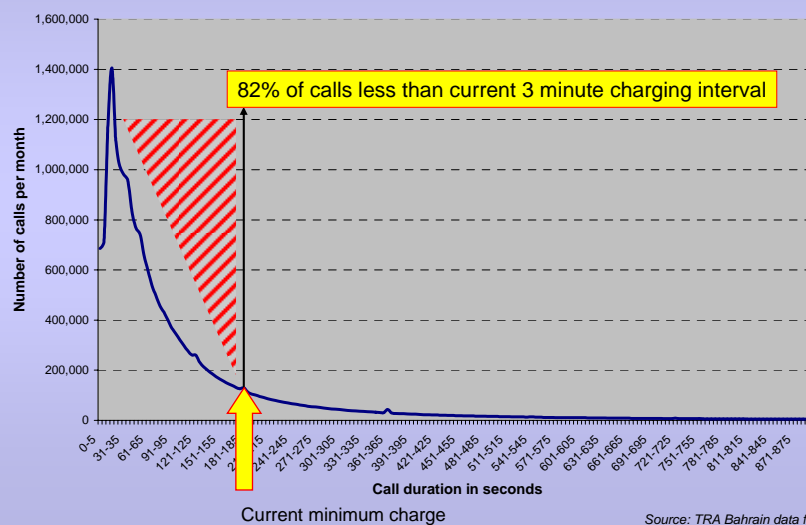
Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

13

Avoid distortions in traffic measurement and provide for consistent definition of traffic indicators

Call durations - Fixed to fixed (6 month average Jan - Jun 2003)



www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

14

Thank You



www.intercai.co.uk

Copyright: Intercal Mondiale Ltd. No reproduction without permission

Intercal Mondiale

15

Intercal Mondiale - Dedicated to the ICT industry

- Intercal is a leading **authority** on telecoms and IT with expertise on convergence issues.
- We focus **solely** on the telecommunications, IT and the media sector and have developed substantial industry knowledge, techniques and data sources.
- We provide strategic management consultancy and operational support throughout the business lifecycle.
- We **develop and implement** growth strategies, improve operations, and help capitalise on technology.
- Focused on technology, our teams combine highly **skilled** consultants in strategy, technology, and operations.
- Our expertise is based on nearly two decades of project **experience executed globally**.
- Intercal is trusted for its **impartiality**
- We are acknowledged for our **objectivity** and efficiency



www.intercai.co.uk

Copyright: Intercal Mondiale Ltd. No reproduction without permission

Intercal Mondiale

16

Intercai's breadth of international experience



- Tariff and pricing strategies
- Interconnection and access rate benchmarking
- Competitive strategy for incumbents and market entrants
- Business planning and technical support
- Technical and financial due diligence
- Sector policy and establishment of Regulator
- Licensing policy and licence award
- Privatisation support
- Training and knowledge transfer



www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

17

Intercai's Value Proposition

Intercai provides:



- Expert knowledge of the telecommunications industry and practical experience of regulation in developed and developing countries
- Skills in business planning, service development and management across the telecommunications market
- Pragmatic insights into the impact of technological innovation

for

- Established operators, new entrants, ISPs, Regulators and Government agencies, banks and investment houses



www.intercai.co.uk

Copyright: Intercai Mondiale Ltd. No reproduction without permission

Intercai Mondiale

18



www.intercai.co.uk

Contact Details

Bharat Vagadia
Intercal Mondiale Ltd
Regatta House
High Street
Marlow
Bucks SL7 1AB
T: +44 (0)1628 478470
F: +44 (0)1628 478472
admin@intercai.co.uk

Copyright: Intercal Mondiale Ltd. No reproduction without permission

Intercal Mondiale

19