

VoIP

(E911)

NENA

* * **

가 All-IP
 가 가
 CRTC 가 가 FCC
 VoIP
 가 가
 E911 가 VoIP E911
 VoIP E911 NENA I2



I.

II. E911

III. VoIP E911

IV. NENA I2

V.

I.

가 100

가
 가

All-IP

가 가

가 , IP 911

* ETRI /
 ** ETRI /

, PSTN(Public Switched Telephone Network) 112, 119

가

, IP 070 . , 2005 112, 119

가 가 , FCC(Federal Communications Commission) CRTC(Canadian Radio-television and Telecommunications Commission) 가 [3],[5].

가

가

가

가

Emergency Numbering Plan) 1 9,000 911 가 NENA(North Emergency Numbering Plan) , 911 97.9%가

가 가

, VoIP(Voice over Internet Protocol) KT, VoIP

가

가

E911

가

가

II

E911

III

VoIP

E911 , IV NENA I2

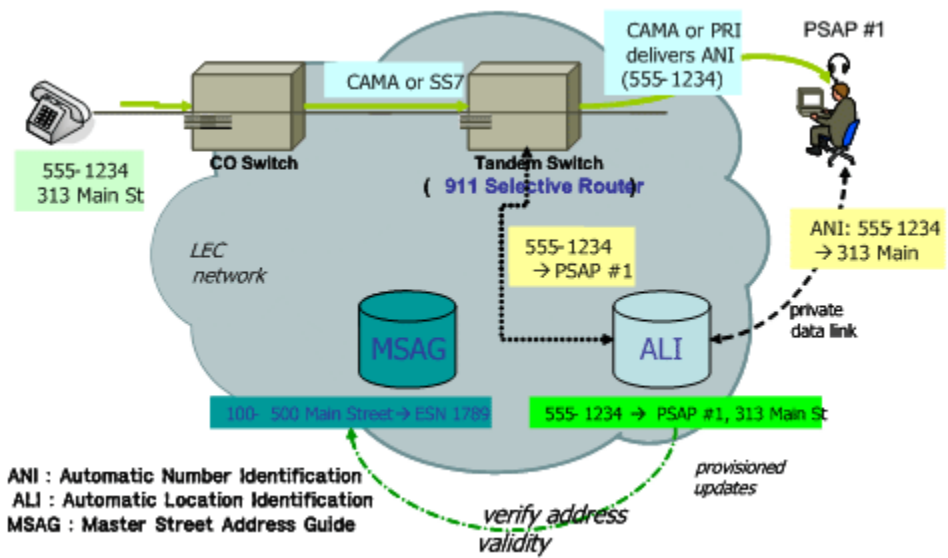
II. E911

911 Basic 911 Enhanced 911(E911) 가
. Basic 911 911 가
PSAP(Public Safety Answering Point;
) PSA() . Basic 911
, PSAP 911
(Automatic Location Information: ALI) (Automatic
Numbering Information: ANI)
Basic 911 E911 가
E911 SR(Selective Router) ¹⁾
PSAP 911 , (ANI) (ALI)
VoIP E911 2005 5 FCC
PSTN VoIP 2005 11 28 E911
Order , VoIP
911 PSAP , ANI ALI PSAP
VoIP E911
VoIP
E911 NENA I2
NENA I2 E911 911
PSAP , VoIP E911

1) Selective Router E911 E911

1273 2006. 11. 22.

NENA I2 , NENA I2
E911
E911 E911
PSTN E911
ILEC(Incumbent Local Exchange Carrier) , PSAP
E911
CLEC(Competitive Local Exchange Carrier) ILEC
911 SR . Selctive Router ILEC SRDB
(Selective Router DataBase) PSAP
, PSAP 911 (ANI) . PSAP
ANI ILEC ALI (Master
Street Address Guide: MSAG)
(ALI) E911 SR, SR PSAP
, ALI , SRDB, ALI PSAP , MSAG
(1) E911



(1) E911

III. VoIP E911

FCC PSTN VoIP VoIP E911
 , 911 E911 .
 E911 SR PSAP
 E911 VoIP E911 SR
 PSAP
 Fixed, Nomadic, Mobile
 , 911 PSAP
 가 가 E911
 가 가 , E911
 E911 E911 VoIP E911 E911
 E911 ‘ 가 ’ (ANI)
 (ALI) PSAP p-
 ANI(Pseudo Automatic Number Identification) P-ANI
 NANP(North American Numbering Plan) ANI
 SR, PSAP E911 ANI
 , P-ANI SR 가
 NPA-NXX PSAP 가
 911 PSAP P-
 ANI ALI DB ESRK(Emergency
 Service Routing Key), ESQK(Emergency Service Query Key) P-ANI
 E911 CMRS 가 가 E911

가 . 가
 PSAP 가
 , SR SR SR
 SR SR
 E911 PSAP PSAP
 SR , SR , ALI DB , SRDB , MSAG, SR PSAP
 , PSAP CPE(Customer Premises Equipment)

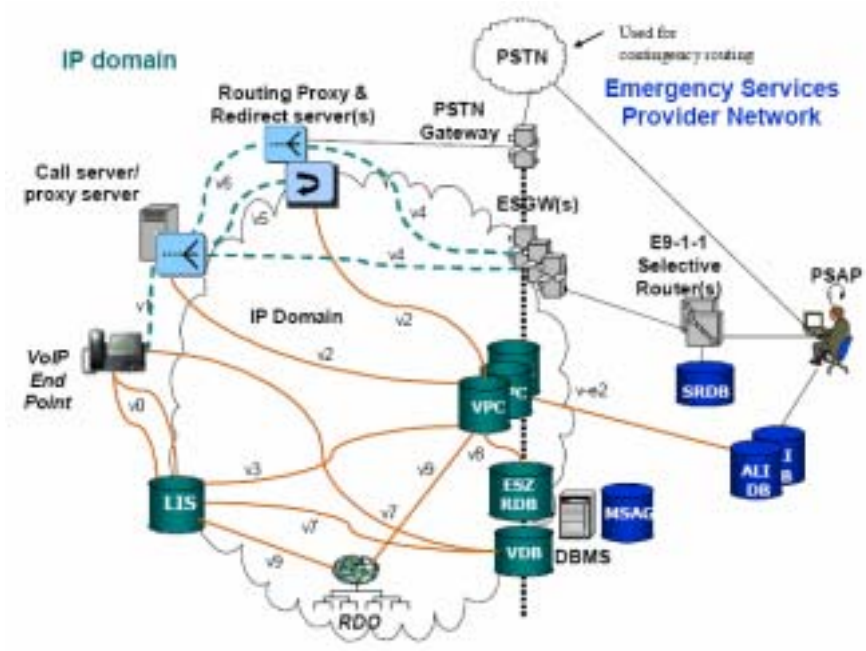
IV. NENA I2

NENA 1982 'One Nation, One Number'
 , 2003 12 VON Coalition VoIP E911
 . NENA VoIP 911 11, I2, I3
 , E911 911 PSAP
 I2 I2
 E911 VoIP E911
 , VoIP E911
 I2 SR, PSAP VoIP 911 E911
 ESQK P-ANI . ESQK NANP
 ANI SR, PSAP E911
 ANI
 VoIP 911 ESQK P-ANI 가 ESQK
 VoIP 3 VoIP E911
 SR PSAP , PSAP
 ESQK pool 가 ESQK 911 가
 ESQK 가 가
 ESQK 911

P-ANI PSAP 911 가 PSAP
P-ANI ANI ALI VoIP E911
가 .

1. NENA I2

I2 VoIP E911 E911
. I2 PSAP ,
I2 VoIP
VoIP
(2) VoIP E911 I2 VoIP
[1].
(2) IP , E911
Emergency Services Provider Network . IP LIS, VPC, ESGW,
ESZRDB, VDB E911 VoIP E911
가 , VoIP



(2) NENA I2 Architecture

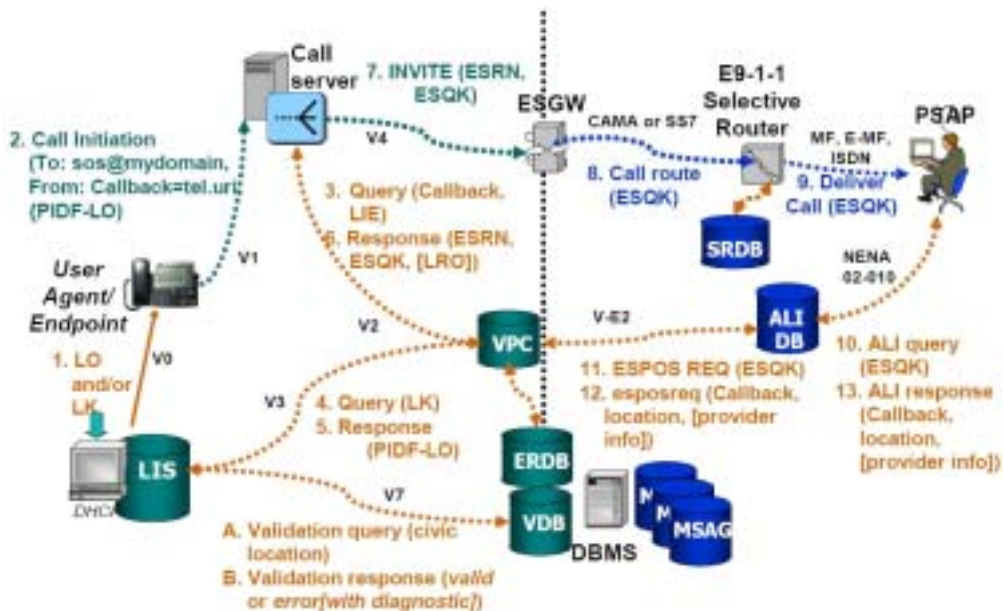
- Emergency Services Provider Network 가 .
- VoIP Endpoint(VEP): DHCP LIS
 - Key
 - Call Server: VEP IP
 - Location Information Server(LIS): VEP
 - VDB , VEP DHCP VEP
 - Key
 - VoIP Positioning Center(VPC): VoIP E911 SR, PSAP
 - E911 ESZR DB .
 - VPC ESQK P-ANI , VoIP 가 E911
 - E911
 - Emergency Service Zone Routing Data Base(ESZRDB/ERDB): 911
 - DB SR 가 ESRN
 - PSAP 가 ESN ,
 - Emergency Services Gateway(ESGW): IP E911 SR
- VoIP E911 NENA I2 E911
- pseudo-ANI P-ANI 가 , NANP ANI
 - SR, PSAP E911 . , 911 가
 - NPA-NXX , P-ANI
 - SR PSAP .
 - P-ANI 가 PSAP
 - ALI DB P-ANI . ESQK P-ANI VoIP 가
 - E911 E911 .
 - NENA I2 (1) VoIP E911

2. VoIP E911

VoIP E911 (3) . VoIP 가 SIP 가 911 가 , VoIP E911 가 [1].

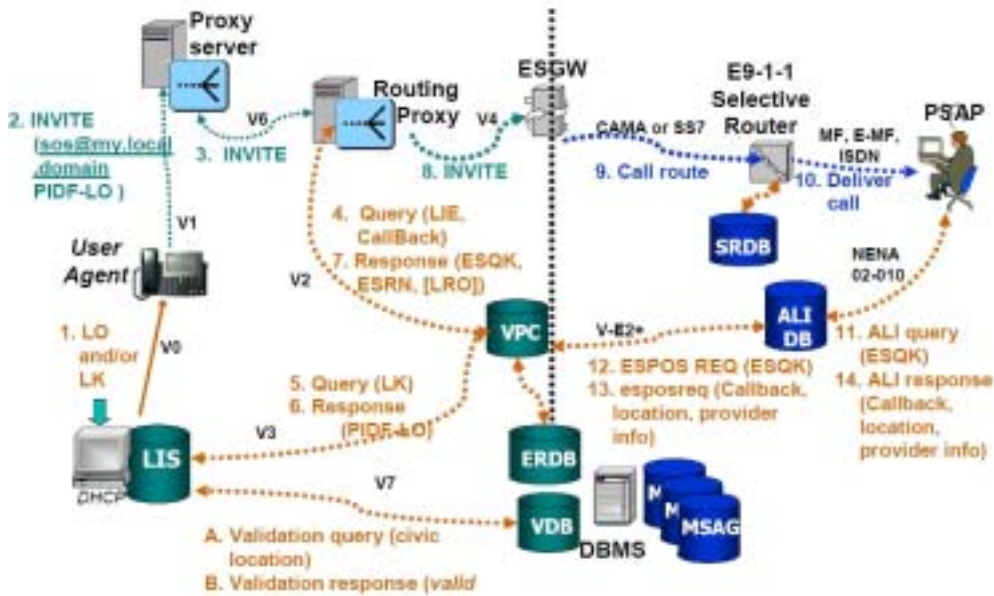
UAE DHCP LIS (Location Object: LO) Key (Location Key: LK) UAE 911 (ANI) LO LK

Call Server 911 911 ANI LO LK 가 VPC 3 LO LK , 4~5 LIS LO 4 VPC LO



(3) Basic Call Routing Scenarios

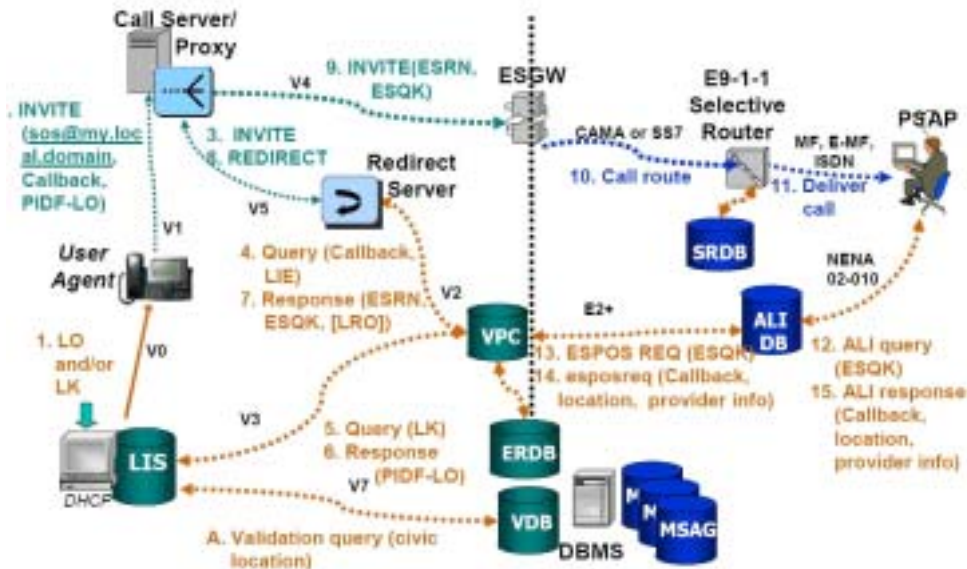
SR, PSAP ERDB(ESZRDB) ,
ANI ESQK P-ANI PSAP
ANI P-ANI E911 VoIP
. ESQK pool 가
911 가 가 . 6
VPC SR (Emergency Service Routing Number: ESRN),
ESQK, (Last Routing Option: LRO) Call Server
Call Server ESRN , 911 ESGW .
ESRN, ESQK
ESGW 911 ESRN , SR
. , ESQK
SR 911 PSAP , ESQK
SRDB . SR ESQK , PSAP
PSAP VoIP 911 , ESQK
ALI DB , ANI, ALI
ALI DB , ESQK
VPC
VPC ESQK ANI, ALI, ALI DB
VPC PSAP .
PSAP 911 ANI ALI
(3) VoIP E911 .
VoIP
가 . (4) (5)
(4) (3)
Call Server 911 Call Server
, 4 , 7 .



(4) Routing Proxy Scenarios

[1].

(5) VoIP E911 Call



(5) Redirect Server Scenarios

Server 911 3 911
4 , 7
INVITE 3xx Call Server
[1].

3.

가

VoIP Call Server ,
v2 VPC 911 (ESRN/ESQK)
v5 911

VoIP E911 가 VPC , 911
. VPC Call Server,
911 ERDB ESRN, ESN, CRN
. ESRN SR ESN PSAP , CRN
Call Server,
가 Key
VPC LIS

VPC ERDB ESRN, ESN, CRN ESRN/ESN
ESQK pool 가 ESQK . ESQK pool
ESRN/ESN ESQK pool ESQK 가
SR PSAP . VPC
ESQK ESQK pool 가 .
ESGW VoIP 911 E911 TDM
v4 ESRN/ESQK 가 911 가
ESRN SR .

V.

가 가

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가 가 , FCC

CRTC 가

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가

가

가 가

가

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(Nomadic) (Mobile)

VoIP E911

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- [1] NENA, Interim VoIP Architecture for Enhanced 9-1-1 Services (i2), 1 December 6, 2005.
- [2] <http://www.ietf.org/html.charters/sip-charter.html>
- [3] FCC 05-116, FIRST REPORT AND ORDER AND NOTICE OF PROPOSED RULEMAKING, June 3, 2005.
- [4] FCC 97-402, MEMORANDUM OPINION AND ORDER, Dec. 23, 1997.
- [5] Ofcom, Regulation of VoIP Services, 22 Feb. 2006.

* IITA