

## YateHSS/HLR

The YateHSS/HLR stores and manages the SIM database for mobile networks. It also manages multiple subscriber identities (from different technologies) in one server, providing seamless services over different networks. It is designed for use in GSM, UMTS, LTE, IMS, WiFi networks or any other type of network that uses MAP or Diameter for authentication.



The YateHSS/HLR includes a Home Location Register (HLR), an Authentication Center (AuC) (2G/3G) and a Home Subscriber Server (HSS) (4G LTE). The YateHSS/HLR exports a JSON API for integration with any SIM management and CRM systems. It is capable of interconnecting with all the VLRs implemented in a GSM mobile network, with any MME from a conventional LTE network, or with the YateUCN core network server.

As it is also an AuC, the YateHSS/HLR authenticates subscribers as they try to connect to the GSM, UMTS, or the LTE networks, to make phone calls, send SMSs and access mobile data.

### Features and benefits

- The YateHSS/HLR is fully implemented in software and uses commodity hardware.
- Can serve as a proxy between an existing 2G/3G HLR and an LTE network.
- Uses the SS7 MAP interfaces when serving as an HLR with other 2G/3G network equipment.
- Provides Diameter support.
- Supports groups for mobile data and CAMEL profiles.
- Scalable by adding more HSS/HLR components, either distributed or load balanced.
- Exports a JSON API for custom features.
- Managed via a web-based management interface.

### Software specifications

|                          |   |
|--------------------------|---|
| Roaming                  | SS7 MAP (2G/3G)   Diameter (4G)   |
| Interfaces               | S6a/S6d (MME/SGSN to and from YateHSS/HLR)   Cx/Dx (I-CSCF/S-CSCF to and from YateHSS/HLR)  |
| Supported networks       | 2G/3G over MAP (ETSI) protocol<br>4G over MAP or Diameter protocol<br>IMS (VoLTE) over Diameter protocol  |
| Supported authentication | 2G SIM using COMP128-1, 2 or 3 algorithms<br>3G/4G USIM using MILENAGE algorithm<br>Derivation of 2G triplets from USIM quintuplets<br>IMS AKAv1-MD5 ISIM/USIM using MILENAGE algorithm<br>SIP MD5 Digest<br>Configurable partitioning of USIM/ISIM sequence number indexes |

|                         |  |
|-------------------------|--|
| Communication protocols | <p>MAP/SS7/SIGTRAN:</p> <ul style="list-style-type: none"> <li>- ITU TCAP, ETSI MAP v3</li> <li>- ITU or ANSI SCCP and SS7 MTP</li> <li>- M2PA or M3UA-ASP over SIGTRAN, SCTP (CRC32)</li> <li>- E.164, E.212, E.214, TT or PC SCCP addressing</li> <li>- can connect to multiple STP/GW</li> </ul> <p>Diameter</p> <ul style="list-style-type: none"> <li>- 3GPP Applications S6a/S6d, Cx/Dx</li> <li>- SCTP or TCP transport</li> <li>- can establish or listen for connections</li> <li>- can connect to multiple Routing Agents</li> </ul> <p>HTTP</p> <ul style="list-style-type: none"> <li>- JSON API server for configuration and subscriber management</li> <li>- REST API client for visited network change notification</li> </ul> <p>SNMP</p> <ul style="list-style-type: none"> <li>- SNMP v2 or v3 for information retrieval</li> <li>- Traps sending for alarms</li> </ul> <p>Telnet</p> <ul style="list-style-type: none"> <li>- management CLI</li> <li>- optional SSL and password protection</li> </ul> |
| CS services             | <p>Supplementary Services (per subscriber)</p> <ul style="list-style-type: none"> <li>- call barring: BAOC, BOIC, BOIC-ExHC, BAIC, BIC-Roam</li> <li>- call forwarding: CFU, CFB, CFNRC, CFNRY</li> <li>- other: CLIR, CW, HOLD, MultiPTY</li> <li>- password protection for service change</li> </ul> <p>Operator barring (per subscriber)</p> <ul style="list-style-type: none"> <li>- ROAM, BAOC, BOIC, BOIC-ExHC, BAIC, BIC-Roam</li> </ul> <p>CAMEL subscription (per profile)</p> <ul style="list-style-type: none"> <li>- O-CSI, T-CSI, VT-CSI, D-CSI, M-CSI, SS-CSI</li> <li>- MO-SMS-CSI, MT-SMS-CSI</li> </ul> <p>USSD subscription (per profile)</p> <ul style="list-style-type: none"> <li>- arbitrary number of prefixes to independent gateways</li> </ul>   |
| PS services             | <p>Operator barring (per subscriber)</p> <ul style="list-style-type: none"> <li>- ALL-PS, ROAM, HPLMN-AP, VPLMN-AP</li> </ul> <p>PDP Contexts (per profile)</p> <ul style="list-style-type: none"> <li>- name, type, charging characteristics</li> <li>- QoS (basic + extensions)</li> <li>- VPAA, SIPTO, LIPA</li> <li>- APN OI Replacement, AMBR</li> </ul> <p>CAMEL subscription (per profile)</p> <ul style="list-style-type: none"> <li>- GPRS-CSI, MG-CSI</li> </ul> <p>APN OI Replacement (per profile)</p>   |
| EPS services            | <p>PDN Connections (per profile)</p> <ul style="list-style-type: none"> <li>- name, type, charging characteristics</li> <li>- QoS (LTE QCI, priorities)</li> <li>- VPAA, SIPTO, LIPA</li> <li>- APN OI Replacement, AMBR</li> <li>- PGW address and name</li> </ul> <p>APN OI Replacement, AMBR, SRVCC, vSRVCC (per profile)</p>   |

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|--------------------------|---|
| <b>IMS services</b>      | <p>IMS private and public identities (per subscriber)<br/>         SIP username, authentication, realm (per subscriber)<br/>         Domain and CSCF configuration (per profile)<br/>         Initial Filter Criteria (per profile)<br/>         - configurable list of SPT groups<br/>         - SPT types: RequestURI, Method, SIPHeader, SessionCase, SessionDescription<br/>         CAMEL subscription (per profile)<br/>         - O-CSI, VT-CSI, D-CSI</p> |
| <b>High availability</b> | <p>Can be configured in a cluster of equal nodes<br/>         Subscriber data is replicated across all nodes<br/>         Requests can be distributed or balanced between nodes<br/>         Detection of communication failures<br/>         Automatic synchronization of new nodes<br/>         Automatic synchronization after failure</p>   |

## Hardware specifications

|                                 |   |
|---------------------------------|---|
| <b>Dell PowerEdge R430</b>      | 3.5" Chassis with up to 4 Cabled Hard Drives                              |
| <b>Processor</b>                | Intel Xeon E5-2630 v3 2.4GHz,20M  |
| <b>Memory</b>                   | 8GB RDIMM, 2133MT/s, Dual Rank, x8 Data                                   |
| <b>Hard drives</b>              | 1TB 7.2K RPM SATA 6Gbps 3.5in Cabled Hard                                 |
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| <b>Hard drive configuration</b> | RAID 1 for H330/H730/H730P (2 HDDs) with Cabled Chassis                   |
| <b>Internal controller</b>      | DVD ROM SATA Internal for 4HD Chassis ReadyRails Sliding Rails With Cable |
| <b>Power supply</b>             | 550W  |
| <b>Network adapter</b>          | Intel Ethernet I350 DP 1Gb Server Adapter, Low Profile                    |

## About us

Legba, Inc. provides innovative infrastructure for mobile operators. SS7ware Inc. provides 2.5G/4G mobile networks. The company is a subsidiary of Null Team, the creators of Yate.

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