

**Huawei HLR9820 V900R006
Configuration Rules V1.0**

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1 Introduction

This document is applicable to Huawei HLR9820 V009R006. It describes the estimated capacity, functional modules, configuration and expansion rules, and specifications of the HLR.

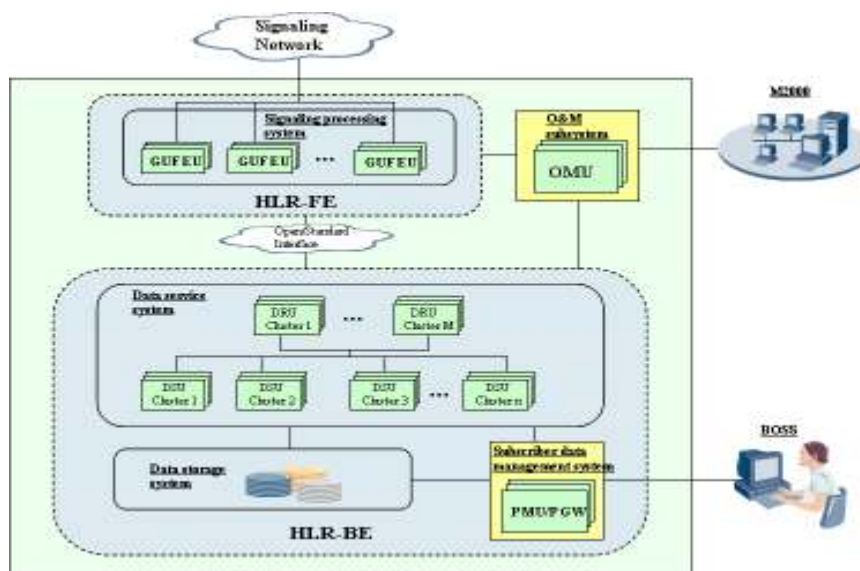
2 Product Overview

The HLR9820 serves as the Home Location Register (HLR) in both the circuit switched (CS) domain and the packet switched (PS) domain of the GSM or UMTS network. The HLR9820, logically, consists of the Back End (BE) and the Front End (FE) and it adopts the OSTA2.0 platform as its hardware platform.

The functions of the HLR-FE and HLR-BE are as follows:

- HLR-FE
The HLR-FE is connected to the signaling network and processes IP or TDM signaling. The protocols and interfaces used are the same as that used by traditional HLRs. The HLR-FE does not store subscriber data. It obtains data from the HLR-BE.
- HLR-BE
The HLR-BE stores subscriber data. It implements the functions such as adding, deleting, updating, and querying data at the requests of the HLR-FE.

Figure 2-1 shows the logical structure of the HLR9820. Logical structure of the HLR9820



General rules for configuring the HLR9820 are as follows:

- The HLR9820 supports a maximum of 200 million subscribers, and all the boards work in load-sharing mode.
- Service processing boards (GUFEU) are configured in N+K mode.
- Data service boards (USRSU) are configured in 1+1 mode.
- For the subscriber data management boards, the USPMU boards are configured in 1+1 mode and the USPGW boards are configured in N+1 mode.

3 Product Configuration

3.1 Basic Hardware Configuration

The HLR9820 adopts a distributed modular architecture. At least one cabinet with one subrack must be configured. Smooth capacity expansion can be achieved by adding processing blades or expansion subracks.

3.1.1 Cabinet

The HLR9820 uses Huawei N68E-22 cabinet, which is a standard 19-inch cabinet that complies with international specifications. Table 3-1 describes the technical specifications of the N68E-22 cabinet.

Table 3-1 Technical specifications of the N68E-22 cabinet

Item	Specifications
Model	N68E-22 server cabinet
Power supply	-48 V DC
Dimensions (height x width x depth)	2200 mm x 600 mm x 800 mm
Available height in the cabinet	46 U (1 U = 44.45 mm = 1.75 in.)

The N68E-22 cabinets are classified into integrated cabinets and extended cabinets.

The configuration rules of integrated cabinets and extended cabinets are as follows:

- An integrated cabinet can be configured with two OSTA 2.0 subracks and auxiliary equipment such as disk array and LAN switch. An extended cabinet can be configured with three OSTA 2.0 subracks.
- Generally, one or two integrated cabinets are configured, whereas the number of extended cabinets to be configured depends on the system capacity.
- Number of integrated cabinets to be configured = IF (Number of OSTA 2.0 subracks > 2, 2, 1)

- Number of extended cabinets to be configured = $\text{ROUNDUP}(\text{MAX}((\text{Number of OSTA 2.0 subracks} - \text{Number of integrated cabinets} \times 2), 0) / 3, 0)$

Figure 3-1 shows the layout of an integrated cabinet and an extended cabinet.

Figure 3-1 Integrated cabinet and extended cabinet



3.1.2 Subrack

Figure 3-2 shows an OSTA 2.0 subrack.

Figure 3-2 OSTA 2.0 subrack



Table 3-2 Technical specifications of an OSTA 2.0 subrack

Item	Specifications
Working voltage	-40 V DC to -72 V DC
Dimensions (height x width x depth)	44.45 mm × 436 mm × 420 mm

An OSTA 2.0 subrack has 14 slots, of which slots 6 and 7 are used to host the SWUs. The other slots at the front are used to host universal process blades (UPBs). The rear slots are used to host the interface boards of the UPBs.

- If integrated deployment of the FE and BE is adopted, the formula for calculating the number of OSTA 2.0 subracks is as follows:

$$\text{Number of OSTA 2.0 subracks} = \text{ROUNDUP}((\text{Number of GUFEU boards} + \text{Number of USRSU boards} + \text{Number of OMU boards} + \text{Number of USPMU boards} + \text{Number of USPGW boards})/12,0)$$
- If separate deployment of the FE and BE is adopted, the formula for calculating the number of OSTA 2.0 subracks is as follows:

$$\text{Number of OSTA 2.0 subracks used for the FE} = \text{ROUNDUP}((\text{Number of GUFEU boards} + \text{Number of OMU boards})/12,0)$$

$$\text{Number of OSTA 2.0 subracks for the BE} = \text{ROUNDUP}((\text{Number of USRSU boards} + \text{Number of OMU boards} + \text{Number of USPMU boards} + \text{Number of USPGW boards})/12, 0)$$

3.1.3 Subsystem Configuration

BOM of BOQ	Subsystem	Front Board	Back Board	Function	Configuration Rule	Expansion Rule
2317940	Signaling processing subsystem	GUFEU	<ul style="list-style-type: none"> • USIA1 in IP networking • ETIA2 in TDM networking or TDM and IP hybrid networking. 	It receives and processes signaling messages.	<p>The GUFEU boards work in load-sharing mode. The GUFEU boards are configured in N+1 mode ($N \leq 4$) or N+2 mode ($N > 4$).</p> <p>A GUFEU board supports a maximum of 3 million subscribers (see the note).</p> <p>Number of GUFEU boards = Number of dynamic subscribers/Maximum number of subscribers supported by each GUFEU board</p>	A GUFEU board needs to be added for every additional 3 million dynamic subscribers stored in the HLR.
02318267	Data service subsystem	USRSU	USIA1	<p>It provides functions of data routing and data storage.</p> <p>Data routing(DRU): It provides the function of data routing for the system to locate the subscriber data.</p> <p>Data storage(DSU): It provides data services for upper-layer applications.</p>	<p>The USRSU boards work in 1+1 load-sharing mode.</p> <p>A pair of USRSU boards supports a maximum of 3 million subscribers (see the note).</p> <p>Number of USRSU boards = Number of static subscribers/Maximum number of subscribers supported by each USRSU board</p>	One pair of USRSU boards needs to be added for every additional 3 million static subscribers stored in the HLR.

	Subscriber data management subsystem	USPMU	USI2	It manages subscriber data and implements configuration of subscriber data. It also provides interfaces for interconnection with the provisioning system and the disk array.	One site is configured with one pair of USPMU boards.	The number of USPMU boards configured for a site is permanent; therefore, the USPMU boards do not require expansion.
		USPGW	None	It processes commands sent from the provisioning system.	If USPMU board's capacity for processing the provisioning system commands is insufficient, add USPGW boards. The configuration rule is N+1 (1 ≤ N ≤ 5).	Each USPGW board is added at a time.
	Operation and maintenance (O&M) subsystem	OMU	USIA7	It provides the functions such as configuration management, device maintenance, fault management, and performance management.	Each site is configured with one pair of OMU boards.	The number of OMU boards configured for a site is permanent; therefore, the OMU boards do not require expansion.
02351956	Data storage subsystem	S2600 disk array	None	It provides permanent storage of subscriber data. The disk array adopts RAID and hot spare disks to ensure security of subscriber data.	Each site is configured with one disk array.	The number of disk arrays configured for a site is permanent; therefore, the disk array does not require expansion.

02351955	LAN switch	LAN switch	None	Quidway S5328C LAN switch is used. It provides 24 GE interfaces and 4 SEP interfaces, which are responsible for data and signaling access as well as cascading between subracks.	<ul style="list-style-type: none"> • Each site is configured with two LAN switches by default for accessing data and signaling. • If more than four subracks are deployed, one pair of LAN switches needs to be added for subrack cascading. 	One pair of LAN switches is added at a time.
Third-party software	<p>The third-party software consists of:</p> <ul style="list-style-type: none"> • Operating system of boards: The boards in each subrack are configured with one Linux operating system. • Service application software used on the disk arrays and OMU boards. 					



NOTE

- The processing capability of a board varies according to service models or traffic models. For details on service models and traffic models of Huawei, see Appendix.
- Number of boards required by the signaling processing subsystem = Number of GUFEU boards
- Number of boards required by the data service subsystem, subscriber data management subsystem, and O&M subsystem = Number of USRSU boards + Number of USPMU boards + Number of USPGW boards + Number of OMU boards

3.2 Typical Hardware Configuration

The HLR9820 contains the service processing unit, data service unit, subscriber data management unit, data storage unit, and operation and maintenance (O&M) unit to meet the requirements for commercial use.

Based on the actual number of subscribers supported and processing capability, you can determine the number of service processing units, data service units, and subscriber data management units to be configured.

3.2.1 Minimum Configuration

The HLR9820 supports a minimum of 3 million subscribers based on service models and traffic models of Huawei.

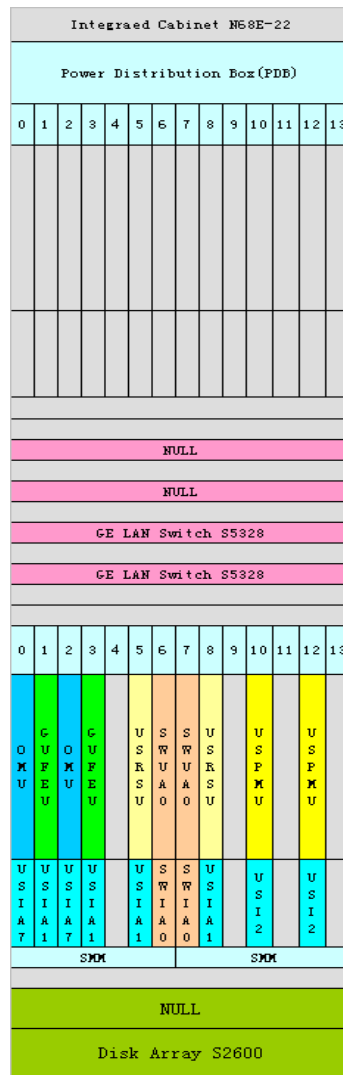
Table 3-3 describes the list of the minimum configuration of the HLR9820.

Table 3-3 List of the minimum configuration of the HLR9820

Hardware	Quantity (pcs)	Description
Cabinet	1	-
Subrack	1	-
GUFEU	2	The interface boards of GUFEU boards are USIA1 boards (In IP networking).
USRSU	2	One pair of USRSU boards is configured to work in 1+1 mode for 3 million subscribers.
USPMU	2	One pair of USPMU boards is configured.
OMU	2	One pair of OMU boards is configured.
LAN switch	2	-
Disk array	1	One disk array is configured.

Figure 3-3 shows the minimum configuration of the HLR9820.

Figure 3-3 Minimum configuration of the HLR9820



3.2.2 Typical Configuration

The typical configuration of the HLR9820 supports 30 million subscribers based on service models and traffic models of Huawei.

Table 3-4 describes the list of the typical configuration of the HLR9820.

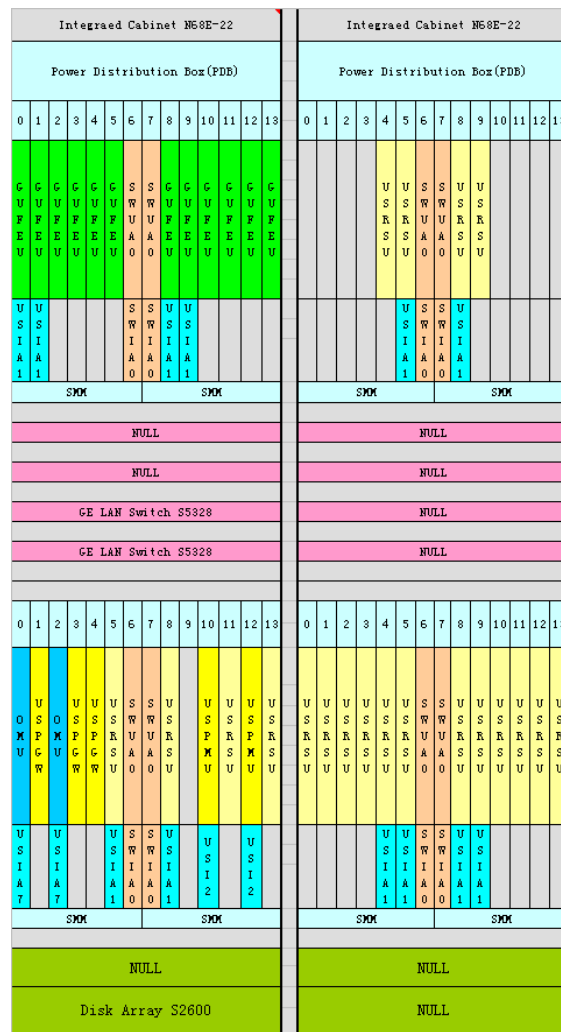
Table 3-4 List of the typical configuration of the HLR9820

Hardware	Quantity (pcs)	Description
Cabinet	2	-
Subrack	4	-

GUFEU	12	The interface boards of GUFEU boards are USIA1 boards(In IP networking).
USRSU	20	Each pair of USRSU boards is configured to work in 1+1 mode for 3 million subscribers.
USPMU	2	One pair of USPMU boards is configured.
USPGW	3	-
OMU	2	One pair of OMU boards is configured. The interface boards of OMU boards are USIA7 boards.
LAN switch	2	-
Disk array	1	One disk array is configured.

Figure 3-4 shows the typical configuration of the HLR9820.

Figure 3-4 Typical configuration of the HLR9820



3.2.3 Maximum Configuration

The HLR9820 supports a maximum of 100 million dynamic subscribers and 200 million static subscribers.

Table 3-5 describes the list of the maximum configuration of the HLR9820.

Table 3-5 List of the maximum configuration of the HLR9820

Hardware	Quantity (pcs)	Description
Cabinet	BE: 5 FE: 2	If more than three cabinets or more than seven subracks are deployed, the FE and BE must be separately deployed.
Subrack	BE: 12 FE: 4	

GUFEU	36	The interface boards of GUFEU boards are USIA1 boards.
USRSU	134	Each pair of USRSU boards is configured to work in 1+1 mode for 3 million subscribers.
USPMU	2	One pair of USPMU boards is configured.
USPGW	6	-
OMU	FE: 2 BE: 2	Each FE and BE is configured with a pair of OMU boards. The interface boards of OMU boards are USIA7 boards.
LAN switch	BE: 6 FE: 2	-
Disk array	1	One disk array is configured.

Figure 3-5 and Figure 3-6 show the maximum configuration of the HLR9820.

Figure 3-5 Maximum configuration of the HLR9820 (BE)

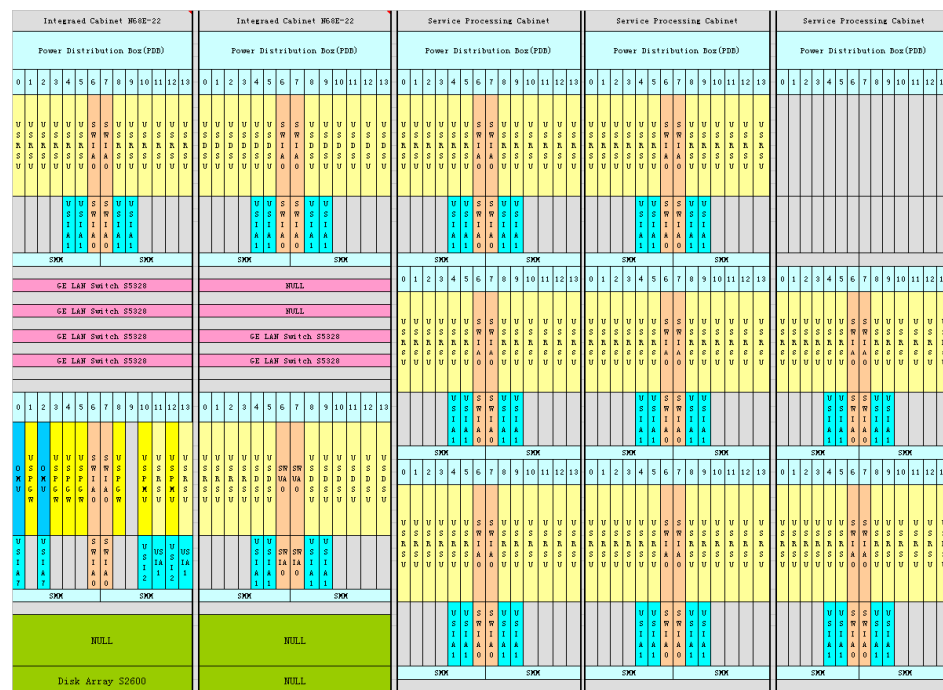


Figure 3-6 Maximum configuration of the HLR9820 (FE)

Integraed Cabinet N68E-22														Integraed Cabinet N68E-22													
Power Distribution Box(PDB)														Power Distribution Box(PDB)													
0	1	2	3	4	5	6	7	8	9	10	11	12	13	0	1	2	3	4	5	6	7	8	9	10	11	12	13
C	C	C	C	C	C	S	S	C	C	C	C	C	C	C	C					S	S						
U	U	U	U	U	U	W	W	U	U	U	U	U	U	U	U					W	W						
F	F	F	F	F	F	I	I	F	F	F	F	F	F	F	F					I	I						
E	E	E	E	E	E	A	A	E	E	E	E	E	E	E	E					A	A						
U	U	U	U	U	U	A	A	U	U	U	U	U	U	U	U					U	U						
1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1					0	0						
SXM							SXM							SXM							SXM						
NULL														NULL													
NULL														NULL													
GE LAN Switch S5328														NULL													
GE LAN Switch S5328														NULL													
0	1	2	3	4	5	6	7	8	9	10	11	12	13	0	1	2	3	4	5	6	7	8	9	10	11	12	13
O	C	O	C	C	C	S	S	C	C	C	C	C	C	C	C	C	C	C	C	S	S	C	C	C	C	C	
M	U	M	U	U	U	W	W	U	U	U	U	U	U	U	U	U	U	U	U	I	I	U	U	U	U	U	
U	U	U	U	U	U	A	A	U	U	U	U	U	U	U	U					U	U						
U	S	S	S	S	S	0	0	U	U	U	U	U	U	S	S					U	U						
U	I	I	I	I	I	A	A	U	U	U	U	U	U	I	I					A	A						
U	A	A	A	A	A	0	0	U	U	U	U	U	U	A	A					U	U						
1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1					0	0						
SXM							SXM							SXM							SXM						
NULL														NULL													
NULL														NULL													

3.3 Software Configuration

3.3.1 Basic Software Configuration

Table 3-6 Basic software configuration of the HLR9820

Part Number	Software	Description
88030GRB	HLR Basic Software-2G BE, V900R006 (per k sub)	It is quoted based on the number of 2G static subscribers supported by the HLR. It is supported by SingleSDB 3.0 (SDB V100R002C02) and SingleSDB 3.1 (SDB V100R002C03).
88030GRC	HLR Basic Software-3G BE, V900R006 (per k sub)	It is quoted based on the number of 3G static subscribers supported by the HLR. It is supported by SingleSDB 3.0 (SDB V100R002C02) and SingleSDB 3.1 (SDB V100R002C03).
88030GRF	HLR Basic Software-2G FE, V900R006 (per k sub)	It is quoted based on the number of 2G dynamic subscribers supported by the HLR. It is supported by HLR9820 V900R006C00 and HLR9820 V900R006C03.
88030GRG	HLR Basic Software-3G FE, V900R006 (per k sub)	It is quoted based on the number of dynamic 3G subscribers supported by the HLR. It is supported by HLR9820 V900R006C00 and HLR9820 V900R006C03.

3.3.2 Upgrade Software Configuration

Table 3-7 Upgrade software configuration of the HLR9820

Part Number	Software	Description
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88030KUV	HLR9820 BE System Upgrade Software-2G to 2G&3G (per k sub)	This item is quoted from March 5, 2010. It is quoted when the HLR needs to be upgraded from the version serving only 2G subscribers to the version serving both 2G and 3G subscribers.
88030KUW	HLR9820 BE License Transition Upgrade Software-2G to 3G (per k sub)	Number of static subscribers migrating from 2G to 3G = MIN[Number of 2G static subscribers decreased during the upgrade, Number of 3G static subscribers increased during the upgrade]
88030WAK	HLR9820 BE Basic Software(2G&3G),V300 Upgrade to V900R006 (per k sub)	This item is sold based on versions. It must be quoted when the HLR9820 is upgraded from V300 to V900R006. It is quoted based on the number of subscribers stored in HLR9820 V300.
88030WAL	HLR9820 BE Basic Software(2G&3G),V600 Upgrade to V900R006 (per k sub)	This item is sold based on versions. It must be quoted when the HLR9820 is upgraded from V600 to V900R006. It is quoted based on the number of subscribers stored in HLR9820 V600.
88030KUU	HLR9820 BE Basic Software(2G&3G),V900R003 Upgrade to V900R006 (per k sub)	This item is sold based on versions. It must be quoted when the HLR9820 is upgraded from V900R003 to V900R006. It is quoted based on the number of static subscribers stored in HLR9820 V900R003.
S4011412	HLR9820 FE System Upgrade Software-2G to 2G&3G (per k sub)	This item is quoted when the HLR needs to be upgraded from the version serving only 2G subscribers to the version serving both 2G and 3G subscribers.
S4011417	HLR9820 FE License Transition Upgrade Software-2G to 3G (per k sub)	Number of dynamic subscribers migrating from 2G to 3G = MIN[Number of 2G dynamic subscribers decreased during the upgrade, Number of 3G dynamic subscribers increased during the upgrade]
88030VSE	HLR9820 FE Basic Software(2G&3G),V300 Upgrade to V900R006 (per k sub)	This item is sold based on versions. It must be quoted when the HLR9820 is upgraded from V300 to V900R006. It is quoted based on the number of subscribers stored in HLR9820 V300.

88030VSD	HLR9820 FE Basic Software(2G&3G),V600 Upgrade to V900R006 (per k sub)	This item is sold based on versions. It must be quoted when the HLR9820 is upgraded from V600 to V900R006. It is quoted based on the number of subscribers stored in HLR9820 V600.
88030GRH	HLR9820 FE Basic Software(2G&3G),V900R003 Upgrade to V900R006 (per k sub)	This item is sold based on versions. It must be quoted when the HLR9820 is upgraded from V900R003 to V900R006. It is quoted based on the number of static subscribers stored in HLR9820 V900R003.

3.3.3 Optional Software Configuration

Table 3-8 Optional software configuration of the HLR9820

Part Number	Software	Description	Function ID
88030GQR	Support Redundancy (per k HLR sub)	The redundancy solution can be seamless geographic redundancy solution, N+1 mated redundancy solution, or N+1 compatibility redundancy solution. This item is quoted only for redundancy HLRs.	WHFD-114031 WHFD-114021 WHFD-910170
88030GQV	File output functions(per k HLR sub)	Number of static subscribers stored in the HLR x Subscription ratio	WHFD-900210
S2010773	Virtual HLR functions (per Virtual HLR)	It is quoted per virtual HLR.	WHFD-900100
88030GPQ	AuC Data Management on the GU HLR(per k HLR AUC sub)	It is quoted based on the number of all the subscribers to be authenticated.	WHFD-115103
88030HCX	Support XML/SOAP interface for HLR provisioning (per k sub)	By default, this function is not included in the quotation. If this function is required, it is quoted based on the number of static subscribers stored in the HLR.	WHFD-112010
S2010720	MML command file Batch operation timing execution (per k sub)	Number of static subscribers stored in the HLR x Subscription ratio	WHFD-115400
Supplementary Services			
S2010713	Multi Party SS(MPTY) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-213002

S2010710	Call Completion SS(CW/HOLD) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-213001
S2011516	Circuit Switch data services (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-211000
S2010728	Unstructured Supplementary Service Data(USSD) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-213003
88036250	USSD Barring (per HLR)	It is supported by per HLR.	WHFD-218021
S2010786	Explicit Call Transfer(ECT) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910010
88038968	PLMN Specific Supplementary Services(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-213005
S2010782	Closed User Group(CUG) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-213004
CAMEL Services			
S2010730	CAMEL Phase 2 services (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-214100
S2010732	CAMEL Phase 3 services (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-214200
88034346	CAMEL Phase 4 (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio As the CAMEL service is compatible with all earlier versions, quote the CAMEL service of the latest version.	WHFD-214300
S2010774	CAMEL restriction function (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218002
88034345	MAP phase2+ (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-217003
88036248	TCSI Suppression Enhancement (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218003
Position Based Services			

S2011517	LCS services (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-215004
High Speed Signal Services			
S2010771	Inverse Multiplexing ATM(IMA,ATM2M) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910280
2010743	TDM 2M signaling link (per 2M Link)	This service is quoted based on the number of TDM 2 Mbit/s links.	WHFD-217002
ALL IP Solution			
S2010770	SIGTRAN (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-217004
8030DXL	SCTP multi-homing (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-217005
88030PFL	TDM&IP dual bearer (per Office)	This function is used in mixed networking of TDM&IP signaling. It helps to improve the reliability of the IP networking. This item is quoted based on the number of NEs that are connected to the HLR over the bearer network of TDM&IP signaling.	WHFD-910220
Signal Policing Services			
S2010754	Automatic add prefix for IP calls (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910030
8038957	MT P POLICING(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910110
88038958	SCCP POLICING(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910120
88038959	MAP POLICING(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910130
Call Forward Enhanced Services			
S2010758	Call Forwarding Default (CFD) service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-215001

2010777	Call forwarding announcement suppression function (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910070
S2011195	CF-specific Black and White Lists (per HLR)	It is supported by per HLR.	WHFD-218010
S2010775	OFA forwarding number analysis function (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910080
Roaming Enhanced Services			
S2010761	Barring of all outgoing calls when roaming outside HPLMN-country (BORO) service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910050
2010772	VLR regional roaming restriction services (local communication service) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218001
S2011193	HLR-specific Roaming Restriction (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218007
88034343	Zone Code (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218014
Routing Enhanced Services			
88033042	Support of Optimal Routing	It is quoted per HLR.	WHFD-910200
2010756	North American Equal Access(NAEA) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910040
Subscriber Information Services			
S2010763	Subscriber information services (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-216100
CRBT			
S2011199	Ring Back Tone Service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218012
Operation and Maintenance Enhancement			

88034338	Global Tracing Function (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218018
8030DXN	Recording and Export of Junk Data (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-901000
Multimedia Services			
88038967	Multimedia RBT(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218024
8034340	Service Change and UDI Fallback Function (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218019
Billing Enhancement			
S2011188	Hot Billing (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218005
2010768	Advice of Charge Charging/Information(A OCI/AOCC) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910060
88038964	Dial Identification Code(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218023
Differentiated and Feature Services			
88032780	eMLPP service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218027
8034342	CLI P by HLR Function (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218020
S2011192	VP Dual-number (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910090
88030BDX	Completion of Calls to Busy Subscriber (CCBS) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218030
88030BDW	Calling name presentation (CNAP) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218029
GSMR Services			

88032778	VBS service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910161
8032779	VG CS service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910162
88034334	FollowMe (FM) Service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910163
88034337	UUS Service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910164
2G&3G Interaction Services			
88036251	2G/3G QoS Mapping (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218022
8032783	ARD Service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218015
Network Capacity Adaptation and Enhancement			
88032781	Supporting LMSI (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218013
8038965	Super Charger(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910180
88038966	Immediate Service Termination(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910190
S2011196	Network Capability Configuration (NCC) (per HLR)	It is quoted per HLR.	WHFD-218011
S2010769	Multiple signaling points (per Office)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-217001
88038233	Auto Device Detection(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-215003
Network Security and Reliability			

88036252	Redundancy Function (per k sub)	It is quoted based on the number of static subscribers stored in the HLR. Number of static subscribers = Number of 2G static subscribers + Number of 3G static subscribers.	WHFD-210200
8036249	SCP Address Filtering (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218009
S2011194	SMC Address Filtering (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218008
88032784	CARP/ARP Service (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218016
88038973	ETSI Lawful interception specification(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910140
PS Services			
88038961	2.5G GPRS(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio If no more than two service models are configured, this service is quoted based on the number of 2.5G GPRS dynamic subscribers. If more than two service models are configured, the number of subscribers used in the quotation is increased by 50% for every additional two service models.	WHFD-212001
8038962	3G GPRS(per k sub)	This service is quoted based on the number of service models and the subscription ratio. If no more than two service models are configured, this service is quoted based on the number of 3G GPRS dynamic subscribers. If more than two service models are configured, the number of subscribers used in the quotation is increased by 50% for every additional two service models.	WHFD-212002
88038970	Enhanced HSPA(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-212003
88038963	Support GPRS charging character(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-212004

S2011201	ODB PS (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910020
Multi-SIM or Multi-Number Services			
88030UHH	Single IMSI Multiple MSISDN (SIMM) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218028
S2011191	Supporting Alternative line service (ALS) (per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-218006
88030VUM	Link SIM(per k sub)	Number of dynamic subscribers stored in the HLR x Subscription ratio.	WHFD-910290
Authentication Center			
88030ACE	AUC (per k sub)	Number of subscribers whose requests are processed by the HLR-FE	WHFD-219000
2010780	Supporting multiple OP (per OP)	It is quoted based on the number of signaling point codes.	WHFD-218004

4 Spare Parts Configuration

The recommended rules for configuring spare parts of OSTA 2.0 boards are as follows:

- Reserve one UPBA2 for each OSTA 2.0 subrack.
- Reserve one SWUA0 (SWUA1 for the site adopting narrowband networking), one SWIA0 (SWIA1 for the site adopting narrowband networking), one USI2, one USIA1, and one USIA7 for each site.
- Reserve one ETIA2 for each site if narrowband networking is adopted.



NOTE

The spare parts are quoted separately.

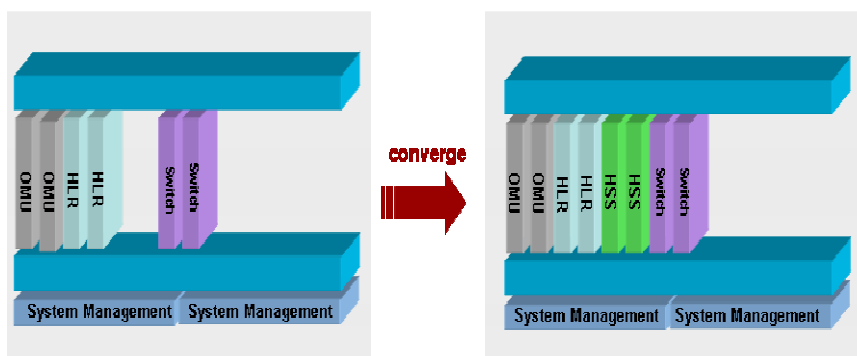
5 Upgrade

5.1 Evolution from HLR9820 V900R006 to SingleSDB V100R003

HLR9820 V900R006 supports a hitless evolution to SingleSDB V100R003 without interrupting services.

HLR9820 V900R006 can be evolved to a SingleSDB that incorporates the IMS-HSS, UEIR, SAE-HSS, UNP, and UPCC. The HLR shares the ATCA platform and the O&M system with other NEs (including the IMS-HSS, UEIR, SAE-HSS, UNP, and UPCC) in the SingleSDB solution. You only need to add the boards as required for implementing a hitless evolution.

Figure 5-1 Converged evolution



5.2 Upgrade from HLR9820 V900R003 to HLR9820 V900R006

HLR9820 V900R003 cannot be directly upgraded to HLR9820 V900R006. Product reconfiguration is required.

The FE of HLR9820 V900R003 adopts the CPCI platform and the BE adopts the ATCA platform. Both the FE and the BE of HLR9820 V900R006 adopt the ATCA platform. Therefore, you need to reconfigure the HLR according the principle for configuring a new HLR of version V900R006.

5.3 Upgrade from HLR9820 V600R003 to HLR9820 V900R006

HLR9820 V600R003 cannot be directly upgraded to HLR9820 V900R006. New deployment of HLR9820 V900R006 is required.

The SAU of HLR9820 V600R003 adopts the CPCI platform and the HDU adopts a platform of minicomputer. Therefore, you need to configure the HLR according the principle for configuring a new HLR of version V900R006.

6 Appendix

Table 6-1 Typical traffic model of Huawei HLR

Parameter	Value	
	2G	3G
Average voice traffic per ordinary subscriber@BH (Erlang)	0.025	0.018
Average call duration per ordinary subscriber (second)	60	60
Proportion of IN subscribers (%)	65%	65%
Average voice traffic per IN subscriber@BH (Erlang)	0.025	0.018
Average call duration per IN subscriber (second)	60	60
Percentage of MS to MS calls	20%	20%
Percentage of PSTN to MS calls	45%	45%
Location update/BH/SUB(To HLR)	0.4	0.2
Number of mobile terminated short messages/subscriber/BH	0.36	0.3
Send authentication to AuC/BH/SUB	0.5	0.8
GPRS Location update/BH/SUB	0.05	0.25
InsertSubscriberData(ODBAOC)/BH/SUB	0.1	0.1
Send Routing Info for LCS/BH/SUB	0.2	0.2
Send authentication to HLR/BH/SUB(PS)	0.6	0.6
USSD/BH/SUB(PS)	0.05	0.05

7 Acronyms and Abbreviations

Table 7-1 Acronyms and abbreviations

Acronym/Abbreviation	Expansion
EIR	Equipment Identification Register
HLR	Home Location Register
OMU	Operations and Maintenance Unit (board)
OSTA	Open Standards Telecom Architecture
USRSU	Unified Subscriber Routing & Service Unit
USPMU	Unified Subscriber Provisioning and Management Unit
USPGW	Unified Subscriber Provisioning Gateway
SingleSDB	Single Subscriber Database