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Emergency Communications (EMTEL); Core elements for network independent access to emergency services

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Contents

Intellectual Property Rights	7
Foreword.....	7
Modal verbs terminology.....	7
Executive summary	7
Introduction	7
1 Scope	9
2 References	9
2.1 Normative references	9
2.2 Informative references.....	12
3 Definition of terms, symbols and abbreviations.....	12
3.1 Terms.....	12
3.2 Symbols.....	12
3.3 Abbreviations	12
4 General	14
4.1 Overview	14
4.2 Architecture.....	15
4.3 Mandatory Interfaces.....	16
4.4 Optional Interfaces	17
5 Entities.....	18
5.1 Border Control Function (BCF)	18
5.1.1 Overview	18
5.1.2 Mandatory Interfaces	18
5.1.3 Optional Interfaces.....	18
5.2 Emergency Service Routing Proxy (ESRP)	19
5.2.1 Overview	19
5.2.2 Mandatory Interfaces	19
5.2.3 Optional Interfaces.....	20
5.2.4 Call Queueing	20
5.2.5 Policy Routing	21
5.3 Emergency Call Routing Function (ECRF).....	22
5.3.1 Overview	22
5.3.2 Mandatory Interfaces	22
5.3.3 Optional Interfaces.....	23
5.3.4 Routing Query	23
5.3.5 Service Boundary.....	23
5.4 Public Safety Answering Point (PSAP).....	24
5.4.1 Overview	24
5.4.2 Mandatory Interfaces	24
5.4.3 Optional Interfaces.....	25
5.5 Location Information Server (LIS).....	26
5.5.1 Overview	26
5.5.2 Mandatory Interfaces	27
5.5.3 Optional Interfaces.....	27
5.5.4 Location Representation	27
5.6 Call Transfer Bridge (BRIDGE)	28
5.6.1 Overview	28
5.6.2 Mandatory Interfaces	28
5.6.3 Optional Interfaces.....	28
6 Interfaces	29
6.1 Signalling	29
6.1.1 SIP Transport (SIP-1)	29
6.1.2 SIP Session (SIP-2).....	29

6.1.2.1	Overview	29
6.1.2.2	SIP Methods	30
6.1.2.3	Required SIP Headers	33
6.1.2.4	Accepted SIP Headers	34
6.1.2.5	Resource Priority	34
6.1.2.6	History-Info and Reason	35
6.1.2.7	Call-Info	35
6.1.2.8	SIP Message Bodies	36
6.1.2.9	SIP Element Overload	36
6.1.2.10	Test Call	36
6.1.3	SIP Registration (SIP-3)	37
6.1.3.1	Overview	37
6.1.3.2	SIP Methods	37
6.1.3.3	Required SIP Headers	37
6.2	Web Services	37
6.2.1	Dequeue Registration (HTTP-1)	37
6.2.1.1	Overview	37
6.2.1.2	Parameter	38
6.2.2	Bad Actor (HTTP-2)	38
6.2.2.1	Overview	38
6.2.2.2	Parameter	38
6.3	Event Notification	39
6.3.1	Queue State (SIP-E1)	39
6.3.1.1	Overview	39
6.3.1.2	Parameter	40
6.3.2	Abandoned Call (SIP-E2)	40
6.3.2.1	Overview	40
6.3.2.2	Parameter	41
6.3.3	Security Posture (SIP-E3)	41
6.3.3.1	Overview	41
6.3.3.2	Parameter	42
6.3.4	Element State (SIP-E4)	42
6.3.4.1	Overview	42
6.3.4.2	Parameter	43
6.3.5	Service State (SIP-E5)	43
6.3.5.1	Overview	43
6.3.5.2	Parameter	44
6.4	Mapping Services	45
6.4.1	Find Service (LOST-1)	45
6.4.1.1	Overview	45
6.4.1.2	findService Request	45
6.4.1.3	findService Response	46
6.4.2	Service Boundary (LOST-2)	47
6.4.2.1	Overview	47
6.4.2.2	getServiceBoundary Request	47
6.4.2.3	getServiceBoundary Response	47
6.4.3	List Services (LOST-3)	47
6.4.3.1	Overview	47
6.4.3.2	listServices Request	47
6.4.3.3	listServices Response	47
6.4.4	List Services by Location (LOST-4)	47
6.4.4.1	Overview	47
6.4.4.2	listServicesByLocation Request	48
6.4.4.3	listServicesByLocation Response	48
6.4.5	Error Responses	48
6.5	Location Services	49
6.5.1	HTTP Enabled Location Delivery (HELD-1)	49
6.5.1.1	Overview	49
6.5.1.2	Location Request	49
6.5.1.3	Location Response	49
6.5.1.4	Error Responses	49
6.5.2	Location Dereference (HELD-2)	49

6.5.3	Location URI (HELD-3).....	49
6.5.3.1	Overview.....	49
6.5.3.2	Subscription.....	49
6.5.3.3	Notification.....	49
6.6	Media.....	50
6.6.1	RTP Transport (RTP-1).....	50
6.6.2	RTP Types (RTP-2).....	50
6.6.2.1	General.....	50
6.6.2.2	Audio.....	50
6.6.2.3	Video.....	50
6.6.2.4	Real-time Text.....	50
6.7	Instant Messaging (IM-1).....	50
6.8	Common Alerting Protocol (CAP-1).....	51
Annex A (normative): JSON Schema.....		52
A.1	QueueState.....	52
A.2	AbandonedCall.....	52
A.3	SecurityPosture.....	53
A.4	ElementState.....	53
A.5	ServiceState.....	53
A.6	Dequeue Registration Request.....	54
A.7	Dequeue Registration Response.....	55
A.8	BadActor Request.....	55
A.9	BadActor Response.....	55
Annex B (informative): Organizational Descriptions.....		56
B.0	General.....	56
B.1	Certificate Authority.....	56
B.2	National, and Regional Authorities.....	56
B.3	Public Safety Computer Emergency Response Team (CERT).....	56
B.4	ETSI Protocol Naming and Numbering Service (PNNS).....	56
B.5	Emergency Call Service Authorities.....	56
Annex C (informative): Parameter Registries.....		58
C.0	General.....	58
C.1	queueState Registry.....	58
C.1.1	General.....	58
C.1.2	Name.....	58
C.1.3	Information required to create a new value.....	58
C.1.4	Management Policy.....	58
C.1.5	Content.....	58
C.1.6	Initial Values.....	58
C.2	securityPosture Registry.....	59
C.2.0	General.....	59
C.2.1	Name.....	59
C.2.2	Information required to create a new value.....	59
C.2.3	Management Policy.....	59
C.2.4	Content.....	59
C.2.5	Initial Values.....	59
C.3	elementState Registry.....	59

C.3.0	General	59
C.3.1	Name	59
C.3.2	Information required to create a new value	59
C.3.3	Management Policy	60
C.3.4	Content	60
C.3.5	Initial Values	60
C.4	serviceState Registry	60
C.4.0	General	60
C.4.1	Name	60
C.4.2	Information required to create a new value	60
C.4.3	Management Policy	60
C.4.4	Content	60
C.4.5	Initial Values	60
Annex D (informative):	Change History	61
History		62

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Foreword

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Modal verbs terminology

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Executive summary

The core elements for network independent access to emergency services provide facilities that support centralized mapping and routing functions for current and future emergency communications and operational requirements. The baseline is a network with the functional elements that comprise security measures and the routing capabilities being necessary to forward a call received at any concentration point based on the caller's location to the responsible emergency call centre. In addition, other functional elements and necessary protocols and procedures enabling interoperable and secure implementations are specified to allow multimedia communications as they evolve.

Introduction

At present, an emergency services infrastructure is based on straightforward technical building blocks and a few legal/regulatory aspects. Technical elements, typically part of an incumbent telephone service provider, ensure that emergency calls are routed to the most appropriate PSAP. Such routing is based on static information at the local telephone exchange that provides a mapping between the location of a calling line and the PSAP, or for a mobile call, between the location of the mobile network cell coverage and the PSAP. The mapping information itself is most often managed by the national regulator, and typically, mapping information is represented by dialling code/area code/cell identifier and a table that maps those codes to PSAPs, which are identified by unlisted and often un-dialable numbers.

However, the existing, legacy emergency services infrastructure is not designed in a way that enables interaction with enhanced services, or that current and future communications and operational requirements will be met. Simply put, the emergency services infrastructure has not kept up with technology, thus, is not able to provide the level of service that citizens expect. Hence, new technologies with a new architecture are introduced as core elements for network independent access to emergency services. These elements enable citizens/individuals to contact emergency services in different ways, using the same types of technology as those they use to communicate every day. It also makes possible that PSAPs receive more and better information about emergencies of all magnitudes and improves interoperability between emergency services.

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1 Scope

The purpose of the present document is to describe the architecture, the core elements and corresponding technical interfaces for network independent access to emergency services. Elements are: Border Control Function (BCF), Emergency Service Routing Proxy (ESRP), Emergency Call Routing Function (ECRF), Public Safety Answering Point (PSAP), the Location Information Server (LIS), and the Call Transfer Bridge (BRIDGE).

The described architecture is currently named Next Generation 112 architecture.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

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2.2 Informative references

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The following referenced documents are not necessary for the application of the present document, but they assist the user with regard to a particular subject area.

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3 Definition of terms, symbols and abbreviations

3.1 Terms

Void.

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AML	Advanced Mobile Location
AMR	Adaptive Multi-Rate
ANP	Access Network Provider
BCF	Border Control Function

CA	Certification Authority
CAP	Common Alerting Protocol
CERT	Computer Emergency Response Team
CPE	Call Processing Equipment
CR	Carriage Return
CTI	(ETSI) Center for Testing and Interoperability
ECRF	Emergency Call Routing Function
ECRIT	Emergency Context Resolution with Internet Technologies (IETF WG)
ECSP	Emergency Call Service Provider
EPSG	European Petroleum Survey Group
ES	ETSI Standard
ESInet	Emergency Services IP network
ESRF	Emergency Service Routing Function
ESRP	Emergency Service Routing Proxy
ETSI	European Telecommunications Standards Institute
EVRC	Enhanced Variable Rate Wideband Codec
EVRC-B	Enhanced Variable Rate Wideband Codec -B
GIS	Geographic Information System
HELD	HTTP Enabled Location Delivery
HTTP	Hypertext Transfer Portocol
HTTPS	Hypertext Transfer Portocol Secure
IANA	Internet Assigned Numbers Authority
IETF	Internet Engineering Task Force
IF	InterFace
IM	Instant Messaging
IMS	IP Multimedia Core Network Subsystem
IP	Internet Protocol
IT	Information Technology
ITU-T	International Telecommunications Union - Telecommunications
JSON	JavaScript Object Notation
LF	Line Feed
LIS	Location Information Server
LO	Location Object
LOST	LOcation to Service Translation
LS	Location Server
MPEG	Moving Picture Experts Group
MSD	Minimum Set of Data
MSRP	Message Session Relay Protocol
NE	Neighboring Entity
PIDF	Presence Information Data Format
PIDF-LO	Presence Information Data Format - Location Object
PNNS	Protocol Naming and Numbering Service
PRF	Policy Routing Function
PSAP	Public Safety Answering Point
PSP	PSAP Service Provider
PSTN	Public Switched Telephone Network
RFC	Request For Comment
RTCP	Real-time Transport Control Protocol
RTP	Real-time Transport Protocol
RTSP	Real-time Streaming Protocol
SBC	Session Border Controller
SDES	SDP Security Descriptions
SDP	Session Decription Protocol
SIP	Session Initiation Protocol
SIPS	Session Initiation Protocol Secure
SMS	Short Message Service
SMSC	Short Message Service Center
SRS	Spatial Reference System
SRTCP	Secure Real-time Transport Control Protocol
SRTP	Secure Real-time Transport Protocol
TCP	Transmission Control Protocol
TLS	Transport Layer Security