

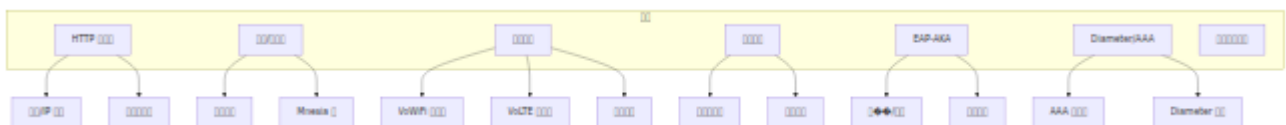
OmniSEP □□□□

OmniSEP □□□□□□□□□□□□

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- HTTP □□□□
- □□□□
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- □□□□
- EAP-AKA □□
- Diameter □□
- □□□□□□
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HTTP □□□□

□□□□□□ HTTP □□□

```
config :omni_sep,  
  http_port: 9014,  
  http_ip: {0, 0, 0, 0},  
  server_fqdn: "sep.mnc001.mcc001.pub.3gppnetwork.org",  
  entitlement_version: "2.0"
```

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□□	□ □	□ □	□□	□□
http_port	□ □	□	9014	HTTP □□□ TCP □□□□□□□□□□ 443 □ TLS
http_ip	□ □	□	{0, 0, 0, 0}	□□□□ IP □□□ {0,0,0,0} □□□□□□□□□□
server_fqdn	□ □ □	□	-	□□□□□□□□□□□□□□ aes.mnc<MNC>.mcc<MCC>.pub. □□ GSMA TS.43 □ 2.1 □□
entitlement_version	□ □ □	□	"2.0"	TS.43 □□□□□ Android □□□□□□ "2.0"□

FQDN □□

□□□ FQDN □□ 3GPP □□□□□

```
aes.mnc<MNC>.mcc<MCC>.pub.3gppnetwork.org
```

名前	説明	値
aes	暗号化方式	aes
mnc<MNC>	ネットワークID (MNC)	mnc001
mcc<MCC>	ネットワークID (MCC)	mcc310
pub.3gppnetwork.org	3GPP ネットワーク	-

ネットワークID: MCC 310, MNC 410, AT&T

```
aes.mnc410.mcc310.pub.3gppnetwork.org
```

設定

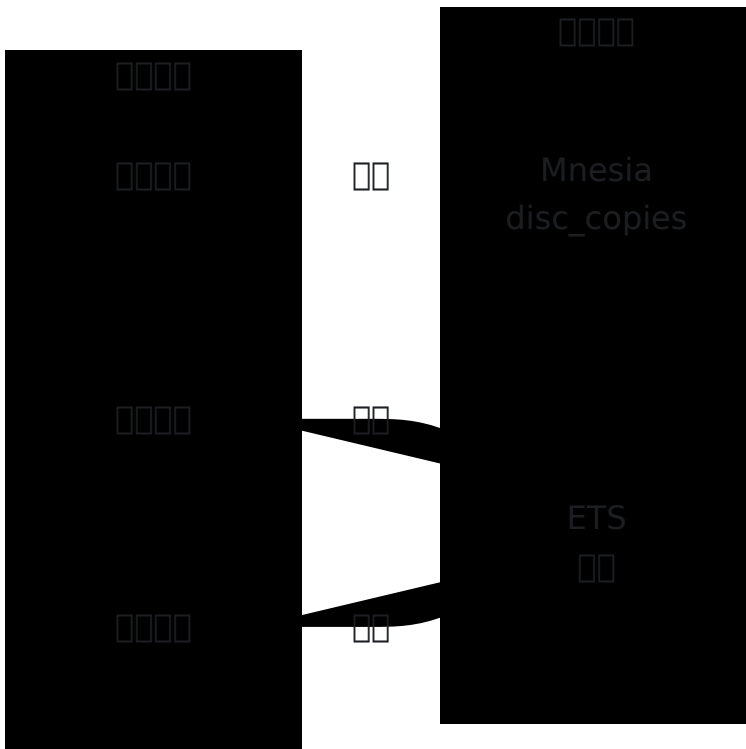
Mnesia データディレクトリ

```
config :omni_sep, :storage,
  data_dir: "priv/data"
```

設定

名前	タイプ	デフォルト	値	説明
data_dir	文字列	priv/data	"priv/data"	Mnesia データディレクトリ

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Mnesia □

□□□□□□□ Mnesia `disc_copies` □□□□□□□

□	□□	□□□
<code>activity</code>	□□□□□□□□□□	Mnesia disc_copies
<code>activity_by_imsi</code>	IMSI □□□□□□□□	Mnesia disc_copies
<code>activity_by_terminal</code>	□□ ID □□	Mnesia disc_copies

目次

```
priv/data/  
└─ mnesia/  
   └─ schema.DAT          # Mnesia 目次  
   └─ activity.DCD       # 目次  
   └─ activity.DCL       # 目次  
   └─ activity_by_imsi.DCD  
   └─ activity_by_imsi.DCL  
   └─ activity_by_terminal.DCD  
   └─ activity_by_terminal.DCL  
   └─ DECISION_TAB.LOG  
   └─ LATEST.LOG
```

目次

目次

1. 目次
2. 目次
3. 目次 Mnesia 目次
4. 目次 Mnesia 目次

```
# config/prod.exs  
config :omni_sep, :storage,  
  data_dir: "/var/lib/omni_sep/data"
```

目次

目次

```

config :omni_sep, :default_entitlements,
  # VoWiFi (ap2004) []
  vowifi: %{
    entitlement_status: 1,          # []
    addr_status: 2,              # []
    tc_status: 2,                # []
    prov_status: 1,              # []
    service_flow_url: "",
    service_flow_user_data: "",
    message_for_incompatible: "[] VoWiFi []"
  },

  # [] (ap2003) []
  volte: %{
    entries: [
      %{
        access_type: 1,          # 4G/LTE
        home_roaming_nw_type: 1, # []
        entitlement_status: 1     # []
      },
      %{
        access_type: 2,          # 5G/NR
        home_roaming_nw_type: 1, # []
        entitlement_status: 1,    # []
        network_voice_irat_capability: "EPS-Fallback"
      }
    ]
  },

  # SMSoIP (ap2005) []
  smsoip: %{
    entitlement_status: 1        # []
  },

  # [] (ap2010) []
  data_plan: %{
    entitlement_status: 1
  },

  # [] (ap2012) []
  dcb: %{
    entitlement_status: 0,      # []
    tc_status: 2                # []
  }

```

```
},
```

```
# 0000 (ap2016) 000
```

```
satmode: %{
```

```
  entitlement_status: 0
```

```
  # 0000
```

```
}
```

VoWiFi (ap2004)

項目	型番	説明	備考
entitlement_status	0 1	0=許可, 1=未許可, 2=許可中, 3=未許可	許可状態
addr_status	0 1	0=許可, 1=未許可, 2=許可中, 3=未許可	許可状態
tc_status	0 1	0=許可, 1=未許可, 2=許可中, 3=未許可	許可状態
prov_status	0 1	0=許可, 1=未許可, 2=許可中, 3=未許可	許可状態
service_flow_url	0 1 2	URL	許可 URL
service_flow_user_data	0 1 2	-	許可状態
message_for_incompatible	0 1 2	-	entitlement_status=2 許可状態

VoLTE (ap2003)

VoLTE 許可状態

属性名	属性種別	値	説明
access_type	整数	1=4G/LTE, 2=5G/NR	接続タイプ
home_roaming_nw_type	整数	1=自宅ネットワーク, 2=他国, 3=他国 ネットワーク	ホームローミングネットワークタイプ
entitlement_status	整数	0=有効, 1=無効	権限ステータス
network_voice_irat_capability	文字列	"EPS-Fallback", "VoNR"	5G ネットワーク 互換性

権限

権限ID	権限名	権限説明
0	読み取り	システム情報の読み取り
1	書き込み	システム情報の書き込み
2	実行	システム情報の実行
3	管理	システム情報の管理

署名

署名秘密鍵

```
config :omni_sep, :token,
  validity_seconds: 86400,
  signing_secret: "change_me_in_production"
```

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<code>validity_seconds</code>	□□	□	86400	□□□□□□□□□□□□ 24 □□□
<code>signing_secret</code>	□□ □	□	-	□□□□□□□□□□□□□□□□□□□□ □□□□ 32 □ □□□□□□□□□□□□

□□□□□□

- □□□□□□□□□□ `signing_secret`
- □□□□□□
- □□□□□□□□□□□□□□□□

```
# config/prod.exs
config :omni_sep, :token,
  signing_secret: System.get_env("OMNI_SEP_TOKEN_SECRET")
```

EAP-AKA □□

□□□□□□□□□□ EAP-AKA □□□□□□□□

```
config :omni_sep, :eap_aka,
  enabled: true,
  session_timeout_ms: 30_000
```



```
config :diameter_ex, :diameter,
  service_name: :omni_sep_aaa,
  listen_ip: {127, 0, 0, 1},
  listen_port: 3868,
  host: "omnisep.example.com",
  realm: "example.com",
  product_name: "OmniSep",
  vendor_id: 10415,
  auth_application_ids: [16777265],
  acct_application_ids: [],
  supported_vendor_ids: [10415],
  request_timeout: 5000,
  allow_undefined_peers_to_connect: true,
  peer_selection_algorithm: :round_robin,
  control_module: OmniSep.Diameter.Control,
  processor_module: OmniSep.Diameter.Processor,
  applications: [
    %{
      alias: :swm,
      dictionary: :diameter_gen_base_rfc6733,
      module: OmniSep.Diameter.Swm
    }
  ],
  peers: [
    %{
      host: "aaa01.example.com",
      ip: "192.168.1.10",
      port: 3868,
      transport: :tcp
    }
  ]
]
```

□□□□

□□	□ □	□ □	□□	□□
service_name	□ □	□	-	□□□□□□□□
host	□ □ □	□	-	Diameter Origin-Host□□□□□□□□ FQDN□□□ RFC 6733□
realm	□ □ □	□	-	Diameter Origin-Realm□□□□□□□□ RFC 6733□
vendor_id	□ □	□	10415	3GPP □□□ ID□□□□ 3GPP TS 29.230□
auth_application_ids	□ □	□	-	□□□□□□□□□□ ID □ □□SWm □ 16777265□
request_timeout	□ □	□	5000	□□□□□□□□□□
peer_selection_algorithm	□ □	□	:round_robin	□□□□ □□:round_robin □ :failover

listen

Option	Type	Value	Description
listen_ip	string	{127, 0, 0, 1}	Diameter IP
listen_port	uint16_t	3868	Diameter RFC 6733

peers

peers configuration

Option	Type	Value	Description
host	string	-	Diameter Origin-Host
ip	string	-	TCP/SCTP IP
port	uint16_t	3868	Diameter
transport	string	:tcp	:tcp or :sctp

SWm

SWm ID 16777265 EAP-AKA 3GPP TS 29.273

Code	Length	Description
DER	268	Diameter-EAP-Request - EAP AAA
DEA	268	Diameter-EAP-Answer - AAA EAP

配置

Diameter OmniSEP 配置

- EAP-AKA 配置
- IMSI 与 EAP_ID 配置
- 配置
- 配置

配置

配置

```
config :omni_sep, :activity,  
  max_records_per_subscriber: 1000,  
  retention_seconds: 2_592_000
```

表

配置	配置	配置	配置
<code>max_records_per_subscriber</code>	配置	1000	配置
<code>retention_seconds</code>	配置	2592000	配置 30 配置

配置

配置

欄名	説明
imsi	IMSI
terminal_id	IMEI/ID
timestamp	時刻
client_ip	クライアント IP
user_agent	HTTP User-Agent
app_ids	アプリケーション ID
auth_method	EAP-AKA, TOKEN
response_code	HTTP レスポンスコード

#####

##

```
# config/dev.exs
import Config

config :omni_sep,
  http_port: 9014

config :omni_sep, :eap_aka,
  enabled: true # EAP-AKA - AAA 対応

config :logger, :console,
  level: :debug
```



```
# config/prod.exs
import Config

config :omni_sep,
  http_port: 9014,
  http_ip: {0, 0, 0, 0},
  server_fqdn: System.get_env("OMNI_SEP_FQDN")

config :omni_sep, :token,
  validity_seconds: 86400,
  signing_secret: System.get_env("OMNI_SEP_TOKEN_SECRET")

config :diameter_ex, :diameter,
  host: System.get_env("DIAMETER_HOST"),
  realm: System.get_env("DIAMETER_REALM"),
  peers: [
    %{
      host: System.get_env("AAA_PEER_HOST"),
      ip: System.get_env("AAA_PEER_IP"),
      port: 3868,
      transport: :tcp
    }
  ]

config :logger, :console,
  level: :info
```

環境変数

変数名	説明
OMNI_SEP_FQDN	TS.43 環境変数 FQDN
OMNI_SEP_TOKEN_SECRET	トークン秘密鍵
DIAMETER_HOST	Diameter Origin-Host
DIAMETER_REALM	Diameter Origin-Realm
AAA_PEER_HOST	AAA 環境変数
AAA_PEER_IP	AAA 環境変数 IP 環境変数

ログ設定

```
config :logger, :console,
  format: "$time $metadata[$level] $message\n",
  metadata: [:request_id, :imsi, :terminal_id]
```

変数名	説明
request_id	環境変数UUID
imsi	環境変数 IMSI環境変数
terminal_id	環境変数 ID

OmniSEP □□□□□□

OmniSEP □□□□□□□□□□□□□□□□

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- □□□□
- TS.43 □□□□
- XCAP Sirmservs □□
- □□□□
- □□□□
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□□□□

□□□□□□□□ OmniSEP □□□□□□□□□□□□□□□□ TS.43 □□□□□□ XCAP □□□□

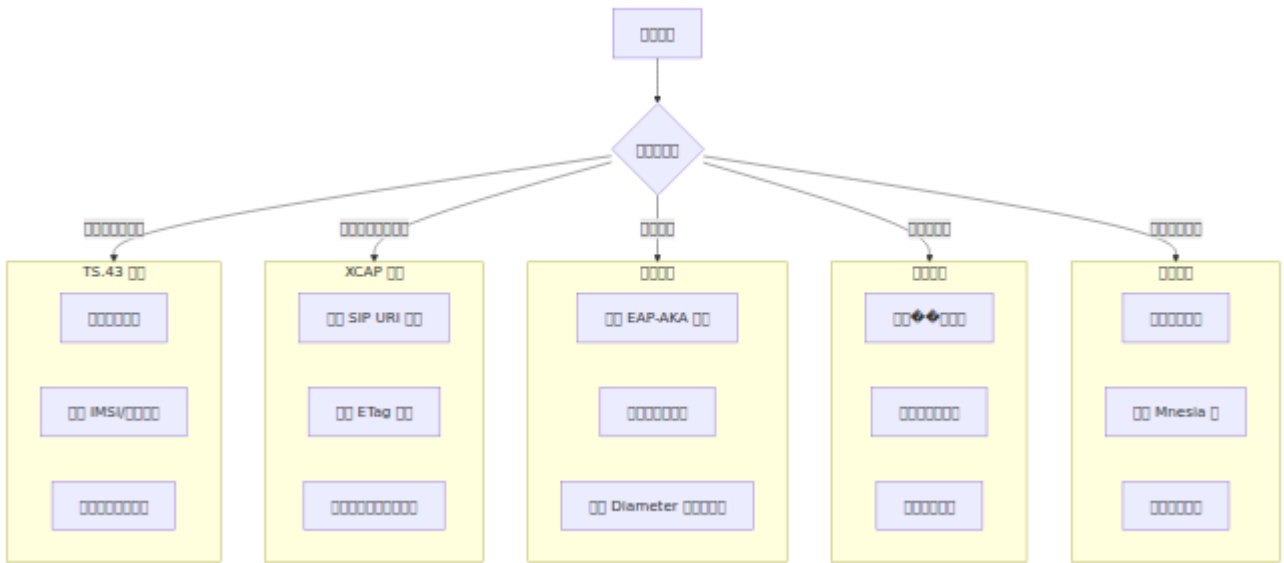
□□□

- □□□□□□□□□□ XCAP □□□□□□□□ EAP □□□□

- IMSI/MSISDN/ID / IP
- HTTP GET/PUT/POST/DELETE
-

- IP
- HTTP XCAP
- IMSI/MSISDN
- ID User-Agent
- XCAP
- User-Agent
- Content-Type/If-Match/3GPP
- XCAP XML
- HTTP

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TS.43 □□□□

□□□□“□□□□□□”

□□□□□□ VoWiFi/VoLTE □□□□□□□□□□

□□□□□

- □□□□□□□ entitlement_status: 0
- □□□□□□□□□□□□□□□□□□
- □□□□□□□□ IMSI □□□□□□

□□□□□

1. □□□□□□□□□□□□□□□□□□

```
GET /api/activity?imsi=<subscriber_imsi>
```

2. □□□□□□□□□□□□□□□□□□

3. □□□□□□□□□□□□□□□□□□


```
GET /api/entitlements/<imsi>
```

4. 删除 entitlements

```
DELETE /api/entitlements/<imsi>/<app_id>
```

返回结果

返回 HTTP 400 错误信息“invalid”

原因

- 不支持 TS.43 格式
- 不支持
- URL 错误

返回

参数	说明
terminal_id	IMEI 15 位
terminal_vendor	4 位
terminal_model	10 位
terminal_sw_version	
entitlement_version	“2.0”
app	ID

返回

1. 不支持 TS.43 格式
2. 不支持

3. Android User-Agent

```
PRD-TS43 term-<vendor>/<model> client-IMS-Entitlement/1.0 OS-Android/<version>
```

HTTP 406

HTTP 406

- entitlement_version
-

1.

```
config :omni_sep,  
  entitlement_version: "2.0"
```

2. Android "2.0"

3.

XCAP Sivers

HTTP 404

XCAP GET 404

-
- SIP URI
- MSISDN

□□□□

1. □□□□□ SIP URI □□□

```
/simservs.ngn.etsi.org/users/sip:+  
<msisdn>@<domain>/simservs.xml
```

2. □□□□ API □□□□□□□□□□

```
GET /api/xcap/<msisdn>
```

3. □□□□□□□□□□

```
POST /api/xcap/<msisdn>  
Content-Type: application/json  
  
{  
  "oip": {"active": true},  
  "oir": {"active": true, "default_behaviour": "presentation-  
not-restricted"},  
  "no_reply_timer": 20,  
  "call_forwarding": {},  
  "call_barring_incoming": {},  
  "call_barring_outgoing": {}  
}
```

ETag □□□□ HTTP 412 □

□□□PUT □ DELETE □□□□ HTTP 412 □□□□□□

□□□□□

- □□□□□□□□□ ETag
- □□□□□□□□□□
- □□□□□□□ ETag

□□□□□

1. ETag

```
GET /simservs.ngn.etsi.org/users/<sip_uri>/simservs.xml
```

2. If-Match ETag

```
PUT /simservs.ngn.etsi.org/users/<sip_uri>/simservs.xml
If-Match: "<etag_value>"
Content-Type: application/xcap-el+xml

<simservs>...</simservs>
```

3. If-Match

XML HTTP 400

PUT HTTP 400

- XML
-
-

()	<code>http://uri.etsi.org/ngn/params/xml/simservs/xcap</code>
cp	<code>urn:ietf:params:xml:ns:common-policy</code>

1. XML

2.

```
<simservs
xmlns="http://uri.etsi.org/ngn/params/xml/simservs/xcap"
xmlns:cp="urn:ietf:params:xml:ns:common-policy">
```

3. ETSI TS 183 023

-
-
-

1. communication-diversion

```
<communication-diversion active="true">
```

2.

```
<cp:rule id="cfb">
  <cp:conditions>
    <busy/>
  </cp:conditions>
  <cp:actions>
    <forward-to>
      <target>tel:+15557654321</target>
    </forward-to>
  </cp:actions>
</cp:rule>
```

3. ID

Call ID	Call State	Call Duration
cfu	()	0000
cfb	busy	00
cfna	no-answer	0000
cfnrc	not-reachable	000
cfnl	not-logged-in	000

4. Call ID tel: URI Call ID E.164 Call

0000

EAP-AKA Call ID

Call ID EAP_ID Call ID

Call ID

- Call ID EAP-AKA
- EAP_ID Call ID
- Diameter Call ID

Call ID

1. Call EAP-AKA Call ID

```
config :omni_sep, :eap_aka,
  enabled: true
```

2. Call EAP_ID Call ID NAI

```
0<IMSI>@nai.epc.mnc<MNC>.mcc<MCC>.3gppnetwork.org
```

```
0310410123456789@nai.epc.mnc410.mcc310.3gppnetwork.org
```

3. Diameter

4.

HTTP 511

HTTP 511

-
-
-

1.

```
config :omni_sep, :token,  
  validity_seconds: 86400 # 24
```

2.

3. EAP-AKA

4. signing_secret

-

- 配置 signing_secret
- 配置 token

配置

1. 配置 signing_secret

```
config :omni_sep, :token,  
  signing_secret: System.get_env("OMNI_SEP_TOKEN_SECRET")
```

2. 配置 token

3. 配置 signing_secret

配置

配置

配置

配置

- 配置 token
- 配置 signing_secret
- 配置 signing_secret

配置

1. 配置 token

```
curl http://<host>:9014/health
```

2. 配置 signing_secret



```
config :omni_sep,  
  http_port: 9014,  
  http_ip: {0, 0, 0, 0}
```

3.  


4. 

```
netstat -tlnp | grep 9014
```



 `/health`  200 




- 
- 
- 
- Mnesia 



1. 

2. 

- Mnesia 
- ETS  XCAP 

3.  Mnesia 

```
ls -la priv/data/mnesia/
```

4.  Mnesia 

5. 

配置

配置

配置

- Diameter 配置
- 配置
- 配置

配置

1. 配置 Diameter 配置

```
config :diameter_ex, :diameter,  
  request_timeout: 5000 # 5 秒
```

2. 配置

3. 配置 ETS 配置

4. 配置

配置

配置

配置

配置

- Mnesia 配置
- 配置 Mnesia 配置
- 配置

配置

1. 列出目录内容

```
ls -la priv/data/mnesia/
```

2. 列出 Mnesia 目录下的 .DCL 文件 - 列出文件内容

```
ls -la priv/data/mnesia/*.DCL
```

3. 删除 Mnesia 目录

```
# 强制 kill -9 信号 SIGTERM  
kill -TERM <pid>
```

4. 检查磁盘空间

```
df -h priv/data/
```

Mnesia 清理

清理 Mnesia 目录

清理

- 清理目录
- 清理
- Erlang 清理

清理

1. 清理 Mnesia 目录

2. 清理目录

```
rm -rf priv/data/mnesia/*  
# 强制 kill -9 信号
```

3. Mnesia 启动

```
:mnesia.stop()
:mnesia.start()
:mnesia.wait_for_tables([:activity, :activity_by_imsi,
:activity_by_terminal], 30000)
```

启动 Mnesia

启动 Mnesia 数据库

启动 Mnesia

- 启动 Mnesia
- 启动 Mnesia 数据库
- 启动 Mnesia 数据库

启动 Mnesia

1. 启动 Mnesia

```
config :omni_sep, :activity,
  max_records_per_subscriber: 1000, # 启动 Mnesia
  retention_seconds: 2_592_000      # 30 启动 Mnesia
```

2. 启动 Mnesia

```
ls -lh priv/data/mnesia/activity.*
```

3. 启动 Mnesia

□□□□

□□□□

```
curl -s http://localhost:9014/health | jq
```

□□□□

```
{
  "status": "ok",
  "service": "omni-sep",
  "version": "0.1.0",
  "services": ["entitlements", "xcap"]
}
```

□□□□□□

```
# □□□□□□□□
curl "http://localhost:9014/api/activity?imsi=<imsi>&limit=10"

# □□□□□
curl "http://localhost:9014/api/activity?terminal_id=
<imei>&limit=10"

# □□□□□□□□
curl "http://localhost:9014/api/activity?from=<unix_ts>&to=
<unix_ts>"
```

□□□□

```
# □□□□□□  
curl http://localhost:9014/api/entitlements/<imsi>  
  
# □□□□□□  
curl -X POST http://localhost:9014/api/entitlements/<imsi> \  
-H "Content-Type: application/json" \  
-d '{"app_id": "ap2004", "entitlement": {"entitlement_status":  
1}}'
```

XCAP □□□□□□

```
# □□□□□□  
curl http://localhost:9014/api/xcap/<msisdn>  
  
# □□□□□□ simservs □□  
curl "http://localhost:9014/simservs.ngn.etsi.org/users/sip:+  
<msisdn>@domain/simservs.xml"
```

□□□□

□□□□□□

□□	□□
[info] GET / ...	□□□□□□
[info] POST / ...	□□□ POST □□□EAP □□□□
[warning] Missing parameters	□□□□□□
[error] EAP session timeout	EAP-AKA □□□□□□
[debug] Token validated	□□□□□□

□□□□□□

```
# config/dev.exs □ runtime
config :logger, :console,
  level: :debug,
  metadata: [:request_id, :imsi, :terminal_id]
```

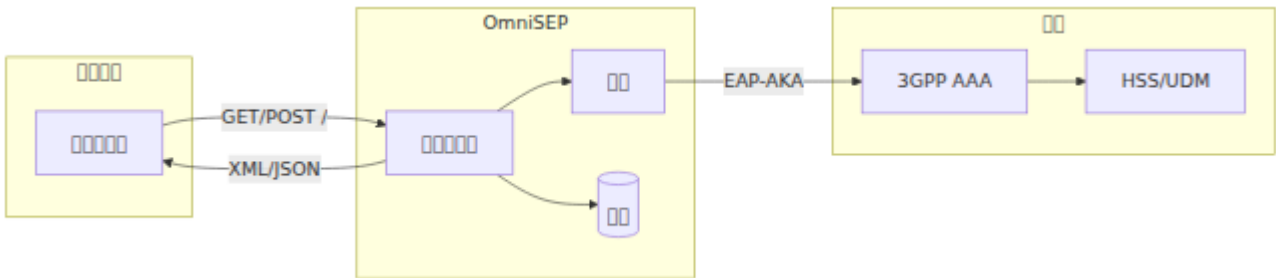
□□□□

□□□□□□□□□□□□□□□□

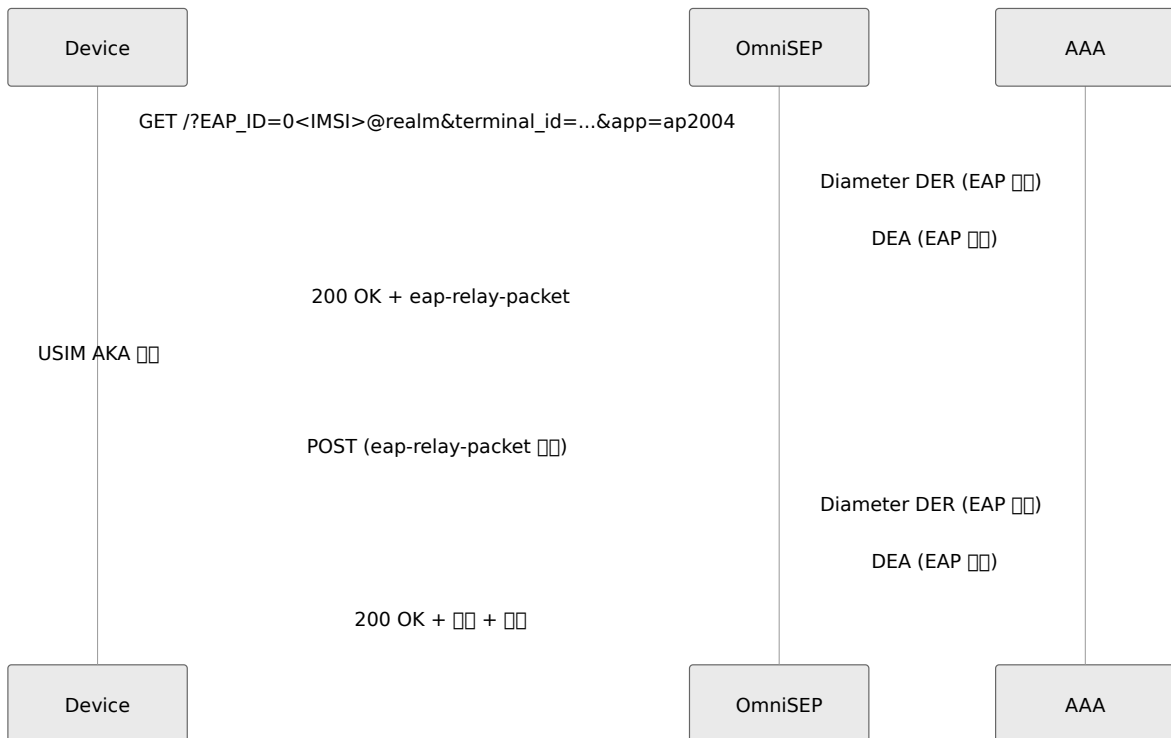
□□	□□
TS.43	GSMA TS.43
XCAP	RFC 4825
Simservs	ETSI TS 183 023
EAP-AKA	RFC 4187
Diameter	RFC 6733

TS.43

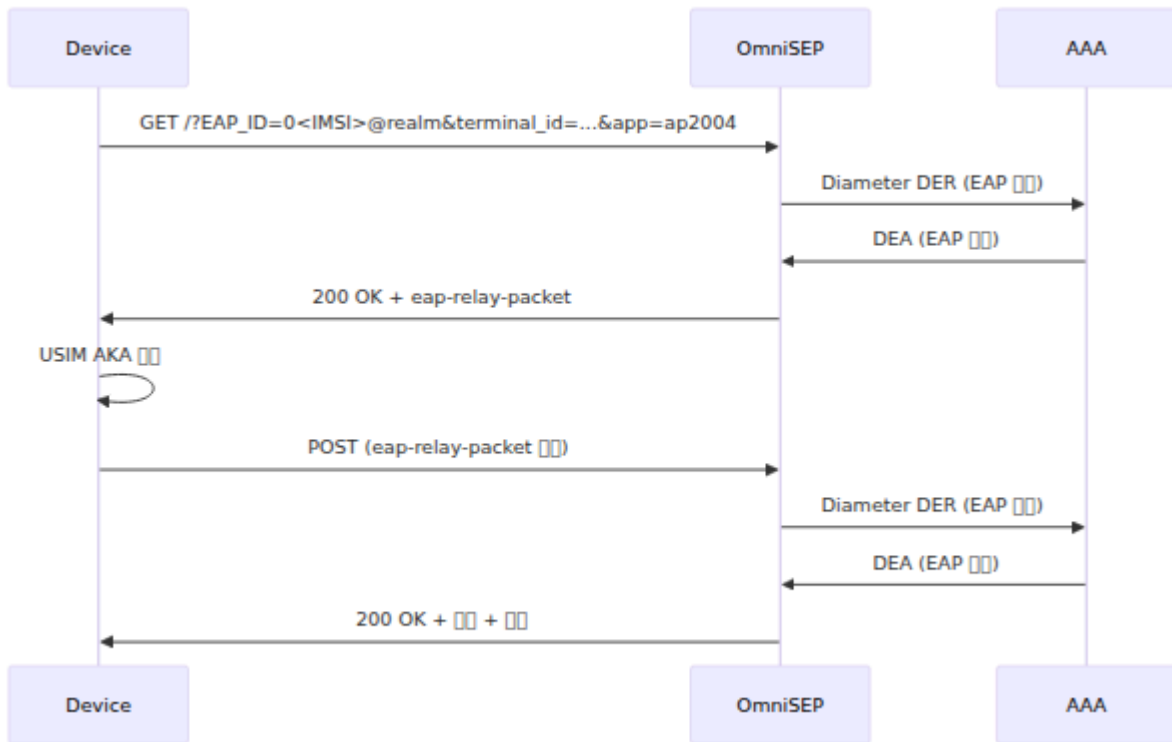
OmniSEP GSMA TS.43 VoWiFi VoLTE SMS



(EAP-AKA)



Sequence Diagram (EAP)



HTTP

Request

Method	Path	Content-Type
GET	/	
POST	/	application/json

终端信息

字段	数据类型	描述
terminal_id	字符串	IMEI 15 位数字
terminal_vendor	字符串	终端厂商名称，如 RCC.14 4
terminal_model	字符串	终端型号，如 RCC.14 10
terminal_sw_version	字符串	终端软件版本，如 RCC.14 20
entitlement_version	字符串	entitlement 版本，如 "2.0"
app	字符串/列表	应用 ID(s)

网络信息

网络接入信息

字段	描述
EAP_ID	EAP-AKA 的 NAI: 0<IMSI>@nai.epc.mnc<MNC>.mcc<MCC>.3gppnetv
token	网络接入令牌
temporary_token	临时令牌
operator_token	运营商令牌

요청

필드	길이	설명
IMSI	15	token (15자리 문자열)
app_name	10	응용 프로그램 이름
app_version	10	응용 프로그램 버전
notif_action	1	0=SMS, 1=GCM, 2=FCM
notif_token	10	알림 토큰
vers	1	API 버전

응답

응답은 **GET** 요청

```
GET /?  
terminal_id=123456789012345&terminal_vendor=Goog&terminal_model=Pixel
```

응답은 **EAP-AKA** 요청 **POST** 요청

```
{  
  "terminal_id": "123456789012345",  
  "terminal_vendor": "Goog",  
  "terminal_model": "Pixel8",  
  "terminal_sw_version": "14.0",  
  "entitlement_version": "2.0",  
  "app": "[ap2003,ap2004]",  
  "EAP_ID":  
  "0310410123456789@nai.epc.mnc410.mcc310.3gppnetwork.org"  
}
```

□□□□

Accept □

Accept □	□□□□
<code>text/vnd.wap.connectivity-xml</code>	XML□□□□
<code>application/json</code>	JSON
<code>application/vnd.gsma.eap-relay.v1.0+json</code>	EAP relay JSON

XML □□

```
<?xml version="1.0"?>
<wap-provisioningdoc version="1.1">
  <characteristic type="VERS">
    <parm name="version" value="2"/>
    <parm name="validity" value="86400"/>
  </characteristic>
  <characteristic type="TOKEN">
    <parm name="token" value="eyJ0eXAi..."/>
    <parm name="validity" value="86400"/>
  </characteristic>
  <characteristic type="APPLICATION">
    <parm name="AppID" value="ap2004"/>
    <characteristic type="ap2004">
      <parm name="EntitlementStatus" value="1"/>
      <parm name="AddrStatus" value="2"/>
      <parm name="TC_Status" value="2"/>
      <parm name="ProvStatus" value="1"/>
    </characteristic>
  </characteristic>
</wap-provisioningdoc>
```

JSON ☐☐

```
{
  "Vers": {
    "version": "2",
    "validity": "86400"
  },
  "Token": {
    "token": "eyJ0eXAi...",
    "validity": "86400"
  },
  "ap2004": {
    "EntitlementStatus": "1",
    "AddrStatus": "2",
    "TC_Status": "2",
    "ProvStatus": "1"
  }
}
```

EAP ☐☐☐☐

☐ EAP-AKA ☐☐☐☐☐☐☐☐☐☐

```
{
  "eap-relay-packet": "AQEALBcBAAAn..."
}
```

□□ ID

□□□□□

□□ ID	□□	□□
ap2003	□□□□□□□□VoLTE/VoNR□	TS.43 □ 4 □
ap2004	□□□□ WiFi□VoWiFi□	TS.43 □ 3 □
ap2005	□□□□ IP	TS.43 □ 5 □
ap2006	ODSA □□	TS.43 □ 6 □
ap2009	ODSA □□	TS.43 □ 6 □
ap2010	□□□□□□	TS.43 □ 7 □
ap2011	□□□□□□□□	TS.43 □ 8 □
ap2012	□□□□□□□□	TS.43 □ 9 □
ap2013	□□□□□□	TS.43 □ 10 □
ap2014	□□□□□□	TS.43 □ 11 □
ap2016	□□□□	TS.43 □ 12 □

VoWiFi (ap2004) 表

項目	型	範囲	説明
EntitlementStatus	型	0-3	権限ステータス
AddrStatus	型	0-3	E911 緊急サービス
TC_Status	型	0-3	TC ステータス
ProvStatus	型	0-3	プロバイダステータス
ServiceFlow_URL	URL	URL	サービスフロー URL
ServiceFlow_UserData	型	-	サービスフローユーザデータ

表

値	EntitlementStatus	AddrStatus/TC_Status/ProvStatus
0	型	型
1	型	型
2	型	型
3	型	型

VoLTE (ap2003) 表

VoLTE 表

項目	状態	値	説明
AccessType	00	1=LTE, 2=NR	000000
HomeRoamingNWType	00	1-3	0000
EntitlementStatus	00	0-1	00000
NetworkVoiceIRATCapability	000	-	00000000 5G

HomeRoamingNWType 00

値	説明
1	00000
2	000
3	000

00000

HTTP 状態	状態	説明
400	0000	0000000
403	00	0000
406	0000	000000000
511	000000	00000000 EAP-AKA

□□□□□□

```
HTTP/1.1 400 Bad Request
Content-Type: text/plain
```

```
Bad Request: Missing parameters ["terminal_id"]
```

□□□□□□

□□□□□□□□

□□□□ API □□□□□□□□□□□□□

```
POST /api/entitlements/{imsi}
Content-Type: application/json
```

```
{
  "app_id": "ap2004",
  "entitlement": {
    "entitlement_status": 0,
    "addr_status": 1,
    "tc_status": 1,
    "prov_status": 0,
    "service_flow_url": "https://activate.example.com/vowifi",
    "message_for_incompatible": "VoWiFi □□□□□□"
  }
}
```

□□□□□

```
GET /api/entitlements/{imsi}
```

□□□□□□□□□□□□□□□□

```

{
  "imsi": "310410123456789",
  "entitlements": {
    "ap2004": {
      "entitlement_status": 1,
      "addr_status": 2,
      "tc_status": 2,
      "prov_status": 1
    }
  }
}

```

□□□□

□□□□□□□□□□□□□□□□

□□□□

```

GET /api/activity?
imsi=310410123456789&from=1704067200&to=1704153600&limit=100

```

□□	□□	□□
imsi	□□□	□□□ IMSI □□
terminal_id	□□□	□□□□□ ID □□
from	□□	□□□□□□ Unix □□□
to	□□	□□□□□□ Unix □□□
limit	□□	□□□□□□□□
offset	□□	□□□□□

□□□□

```
{
  "id": "550e8400-e29b-41d4-a716-446655440000",
  "timestamp": "2024-01-15T10:30:00Z",
  "imsi": "310410123456789",
  "terminal_id": "123456789012345",
  "terminal_vendor": "Google",
  "terminal_model": "Pixel8",
  "app_ids": ["ap2003", "ap2004"],
  "client_ip": "192.168.1.100",
  "user_agent": "PRD-TS43 Goog/Pixel8 client-IMS-Entitlement/1.0
  OS-Android/14.0",
  "auth_method": "TOKEN",
  "response_code": 200
}
```

Android □□□□□□

OmniSEP □□□ Android AOSP `service_entitlement` □□□□□□□

□□□□□□

Android □□□□□□□□□□□□

```
PRD-TS43 term-<vendor>/<model> <client_ts43>/<app_version> OS-
Android/<sw_version>
```

□□□

```
PRD-TS43 term-Google/Pixel8 client-IMS-Entitlement/1.0 OS-
Android/14.0
```

□□□□ ID

Android □ POST □□□□□□□□□□□□□□□□ ID□

```
{  
  "app": "[ap2003,ap2004]"  
}
```

OmniSEP 配置

- "ap2003,ap2004" - 設定
- "[ap2003,ap2004]" - 設定Android 設定
- ["ap2003", "ap2004"] - JSON 設定

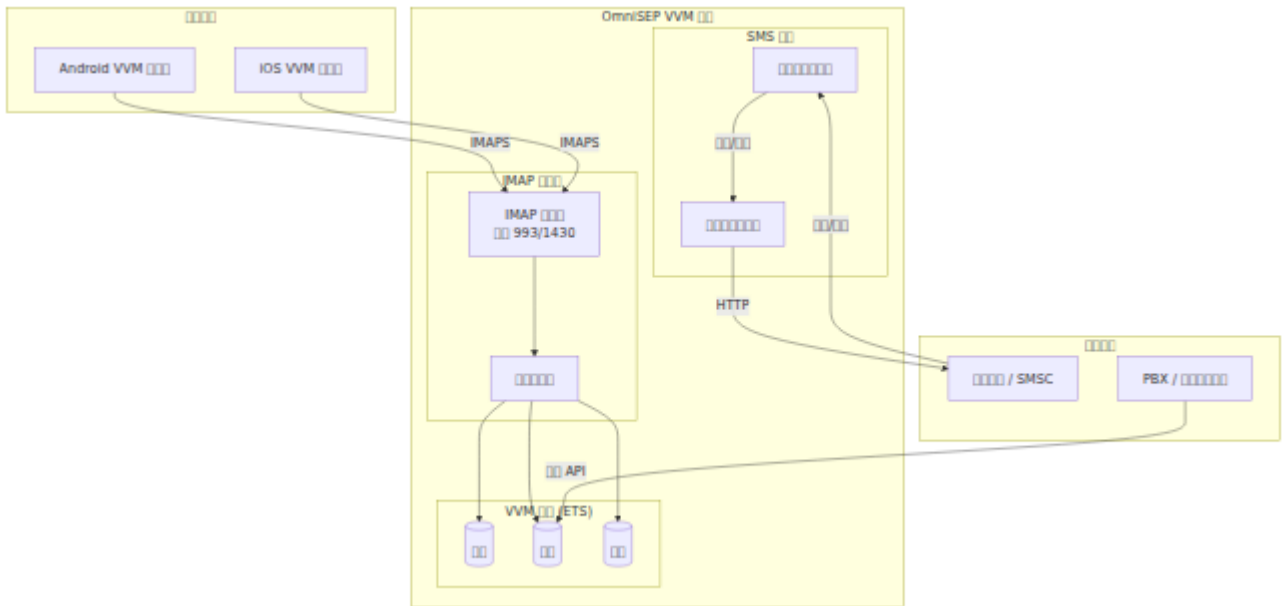
設定

項目	設定
GSMA TS.43	設定
GSMA RCC.14	IMS 設定
3GPP TS 33.220	設定 (GBA)
3GPP TS 29.273	EPS AAA 設定 (SWm)

OmniSEP VVM (VVM)

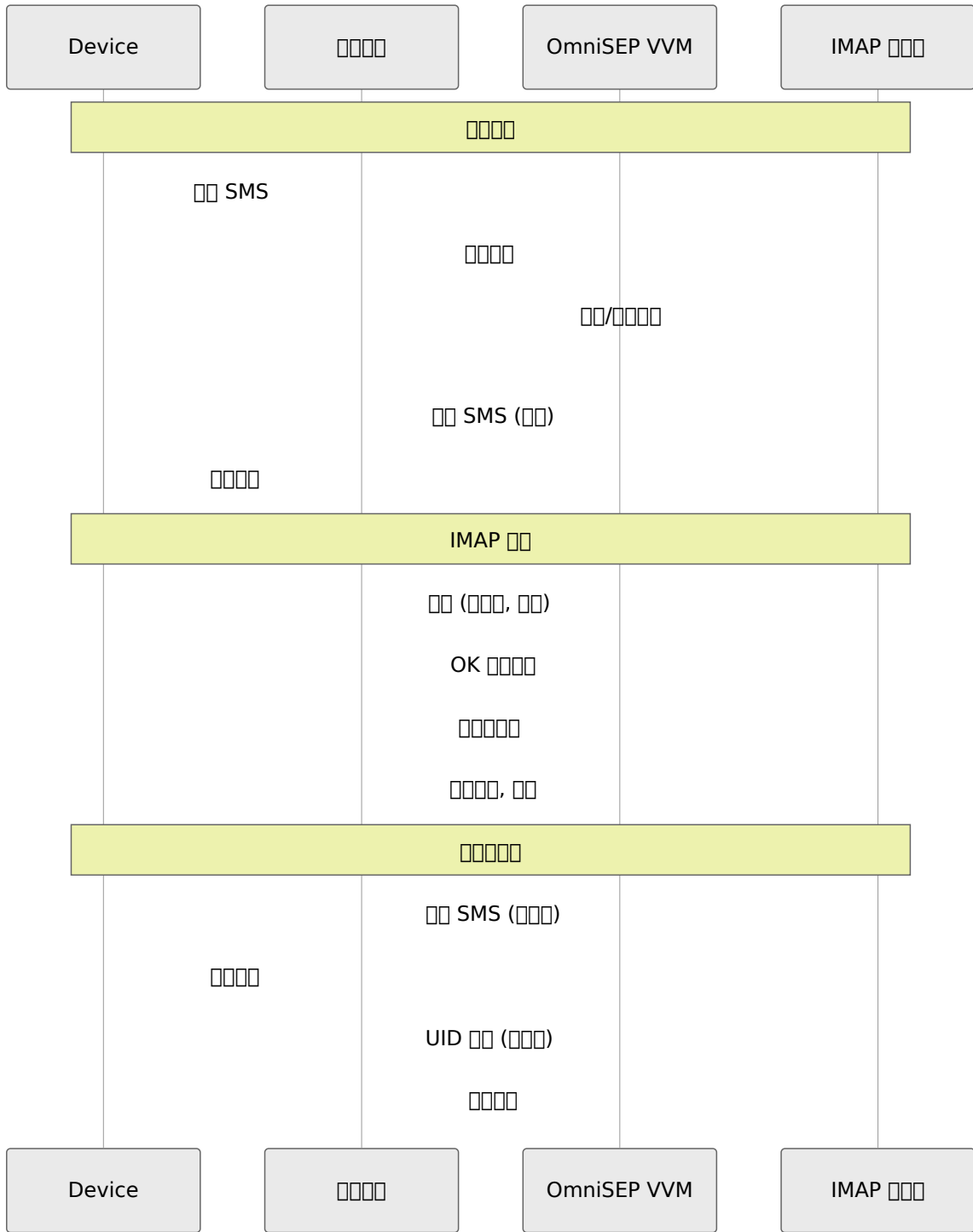
OmniSEP 993/1430 IMAP 993/1430 OMTP VVM v1.3 GSMA TS.46 VVM SMS IMAP SMS

概要



接続

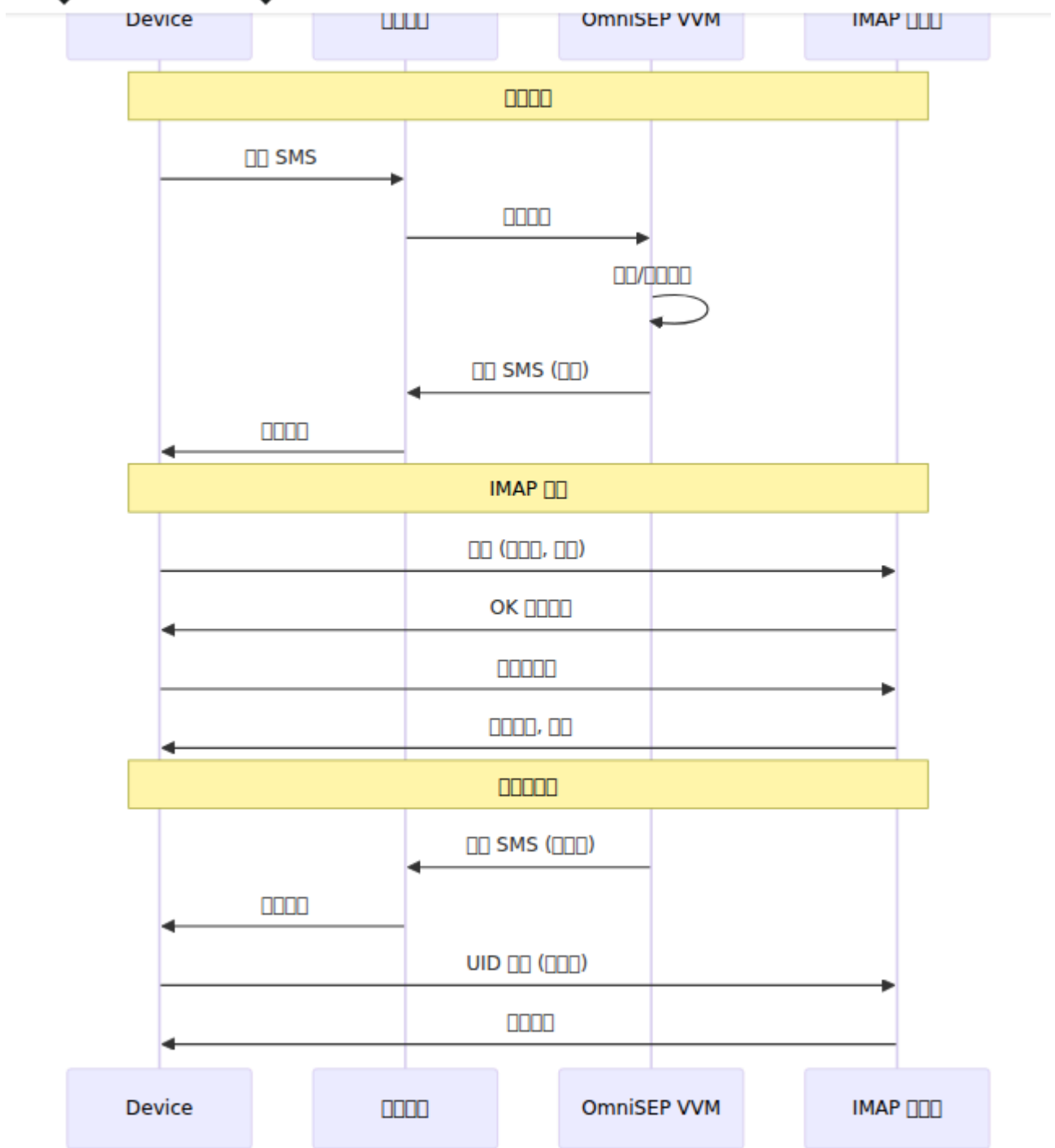
VVM 993/1430 IMAP 993/1430 OMTP VVM v1.3 GSMA TS.46 VVM SMS IMAP SMS



IMAP

VVM IMAP SMTP IMAP

□□	□□	□□
□□	U	□□□□□□□□□□
□	N	□□□□□□□□□□□□□□□□
□□	R	□□□□□□□□
□□□	P	□□□□□□□□□□□□□□
□□□	B	□□□□□□□□



[] [] [] []

[] [] [] [] ([] [] [] [] [] [])

[] [] [] [] [] [] IMAP [] []

```
//VVM:STATUS:st=R;rc=0;srv=vvm.example.com;ipt=993;spt=587;u=5050100015;pm=N;gm=N;vtc=A
```

項目	説明
st	ステータス (R=成功, B=失敗, N=未定義, P=エラー, U=未定義)
rc	レスポンスコード (0=成功)
srv	IMAP サーバ名
ipt	IMAP ポート番号
spt	SMTP ポート番号 (ポート)
u	ユーザー名 (IMSI)
pw	パスワード
tui	TUI かどうか
dn	ドメイン名 (ドメイン)
lang	言語
g_len	グループ名長
vs_len	バージョン名長
pw_len	PIN 長さ
pm	パスワード PIN (Y/N)
gm	グループ名 (G=成功, V=失敗, B=未定義, N=未定義)
vtc	バージョンコード (A=成功, D=失敗, B=未定義, N=未定義)

URI (URI)

URI

```
//VVM:SYNC:ev=NM;id=123;c=5;t=v;s=+61400123456;dt=15/01/2024 10:30+0000;l=30
```

URI	URI
ev	URI (NM=URI, MBU=URI, GU=URI)
id	URI ID
c	URI
t	URI (v=URI, o=URI, f=URI, i=URI, e=ECC)
s	URI
dt	URI
l	URI

URI (URI)

URI VVM

```
Activate:pv=11;ct=samsung.SM-A536E.13
```

URI	URI
pv	URI
ct	URI (vendor.model.os_version)

□□□□ (□□□□□□□□)



□□□□□□ VVM□

Deactivate:pv=11

IMAP □□□

VVM IMAP □□□□□□□□□□□□□□ IMAP4rev1 (RFC 3501) □□□□

□□□□□

□□	□□
CAPABILITY	□□□□□□□
LOGIN	□□□□□/□□□□□□□□
LOGOUT	□□□□
SELECT	□□□   (□□□, □□□, □□□)
EXAMINE	□□□□□□□□□
LIST	□□□□□□
STATUS	□□□□□□ (□□□□)
FETCH	□□□□□□
UID FETCH	□ UID □□
STORE	□□□□□□
UID STORE	□ UID □□□□
SEARCH	□□□□
UID SEARCH	□ UID □□
COPY	□□□□□□□□□
EXPUNGE	□□□□□□□□□
CLOSE	□□□□□□□
GETQUOTAROOT	□□□□□□

NOOP	

NOOP

IMAP4rev1 AUTH=PLAIN AUTH=LOGIN UIDPLUS MOVE QUOTA

NOOP

NOOP	

NOOP

NOOP RFC 5322 NOOP MIME NOOP



☐☐ **VVM**

```
# config/config.exs
config :omni_sep, :vvm,
  enabled: true,

  # IMAP ☐☐☐☐
  imap_port: 993,
  imap_ssl: true,
  imap_server: "vvm.example.com",
  imap_cert: "priv/cert/server.crt",
  imap_key: "priv/cert/server.key",

  # TUI (☐☐☐☐☐☐) ☐☐
  tui_number: "*86",

  # ☐☐☐☐
  sms_source_number: "+614000000000",
  sms_gateway: "https://sms-gateway.example.com/api/send",

  # PIN ☐☐
  min_pin_length: 4,
  max_pin_length: 15,

  # ☐☐☐☐☐
  default_max_messages: 100,
  default_storage_limit_kb: 50_000,
  default_max_greeting_seconds: 60
```

□□□□

□□	□ □	□ □	□□□	□□
<code>enabled</code>	□ □	□	false	□□ VVM □ □
<code>imap_port</code>	□ □	□	993	IMAP □□□ □□
<code>imap_ssl</code>	□ □	□	true	□□ IMAP □□□ TLS
<code>imap_server</code>	□ □ □	□	-	IMAP □□□ □□□ (□□□ SMS □□□)
<code>imap_cert</code>	□ □ □	□	priv/cert/server.crt	TLS □□□□
<code>imap_key</code>	□ □ □	□	priv/cert/server.key	TLS □□□□
<code>smtp_port</code>	□ □	□	587	SMTP □□ (□□□□)
<code>tui_number</code>	□ □ □	□	*86	□□□□□□□□ TUI □□□□
<code>sms_source_number</code>	□ □ □	□	-	VVM □□□ □□□□□

項目	型	デフォルト	説明	備考
<code>sms_gateway</code>	文字列	nil	SMS送信のゲートウェイ	HTTP経由で指定可能
<code>min_pin_length</code>	整数	4	PINコードの最小桁数	
<code>max_pin_length</code>	整数	15	PINコードの最大桁数	
<code>default_max_messages</code>	整数	100	デフォルトのメッセージ最大数	
<code>default_storage_limit_kb</code>	整数	50000	デフォルトのストレージ制限	KB単位
<code>default_max_greeting_seconds</code>	整数	60	デフォルトの挨拶最大秒数	

設定例

IMAP/TLS設定例

```
# config/dev.exs
config :omni_sep, :vvm,
  enabled: true,
  imap_port: 1430,
  imap_ssl: false,
  imap_server: "localhost",
  tui_number: "*86",
  sms_source_number: "+61400000000"
```

□□□□

```
# config/prod.exs
config :omni_sep, :vvm,
  enabled: true,
  imap_port: 993,
  imap_ssl: true,
  imap_server: "vvm.carrier.example.com",
  imap_cert: "/etc/omnisep/certs/vvm.crt",
  imap_key: "/etc/omnisep/certs/vvm.key",
  tui_number: "*86",
  sms_source_number: "+61400000001",
  sms_gateway: "https://smsc.carrier.example.com/api/v1/send"
```

□□

IMAP □□□□

□□: vvm_imap_sessions_total

□□: □□□

□□: VVM IMAP □□□□

□□:

- result - □□□□: success, auth_failed, timeout

□□: vvm_imap_active_sessions

□□: □□□

□□: □□□□□ IMAP □□□□

□□: vvm_imap_commands_total

□□: □□□

□□: □□□ IMAP □□□□

□□:

- command - IMAP □□: LOGIN, SELECT, FETCH, □□
- result - □□□□: ok, no, bad

消息

GET: vvm_messages_total

返回: 消息

返回: VVM 消息列表

返回:

- operation - 操作: deposit, read, delete, move

GET: vvm_messages_stored

返回: 消息

返回: 消息存储列表

GET: vvm_message_duration_seconds

返回: 消息

返回: 消息持续时间列表

返回: 5, 10, 15, 30, 60, 120, 180, 300

短信

GET: vvm_sms_total

返回: 短信

返回: VVM 短信列表

返回:

- type - 类型: status, sync, activate, deactivate
- result - 结果: success, failed, no_gateway

账户

GET: vvm_accounts_total

返回: 账户

返回: VVM 账户列表

返回:

- operation - 操作: create, activate, deactivate, update
- result - 结果: success, error

API IMAP

VVM

“”

:

-
- SMSC
- VVM

:

1. sms_gateway
- 2.
3. VVM enabled: true
4. vvm_sms_total{type="status"}

IMAP

SMS

:

- /
- TLS
- IMAP

:

1. SMS
2. TLS
3. IMAP

4. `telnet/openssl` `openssl s_client -connect vvm.example.com:993`

□□□□□

□□: □□□□□□□□□□□□□□

□□□□:

- □□□□ SMS
- IMAP □□□□
- □□□□□□

□□□□:

1. `vvm_sms_total{type="sync"}` □◆◆◆◆
2. □□□□□□□□□□
3. `vvm_messages_total{operation="deposit"}` □□□□□□□
4. □□ IMAP □□□□□□□□□□□□

□□□□□□

□□: □□□□□□□□□□

□□□□:

1. □□□□□□: `default_storage_limit_kb`, `default_max_messages`
2. `vvm_messages_stored` □□□
3. □□□□□□□□□□□
4. □□□□□□: `get_greetings/1` □□□□□□

□□□□□

- **OMTP VVM** □□ **v1.3** - □□□□□□□□□□
- **GSMA TS.46** - □□□□□□□□□□
- **RFC 3501** - IMAP4rev1 □□
- **RFC 5322** - □□□□□□□□

XCAP 介面 (Simservs)

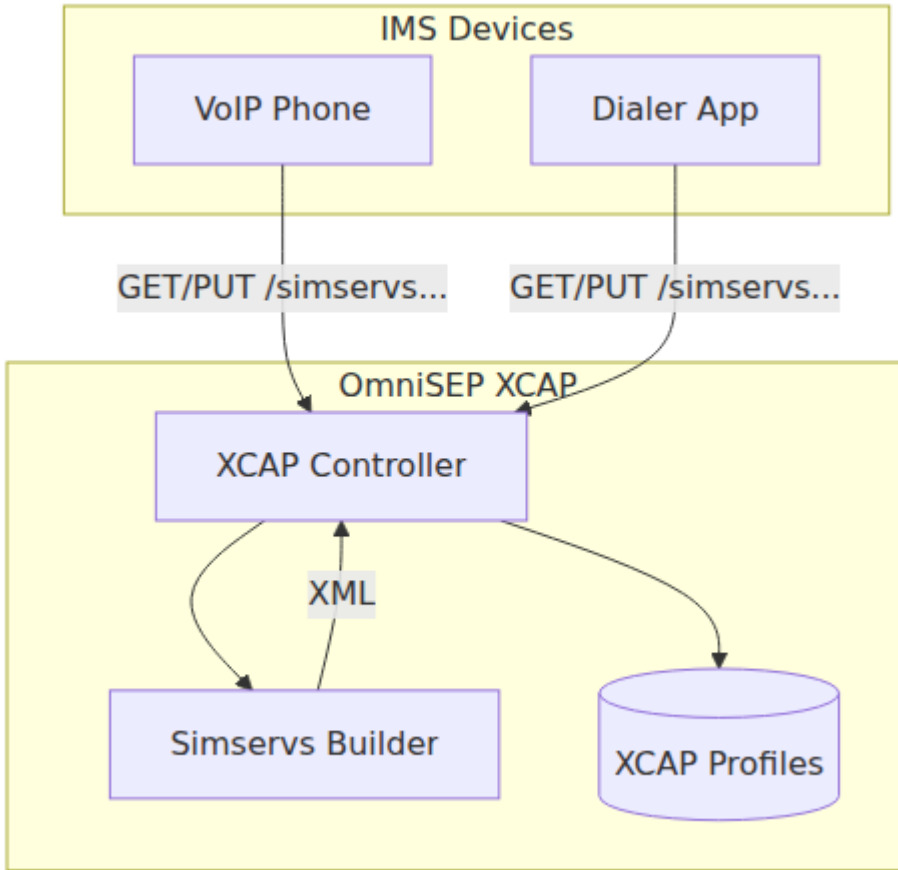
OmniSEP 符合 ETSI TS 183 023 XCAP (XML 介面) 與 IMS 介面

UI

XCAP Simservs Web 介面

功能

- MSISDN 查詢
- Diameter Sh 與 HSS 查詢
- 2 種查詢
 - OIP/OIR (查詢) (查詢) 查詢
 - 查詢
- HSS 查詢/查詢
- 查詢



Simservs

simservs ETSI TS 183 023



HTTP

XCAP URL

```
/simservs.ngn.etsi.org/users/{sip_uri}/simservs.xml[/~/~/{xpath}]
```

Placeholder	Description	Example
{sip_uri}	MSISDN or SIP URI	sip:+15551234567@ims.example.com
{xpath}	XPath expression (e.g., /~/~/)	simservs/communication-diversion

□□

□□	□□
GET	<code>/simservs.ngn.etsi.org/users/{sip}/simservs.xml</code>
PUT	<code>/simservs.ngn.etsi.org/users/{sip}/simservs.xml</code>
GET	<code>/simservs.ngn.etsi.org/users/{sip}/simservs.xml/~/simservs.</code>
PUT	<code>/simservs.ngn.etsi.org/users/{sip}/simservs.xml/~/simservs.</code>
DELETE	<code>/simservs.ngn.etsi.org/users/{sip}/simservs.xml/~/simservs.</code>

□□□□

Content-Type	□□
application/xcap-el+xml	XCAP □□□□
application/xml	□□ XML

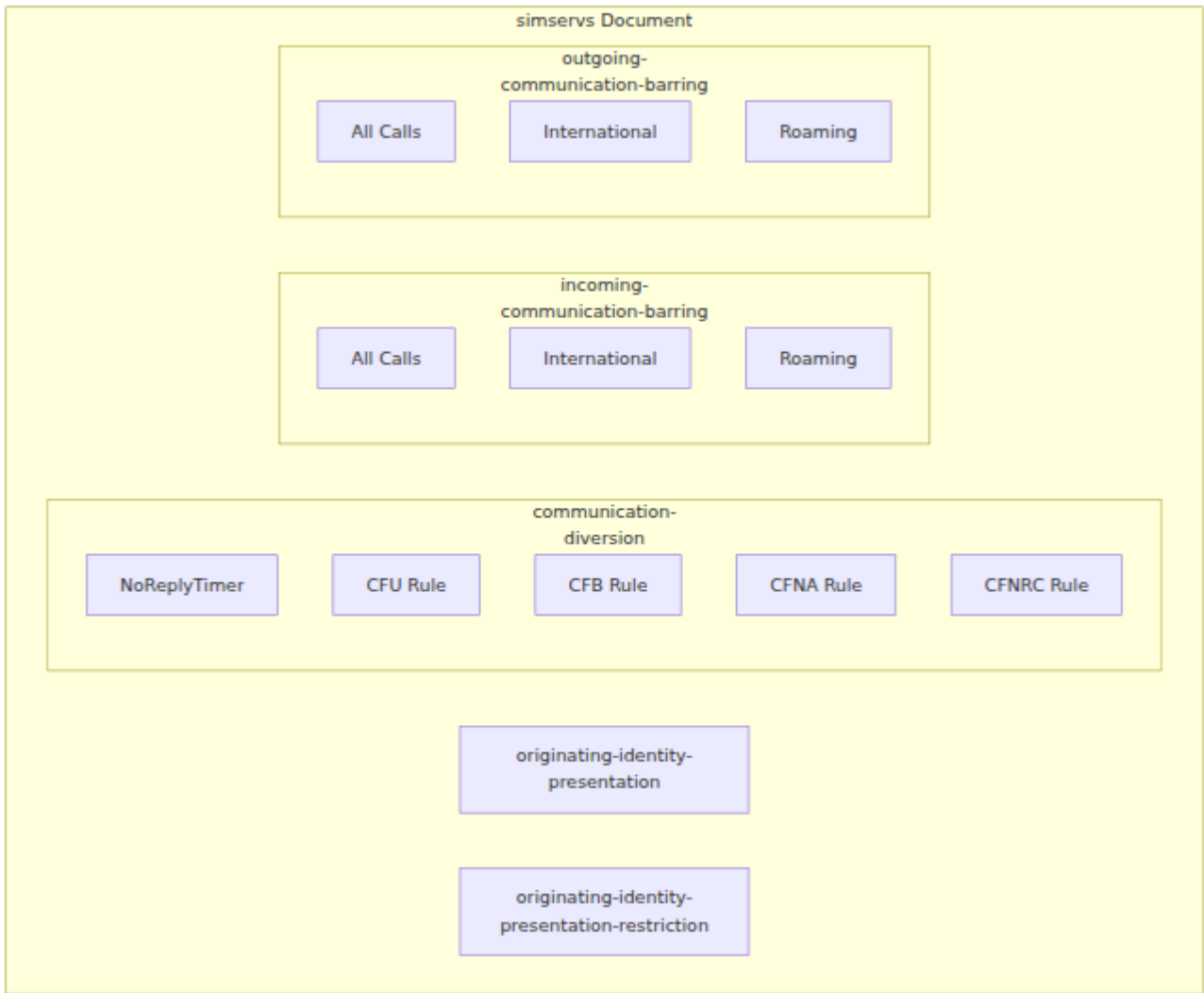
ETag □□

OmniSEP □□□ [RFC 4825](#) □□ ETag □□□□□□

□□	□□
ETag	□□□□□□□□□□
If-Match	□□□□ (PUT/DELETE)
If-None-Match	□□ GET (304 Not Modified)

□□□□

OmniSEP □□□□□□□□□□□□□□□□ ETS □□□□□ HSS □□□



□□□

□	□	□	□□
xcap_profiles	IMSI	{profile_map, etag}	□□□□□□□□
xcap_by_msisdn	MSISDN	IMSI	XCAP □□□□□□□□

□□□□

□□□□ (GET)

1. □□□□□□ ETS □□
2. □□□□□□□□□□ Diameter Sh □ HSS □□

3. HSS
4. HSS

PUT

1. ETag
- 2.
3. ETag
4. HSS

ETag

ETags MD5

```
ETag = MD5(erlang:term_to_binary(profile))[0:16]
```

"a1b2c3d4e5f6g7h8"

16

ETS read_concurrency	
GenServer	
ETag	

3GPP TS 24.623

-
- OIR presentation-not-restricted

- NoReplyTimer 20
- /

HSS

	Diameter	
	Sh UDR (User-Data-Request)	
	Sh PUR (Profile-Update-Request)	PUT

HSS

Simservs XML ☐☐

☐☐☐☐☐☐

```
<?xml version="1.0" encoding="UTF-8"?>
<simservs xmlns="http://uri.etsi.org/ngn/params/xml/simservs/xcap"
  xmlns:cp="urn:ietf:params:xml:ns:common-policy">

  <originating-identity-presentation active="true"/>

  <originating-identity-presentation-restriction active="true">
    <default-behaviour>presentation-not-restricted</default-
behaviour>
  </originating-identity-presentation-restriction>

  <communication-diversion active="true">
    <NoReplyTimer>20</NoReplyTimer>
    <cp:ruleset>
      <cp:rule id="cfb">
        <cp:conditions>
          <busy/>
        </cp:conditions>
        <cp:actions>
          <forward-to>
            <target>tel:+15557654321</target>
            <notify-caller>>false</notify-caller>
          </forward-to>
        </cp:actions>
      </cp:rule>
    </cp:ruleset>
  </communication-diversion>

  <incoming-communication-barring active="false">
    <cp:ruleset/>
  </incoming-communication-barring>

  <outgoing-communication-barring active="false">
    <cp:ruleset/>
  </outgoing-communication-barring>

</simservs>
```

□□□□

□□	□□□□	□□
(default)	<code>http://uri.etsi.org/ngn/params/xml/simservs/xcap</code>	ETSI Simservs
cp	<code>urn:ietf:params:xml:ns:common-policy</code>	RFC 4745 □□ □□

□□

□□□□ (OIP)

□□□□□□□□□□□□□□

```
<originating-identity-presentation active="true"/>
```

□□	□□	□□
<code>active</code>	□□□	□□□□/□□

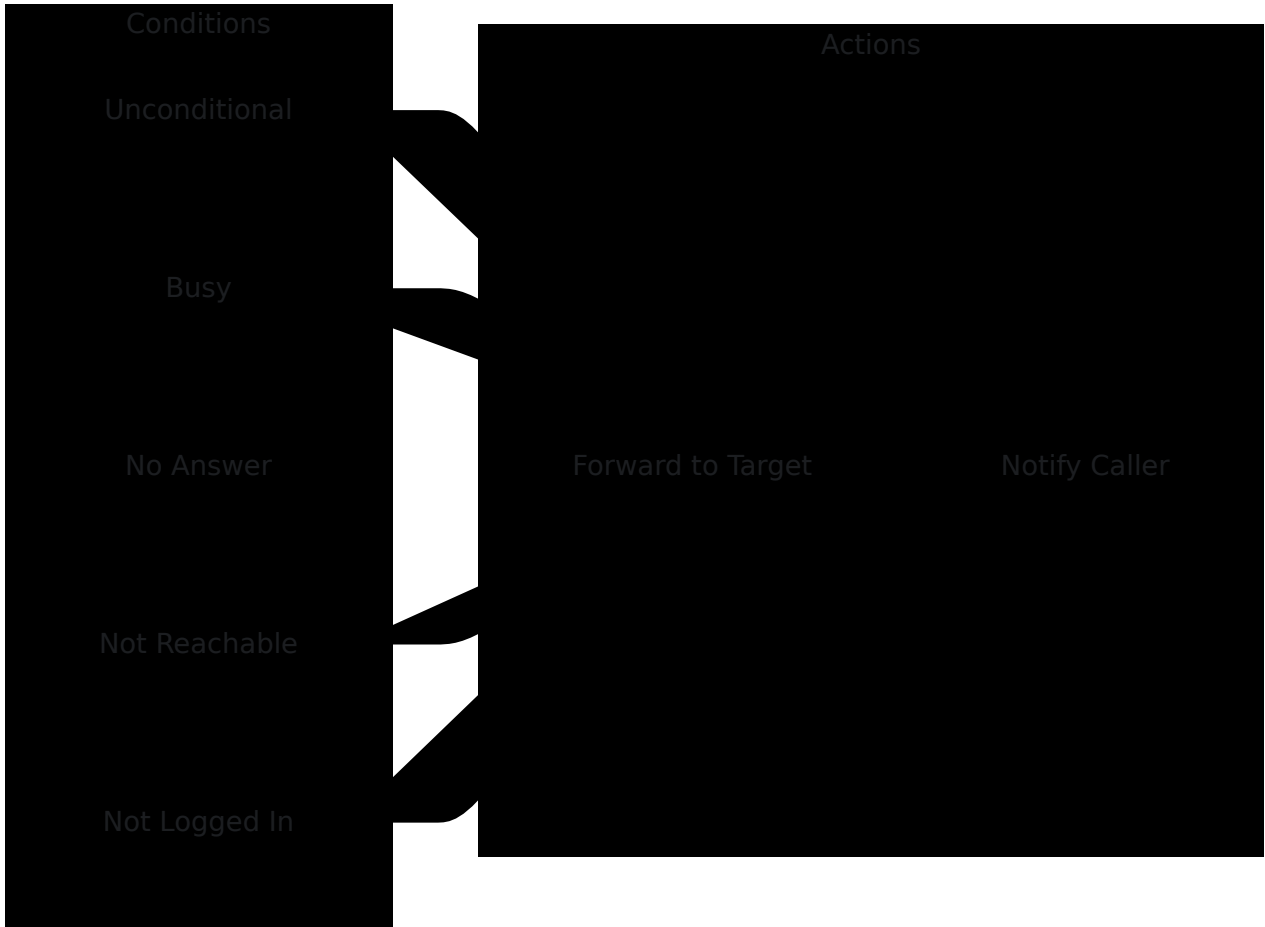
□□□□□□ (OIR)

□□□□□□□□

```
<originating-identity-presentation-restriction active="true">  
  <default-behaviour>presentation-not-restricted</default-behaviour>  
</originating-identity-presentation-restriction>
```

☐☐	☐	☐☐
default-behaviour	presentation-restricted, presentation-not-restricted	☐☐☐☐☐ ☐☐☐

☐☐☐☐ (☐☐☐☐)



☐☐☐☐

ID	状態	説明
cfu	()	通話中 - 通話中
cfb	busy	通話中
cfna	no-answer	通話中 (NoReplyTimer)
cfnc	not-reachable	通話中
cfnl	not-logged-in	通話中

通話中

```
<communication-diversion active="true">
  <NoReplyTimer>20</NoReplyTimer>
  <cp:ruleset>
    <cp:rule id="cfna">
      <cp:conditions>
        <no-answer/>
      </cp:conditions>
      <cp:actions>
        <forward-to>
          <target>tel:+15557654321</target>
          <notify-caller>>false</notify-caller>
        </forward-to>
      </cp:actions>
    </cp:rule>
  </cp:ruleset>
</communication-diversion>
```

URI	URI	URI
NoReplyTimer	URI	CFNA (1-300)
cp:rule/@id	URI	URI (cfu, cfb, cfna, cfnc, cfnl)
target	tel: URI	URI
notify-caller	URI	URI

URI

URI tel: URI RFC 3966

```
tel:+15557654321;phone-context=ims.mnc001.mcc310.3gppnetwork.org
```

URI	URI
tel:	URI
+15557654321	URI E.164
phone-context	IMS (URI)

URI

URI

```
<incoming-communication-barring active="true">
  <cp:ruleset>
    <cp:rule id="international">
      <cp:conditions>
        <international/>
      </cp:conditions>
      <cp:actions>
        <allow>>false</allow>
      </cp:actions>
    </cp:rule>
  </cp:ruleset>
</incoming-communication-barring>
```

□□□□

```
<outgoing-communication-barring active="true">
  <cp:ruleset>
    <cp:rule id="international">
      <cp:conditions>
        <international/>
      </cp:conditions>
      <cp:actions>
        <allow>>false</allow>
      </cp:actions>
    </cp:rule>
  </cp:ruleset>
</outgoing-communication-barring>
```

□□□□□□

API ID	API	API
all	()	
international	international	
international-exHC	international-exHC	
roaming	roaming	

API

Simservs

```
GET
/simservs.ngn.etsi.org/users/sip:+15551234567@ims.example.com/simservs
Accept: application/xcap-el+xml
```

Response

```
HTTP/1.1 200 OK
Content-Type: application/xcap-el+xml
ETag: "a1b2c3d4e5f6g7h8"

<?xml version="1.0" encoding="UTF-8"?>
<simservs
xmlns="http://uri.etsi.org/ngn/params/xml/simservs/xcap"...>
  ...
</simservs>
```

□□□□□□□□

GET

/simservs.ngn.etsi.org/users/sip:+15551234567@ims.example.com/simserv
diversion

□□□□□□□□

PUT

/simservs.ngn.etsi.org/users/sip:+15551234567@ims.example.com/simserv
diversion/cp:ruleset/cfb

Content-Type: application/xcap-el+xml

If-Match: "a1b2c3d4e5f6g7h8"

```
<cp:rule id="cfb">
  <cp:conditions>
    <busy/>
  </cp:conditions>
  <cp:actions>
    <forward-to>
      <target>tel:+15557654321</target>
      <notify-caller>>false</notify-caller>
    </forward-to>
  </cp:actions>
</cp:rule>
```

□□□□□□□□

DELETE

/simservs.ngn.etsi.org/users/sip:+15551234567@ims.example.com/simserv
diversion/cp:ruleset/cfb

If-Match: "a1b2c3d4e5f6g7h8"

PUT NoReplyTimer

```
PUT
/simservs.ngn.etsi.org/users/sip:+15551234567@ims.example.com/simserv
diversion/NoReplyTimer
Content-Type: application/xcap-el+xml

25
```

GET API

JSON API

GET

```
GET /api/xcap/15551234567
```

JSON

```
{
  "oip": { "active": true },
  "oir": {
    "active": true,
    "default_behaviour": "presentation-not-restricted"
  },
  "no_reply_timer": 20,
  "call_forwarding": {
    "cfb": {
      "enabled": true,
      "target": "tel:+15557654321",
      "condition": "busy"
    }
  },
  "call_barring_incoming": {},
  "call_barring_outgoing": {}
}
```

Request

POST /api/xcap/15551234567
Content-Type: application/json

```
{  
  "no_reply_timer": 25,  
  "call_forwarding": {  
    "cfna": {  
      "enabled": true,  
      "target": "tel:+15559876543",  
      "condition": "no-answer"  
    }  
  }  
}
```

Response

Response Headers

Header	Value
OIP	0
OIR	presentation-not-restricted
NoReplyTimer	20
Content-Type	application/json
Content-Length	150
ETag	W/"15551234567"

□□□□

HTTP □□	□□
200	□□
304	□□□ (If-None-Match □□)
400	□□□□ - □□□ XML □□□
404	□□□ - □□□□□□□□
405	□□□□□
409	□□ - □□□□
412	□□□□□□ - ETag □□□

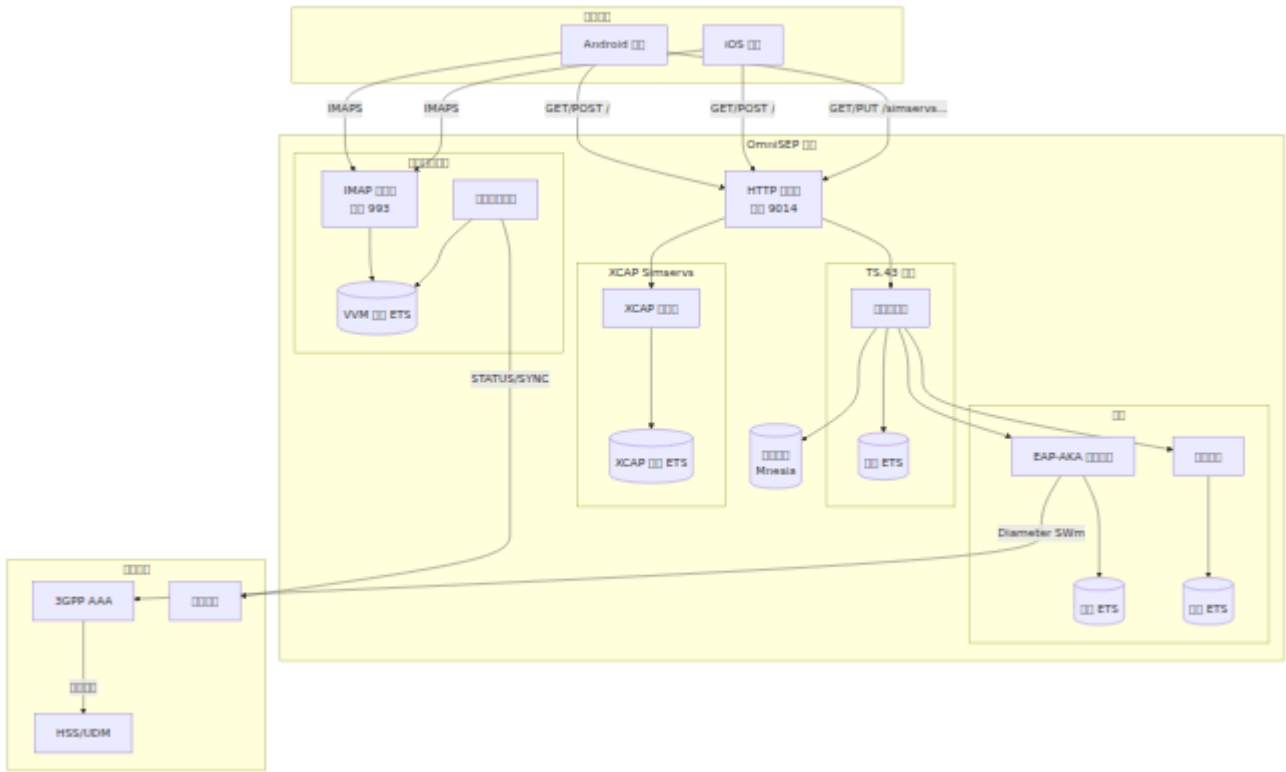
□□□□□□

```
<?xml version="1.0" encoding="UTF-8"?>
<xcap-error xmlns="urn:ietf:params:xml:ns:xcap-error">
  <error-element>Element not found: simservs/unknown</error-
element>
</xcap-error>
```

□□□□

□□	□□
ETSI TS 183 023	NGN Sivers □ XCAP □□
ETSI TS 183 004	□□□□ (CDIV)
RFC 4825	XCAP □□
RFC 4745	□□□□
RFC 3966	tel: URI
3GPP TS 24.623	XCAP □□ Ut □□

□□□□



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TS.43 □□□□

□□ GSMA TS.43 □□□□□□□□

AP ID	Feature	Requirement
ap2003	VoLTE	VoLTE/VoNR Support
ap2004	VoWiFi	WiFi Support
ap2005	SMSoIP	IP-based SMS Support
ap2006	ODSA	ODSA Support
ap2009	ODSA	ODSA Support
ap2010	DCB	DCB Support
ap2012	DCB	DCB Support
ap2016	DCB	DCB Support

XCAP Support

ETSI TS 183 023 IMS Support

Feature	Requirement	Reference
CFU, CFB, CFNA, CFNRC	CFU, CFB, CFNA, CFNRC Support	ETSI TS 183 004
CFM	CFM Support	ETSI TS 183 023
CFR	CFR Support	ETSI TS 183 023
OIP/OIR	OIP/OIR Support	ETSI TS 183 023

OMTP VVM v1.3

OMTP VVM v1.3 GSMA TS.46

プロトコル	機能	規格
IMAP	メール	RFC 3501
SMTP	SYNC/STATUS	OMTP VVM v1.3
HTTP	API	GSMA TS.46
HTTP	API	OMTP VVM v1.3

API

GET /health

API

GET /api/activity GET /api/entitlements/{imsi} GET /api/xcap/{msisdtn}

XCAP Simserve

GET /simserve.ngn.etsi.org/users/{sip}/simserve.xml PUT /simserve.ngn.etsi.org/users/{sip}/simserve.xml DELETE /simserve.ngn.etsi.org/users/{sip}/simserve.xml/{path}

TS-43

GET / POST /

URI	Method
/	GET/POST
/simservs.ngn.etsi.org/users/{sip}/simservs.xml	GET/PUT
/simservs.ngn.etsi.org/users/{sip}/simservs.xml/~/~/{xpath}	GET/PUT
/api/activity	GET
/api/entitlements/{imsi}	GET/POST
/api/xcap/{msisdn}	GET/POST
/health	GET

Web UI

OmniSEP Web Phoenix LiveView UI

<http://<host>:9014/>

XCAP Sirmservs

API

API	URI	Description
Root	/	Root endpoint
Entitlements	/entitlements	IMSI based TS.43 entitlements
Sessions	/sessions	EAP-AKA sessions
Activity	/activity	TS.43 activity
XCAP	/xcap	XCAP Sirmservs HSS
Diameter	/diameter	Diameter
Logs	/logs	Logs

API

API

- 支持 HTTP 支持 EAP-AKA VVM 支持
- 支持 XCAP 支持
- 支持 ETS 支持
- 支持

支持 5 支持

XCAP 支持

XCAP 支持

- MSISDN 支持
- OIP/OIR 支持
- Diameter Sh 支持 HSS 支持
- HSS
- IP 支持

支持

支持

支持 XCAP 支持/支持

支持

- XCAP EAP
- IMSI MSISDN ID IP
- /
- HTTP

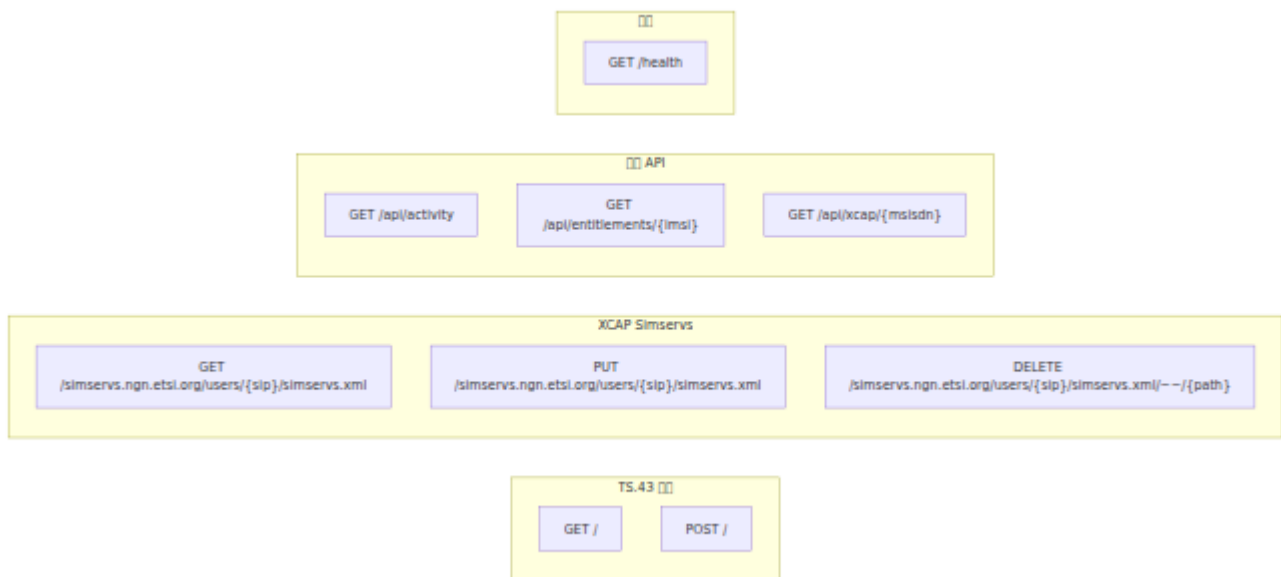
□□□□

□□□□□□□□

- EAP-AKA
-

□□□□□□□□/□□□□□□

□□□□



□□□□□□

□□□□

```
# config/config.exs
import Config

config :omni_sep,
  http_port: 9014,
  http_ip: {0, 0, 0, 0},
  server_fqdn: "sep.mnc001.mcc001.pub.3gppnetwork.org",
  entitlement_version: "2.0"

# □□□□□□□□
config :omni_sep, :default_entitlements,
  vowifi: %{
    entitlement_status: 1,
    addr_status: 2,
    tc_status: 2,
    prov_status: 1
  },
  volte: %{
    entries: [
      %{access_type: 1, home_roaming_nw_type: 1,
entitlement_status: 1}
    ]
  }

# □□□□
config :omni_sep, :token,
  validity_seconds: 86400,
  signing_secret: "your-production-secret-here"

# EAP-AKA □□
config :omni_sep, :eap_aka,
  enabled: true,
  session_timeout_ms: 30_000
```

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□□□□□

1. □□□□□
2. □□ □□□□ □□□□□□
3. □□ □□□□ □□□□□□

□□□□□

1. TS.43 □□ □□ VoWiFi/VoLTE □□
2. XCAP Simservs □□□□□□/□□

□□□□□

1. □□□□□□ □□□□□□
2. □□ □□□□ □□□□□

□□□

GSMA TS.43□

- TS.43 □□ - □□□□□□□□□□
- □□□□ GSMA TS.43

ETSI XCAP□

- XCAP Simservs - □□□□□□
- □□□
 - ETSI TS 183 023 - XCAP □□
 - ETSI TS 183 004 - □□□□
 - RFC 4825 - XCAP □□