

VoIP tƳ Internet Telephony ; DaGwl Ij Bdfg Igodg Joj :yf

IP (Internet Protocol) Telephony nf0{ lgDg adf]hd kl/eflft ul/Psf]5 .

“IP telephony is defined as the transmission of voice signals over packet switched IP-based networks.”

IP (Internet Protocol) Telephony nf0{ tn pLn} eP adf]hd b0{efudf jul\$/of ul/Psf]5 .

-!_ VoIP (Voice Communication over Managed IP based network) and

-@_ Internet Telephony (Voice Communication over the Public Internet)

-!_ VoIP ; DaGwl Joj :yf

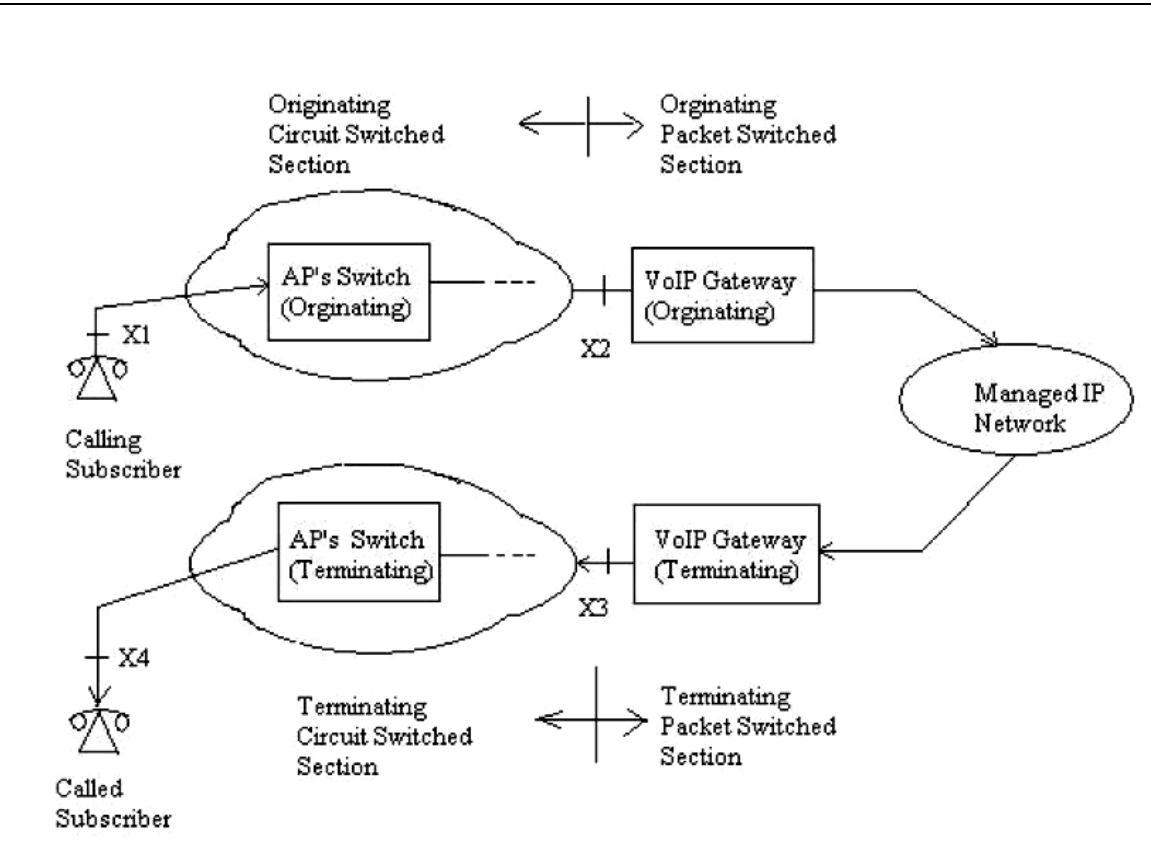
-!=_ cGt/fli60 b/; #f/ ; }f ; #fng ug{ cgdlt klkt JolQm?nf0{ hf/L ePsf] cgdltkqdf fgsf] bnf @ cg! f/ ; zfwg eP adf]hd gkndf VoIP Gateway Sf] : yfkgf u/L cfkth u/x?nf0{lgDg adf]hd ; }f kbfg ug{ ; Sg]M

(i) gkndf /sf] sg} klg 6nkng Public Switched Telephone Network, Public Land Mobile Network/ Integreted Services Digital Network (PSTN/PLMN/ISDN) af6 gkth aflx/ c6 bzd f /sf] hg; s} 6nkng PSTN/PLMN/ISDN ; # Managed IP-based Packet Switched Network Sf] kofu u/L Voice Communications -cf]fh cfbgkbfg j f afn} s'fsfgL_ug{ u/fpg ; Sg].

(ii) o; /l ; }f ; ~rfng ubf{u|xsn]sg}lglZrt sfB 8fon u/L cfkth]rfxsf] cGt/fli60 b/; #f/ ; }f ; #fnssf] Gateway dfknt cfkth]OR5fPsf]u0f:t/ cg! f/sf] ; :tf] jf dxuf] b/sf] cGt/fli60 ; }f klkt ug{ ; Sg] Joj :yf ; }f kbfosx?n]ug[kg].

-!=@_ VoIP dfkth kbfg ul/g] ; }f sf] u0f:t/ ; #ldg adf]hd xgkg[. ; fy}o; ; DaGwf klfs/Cfn] ; do ; dodf t]slbP adf]hd ; }f kbfosn] u0f:t/ kbfg ug[kg].

Quality of Service Specifications for VoIP		
Parameters	Toll Quality	Below Toll Quality
1. MOS (Mean Opinion Score) Or R-Value	> = 4 (without satellite link) and > = 3.5 (with satellite link) Or, > = 80 (without satellite link) and > = 70 (with satellite link)	< 4 (without satellite link) and < 3.5 (with satellite link) Or, < 80 (without satellite link) and < 70 (with satellite link)
2. One-way End-to-End Delay	< = 150 ms (without Satellite Link) < = 400 ms (with Satellite Link)	> 150 ms (without satellite link) > 400 ms (with Satellite Link)
3. Grade of Service (GoS)	< 2 %	< 2%
4. Packet Loss	< 0.1 %	< 2 %
5. Packet Jitter	< 5 ms	< 10 ms
6. CCS7 signaling delay	To confirm with Q.709	To confirm with Q.709



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b/; -rf/ Pj, @%# sfi bkrn@^ sfi pkbkrn-\$_cg' f/ Oo/gb ; jf kpfosx?sfj cgdltkqdf ; zfvj eP adfjhd klwv/Oaf6 Oo/gb ; jf ; -r fngsfj cgdltkq klfk ; :yfX?n]tkl; n adfjhd Oo/gb 6jnkrfjL; ~rfngsf ug{; Sg]M

-@=!_ gkfndf /x\$fi]Ppof sDkob/ -Personal Computer_ af6 gkfnleq}/x\$fi] j f aflx/ cGo b7df /x\$fi] csfi] sDob/; u klAns Oo/gb (Public Internet) sfi kpfu u/L Voice Communications -cfj fh cfdgkdfgj f afh/ s'/fsfgL_ug{u/fpg ; Sg].

-@#_ gkfndf /x\$fi] Ppof sDob/af6 gkfn aflx/ cGo b7df /x\$fi] hg; s} 6jnkrfj (Public Switched Telephone Network/Public Land Mobile Network/Integrated Services Digital Network Telephone Cflb) ; u klAns Oo/gb (Public Internet) sfi kpfu u/L Voice Communications -cfj fh cfdgkdfgj f afh/ s'/fsfgL_ug{u/fpg ; Sg].

-@#_ gkfndf /x\$fi] H.323/SIP Terminal af6 gkfn leq}/x\$fi] csfi] H.323/SIP Terminal j f aflx/ cGo b7df /x\$fi] hg; s} Telephone ; u klAns Oo/gb (Public Internet) sfi kpfu u/L Voice Communications -cfj fh cfdgkdfgj f afh/ s'/fsfgL_ug{u/fpg ; Sg].

-@!\$_ Oo/gb 6jnkrfjL (Internet Telephony) ; jf ; #fng ubf International Telecommunications Union (ITU) Sfi E.164 Numbering Scheme sfi cfw/df geO Internet Assigned Numbers Authority (IANA) Sfi IP Addressing Scheme sfi cfw/df Terminal Device or Customer Premise Equipment (CPE) sfi gdfis/O u /kgj].

-@!=%_ Oo/gb 6jnkrfjL (Internet Telephony) ; #fng ubf klAns Oo/gb (Public Internet) dkrn gkfn lelqPsfi] Voice Traffic nfQgkfnleq /x\$fi] sg}klg PSTN(Public Switched Telephone Network) j f PLMN (Public Land Mobile Network) j f ISDN (Integrated Services Digital Network) gbj s{ cflb ; u h8fg (Connection) u/L j f cG/Cfj C (Interconnection) u/l E.164 Numbering Scheme kpfu ugI krfj j f dfaOn j f 6dgndf Terminate u/fpg gkfOj].

-@! =^_ Oo/gb 6jnkrfjL (Internet Telephony) sfi cgdlt kfpj] ; jf kpfosn] b/ ; ~rf/ ; u ; DaGwl j tdfg Pj, lgodx? cflbsf clt/Oma Oo/gb 6jnkrfjL (Internet Telephony) ; jf ; ~rfng ubf kfnfg ugkgI z t X? (Conditions to be abide by the Licensee to Operate Internet Telephony Services) AE df pN]vt z t X?sfj ; dt kfnfg ugkgj].

006/g0 6]hknfgl (Internet Telephony) ;] f ; ~r fng ubf[kfngf ug[kg] zt{x? (Conditions to be abide by the Licensee to Operate Internet Telephony Services)

The Nepal Telecommunications Authority has decided to permit the **Internet Service Providers (ISPs)** to process and carry voice signals through IP network subject to the following broad guidelines: -

1. **Only ISP licensees are permitted to offer such service.**
2. **Scope and Definition of Internet Telephony Services:**
 - 2.1 Internet Telephony means an **Application Service**, which the customers of ISPs can avail from their Personal Computers (PC) capable of processing voice signals or other IP based Customer Premises Equipment (CPE) as mentioned below:-
 - a) PC to PC (Both within as well as outside Nepal).
 - b) PC in Nepal to Telephone outside Nepal
 - c) IP based H.323/SIP Terminals in Nepal to similar Terminals both in Nepal and abroad, employing IP addressing scheme of 'Internet Assigned Numbers Authority (IANA)'
 - 2.2 The addressing scheme for such a communication involving transmission of voice in packetized data format through the public Internet will conform to **IP addressing scheme** of Internet Assigned Numbers Authority (IANA) alone **and not the E.164 numbering scheme/plan** applicable to subscribers of Basic/Cellular Telephone Service.
 - 2.3 Internet Telephony Service offered by ISPs is different in nature, scope and kind from the real time voice, offered as telecommunication service by operators such as Basic Service Operators, Cellular Mobile Service Operators etc, under their existing license.
3. The following are **outside and do not fall under Internet Telephony service**: -
 - (i) Voice communication from anywhere to anywhere by means of dialing a telephone number (PSTN/ISDN/PLMN) using National Numbering Plan or E.164 Numbering Scheme;

- (ii) Originating the voice communication service from a Telephone/Mobile set (that uses E.164 Numbering Scheme) in Nepal;
- (iii) Terminating the voice communication to Telephone/Mobile (that uses E.164 Numbering Scheme) within Nepal;
- (iv) Establishing an interconnection to any Public Switched Network in Nepal;
- (v) Dial up lines with outward dialing facility from ISP nodes.

4. Quality of Service

Quality of Service (QoS) shall be as prescribed from time to time by Nepal Telecommunications Authority.

5. Security Monitoring

5.1 Privacy of the consumers should be ensured by the ISPs.

5.2 Suitable additional monitoring system (calling and called party identification, provision of lawful interception of calls, details of calls etc.) is to be set up by the ISPs carrying Internet telephony traffic through their Internet gateways, at their own cost and the cost of maintenance of the monitoring equipment shall be borne by the ISPs.

5. Tariff

NTA has not levied tariff for Internet telephony offered by ISPs over public Internet; however, NTA may review and fix a tariff at any time during the validity of ISP license, which shall be binding on the licensee. ISPs are not allowed to impose any tariff to consumers for Internet telephony without approval from NTA.