IP telephony and NGN

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IP telephony Trends in Japan

(based on the latest research by Ministry of Internal Affairs and Communications)

IP telephony scenarios in Japan

In addition to the initial 050 type services, 0AB-J services are now being provided.



Numbering plan for IP telephony in Japan

- In Japan, a specific numbering plan is applied for existing telephony, e.g., 0A0, 0AB0.
- For IP telephony, a new number allocation policy was introduced in Oct. 2002 based on performance and capabilities.

	R-value	End-to- end delay	Call failure rate	Emergency call	Telephone number
Class A	80–	~100 ms	0.15	Yes	0AB~J
				No	050
Class B	80-	~150 ms	0.15	Yes	0AB~J
	70—			Yes/no	050
Class C	50-	~400 ms	0.15	No	050

R-value (general voice transmission quality rate) is the figure indicates the comprehensive transmission quality of VoIP (ITU-T G.107). R-value and delay values are considered satisfactory when 95% of the samples are satisfied.

Current IP telephony: number allocation

- 7.02 million IP phones are used in Japan. (total of "050" and "0AB-J")
 - Since January 2004, it has increased by about 0.9 million numbers quarterly.
- Ratio of "050" numbers to "0AB-J" numbers is 99:1.
 - 6.94 million users for "050" numbers and 0.08 million users for "0ABJ" numbers.
 - Users increased by 1.71 million for "050" numbers and 0.04 million for "0ABJ" numbers in the 1st half of 2004 (April to September). The ratio is 98:2.
- In both retail and wholesale, the main carriers are NTT Communications, KDDI, and Softbank BB.
 - Ratio of retail to wholesale is 9:1.
 - Softbank BB only does direct marketing.
 NTT Comm. and KDDI also do wholesale to other carriers.

Approximately 40% of broadband service users have an IP phone.

- Total number of IP phone numbers in use (for both 050 and 0ABJ) is 7.02 million. Total for broadband service (FTTH, ADSL, and CATV Internet) users is 17.6 million
- Since the end of Dec. 2003, quarterly increases in IP phone users were: 0.95, 0.76, and 0.99 million.



Breakdown of IP phone numbers



IP phone numbers (050 and 0ABJ) granted to carriers

- Total number of 050 numbers granted to carriers is 18.04 million.
- Actually, 6.94 million 050 numbers are used (approx. 40%).



As of Jan. 20th 2005

As of end of Nov. 2004

Breakdown by IP phone carrier

65% use Softbank BB. NTT Communications (8%) and KDDI (6%) follow.



Access lines used by IP phone users



TTC SIP Activities

- Scope: Interoperability specifications for IP telephony services
- Documents and schedule
- ✓ TS-1002 SIP-ISUP interworking specification (reference point C)
- ✓ TS-1003 Framework of interoperability specifications between carriers
- ✓ TS-1004 User ID interwork specification
- ✓ TS-1005 Guidelines for SIP-related technical specification
- ✓ TS-1006 UNI (reference point B) specification
- ✓ TS-1007 NNI (reference point A) specification
- ✓ All these documents will be standardized by the end of May 2005.
- Policy for deciding specifications of interfaces: The basic concept is to achieve basic interoperability of IP telephony by SIP, complying with RFC.



NGN in ITU-T

Overview of NGN architecture in ITU-T



Note: Charging and billing functions and management functions are applied to both service and transport layers.

TISPAN NGN architecture



3GPP IMS-related references

TS	23.228	Archi	IP Multimedia Subsystem (IMS); Stage 2	S2
TS	33.203	Security	Access Security (& integrity protection) for IP-based Services", Stage 2	S3
TS	33.210	Security	Netw. domain sec.; IP network layer security (sec of SIP signalling between network nodes)	S3
TS	23.218	Call Control	IP Multimedia (IM) session handling; IM call model; Stage 2	N1
TS	24.228	Call Control	Signalling flows for the IMS Call Control based on SIP and SDP; Stage 3	N1
TS	24.229	Call Control	IP Multimedia Call Control Protocol based on SIP and SDP; Stage 3	N1
TS	26.235	User plane	Packet Switched Conversational Multimedia Applications; Default codecs	S4
TS	26.236	User plane	Packet Switched Conversational Multimedia Applications; Transport protocols	S4
TS	29.162	Interworking	Interworking between the IM CN subsystem and IP networks	N3
TS	29.163	Interworking	Interworking between the IM CN subsystem and CS networks	N3
TS	23.278	Service Logic	CAMEL - IP Multimedia System (IMS) interworking; Stage 2	N2
TS	29.278	Service Logic	CAMEL Application Part (CAP) specification for IP Multimedia Subsystems (IMS)	N2
TS	29.228	User data & interfaces	IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents	N4
TS	29.229	User data & interfaces	Cx and Dx interfaces (based on Diameter) Protocol details	N4
TS	29.328	User data & interfaces	IP Multimedia Subsystem (IMS) Sh interface signalling flows and message contents	N4
TS	29.329	User data & interfaces	Sh interface based on the Diameter protocol	N4
TS	22.115	Charging	Charging & Billing, Stage 1	S5
TS	23.815	Charging	Charging implications of IMS architecture	S2/S5
TS	32.225	Charging	Charging data description for the IMS - Rel 5	S5
TS	32.260	Charging	IMS Charging - Rel 6	

Clear separation of each managed IP network will help to provide reliable and interoperable NGN.

