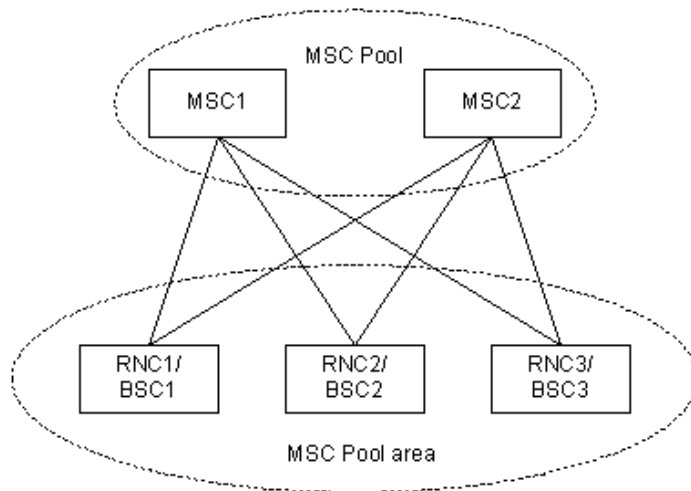# MSC Pool

SEA CS Advanced Training

www.huawei.com

Content

- General Introduction&Conceptions
- Data Configuration
- Evolution to Pool

What is MSC Pool?

- In a traditional mobile network, one RNC/BSC can be connected to one MSC only. In the MSC Pool networking mode, one RNC/BSC can be connected to multiple MSCs.

Advantages:

- Multiple MSCs share the load of a network. This design helps to improve the utilization of resources of the core network and saves investment on equipment.

- Data can be backed up amongst the MSCs to make the MSC pool more disaster tolerant and improve the reliability of the network.

- Inter-MSC location update times and signaling traffic on the C/D interface are reduced.

- Inter-MSC handovers are reduced and subscribers' conversation quality is improved.

MSC Pool Conceptions

NRI

- A network resource identifier (NRI) is used to identify an MSC node serving a specified MS/UE. Contained in TMSI from bit 23 to bit 14.

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	...	0
CS/PS		VLR restart										NRI range								

- Serving MSC will not change when moving in pool area,save C/D interface traffic.
- The implementation of the MSC Pool function depends on the TMSI reallocation function enabled by the MSC in the MSC Pool, including:
-     Allocation of TMSI during location update
-     Allocation of TMSI during service access

 SET MAPACCFG: IFALTMSILU=YES, IFALTMSISA=YES;

Null NRI

- It is a special NRI in the same structure as normal NRI. During inter-MSC subscriber migration in the MSC Pool, a null-NRI is used to instruct the RNC/BSC to reselect an MSC to service the MS/UE. When RNC/BSC receives Null NRI,it will send message to a valid MSC based on arithmetic.

- A null-NRI is unique in an MSC Pool.

  ADD NRIMSC: DESC="NULL NRI", **NRIV=10**, MSCNO=K'861390801, VLRNO=K'861390801, MSCNM="SX1", **NNRI=TRUE**;

MSC Pool Conceptions

Non-broadcast LAI

- It is a special LAI with the same format as common LAI.
- ADD LAISAI: SAI="**460004444**", LAISAINAME="Non-broadcast", MSCN="861390801", VLRN="861390801", **NONBCLAI=YES**, NONBCLAIT=HVLR;
- During inter-MSC subscriber migration in the MSC Pool, it is used to trigger the MS/UE to perform location update immediately after completing the current service procedure.
- Each MSC in Pool has a unique Non-broadcast LAI;Each MSC in Pool must configure all Non-broadcast LAIs of other MSCs in Pool because the target MSC determines the address of original MSC based on the Non-broadcast LAI and obtains the subscriber information(**MAP_SEND_IDENTIFICATION**) from the original MSC during inter-MSC subscriber migration in the MSC Pool.

Example:

ADD LAISAI: SAI="460004444", LAISAINAME="Non-broadcast", MSCN="861390801", VLRN="861390801", NONBCLAI=YES, **NONBCLAIT=HVLR**;

ADD LAIGCI: SAI="460005555", LAIGCINAME="Non-broadcast", MSCN="861390802", VLRN="861390802", NONBCLAI=YES;

ADD LAIGCI: SAI="460006666", LAIGCINAME="Non-broadcast", MSCN="861390803", VLRN="861390803", NONBCLAI=YES;

MSC Pool Conceptions

MGW to Provide the A-Flex Function

- When MSC Pool is applied,BSC should support A-Flex function,if BSC can not support this function,Huawei MGW can provide A-Flex Proxy function to enable BSC to access MSC Pool without upgrade.

Default MSC

- When MS registers in adjacent MSC outside pool,this MSC just needs to address Default MSC in pool to get subscriber information by original LAI of the subscriber,because LAI can not map a unique MSC in pool,by this way,MSC outside pool does not need to develop new functions but just sends message to default MSC.

    Default MSC then finds the previous serving MSC of this subscriber by NRI in TMSI,obtains subscriber information and provides to MSC outside pool.

CNID

- It is the ID of an MSC node. Its format is:
- MCC+MNC+CN-ID
- The value of CN-ID ranges from 0 to 4095. A CN-ID uniquely identifies an MSC in the MSC Pool.

Load Balancing

1, When an MS/UE initiates a service based on IMSI/IMEI, the RNC/BSC selects a valid MSC according to the capacity proportion of each valid MSC in the MSC Pool.Then MSC assigns TMSI containing NRI.
When an MS/UE initiates a service based on TMSI,RNC/BSC will directly route it to the serving MSC based on NRI in TMSI

MOD CNNODE
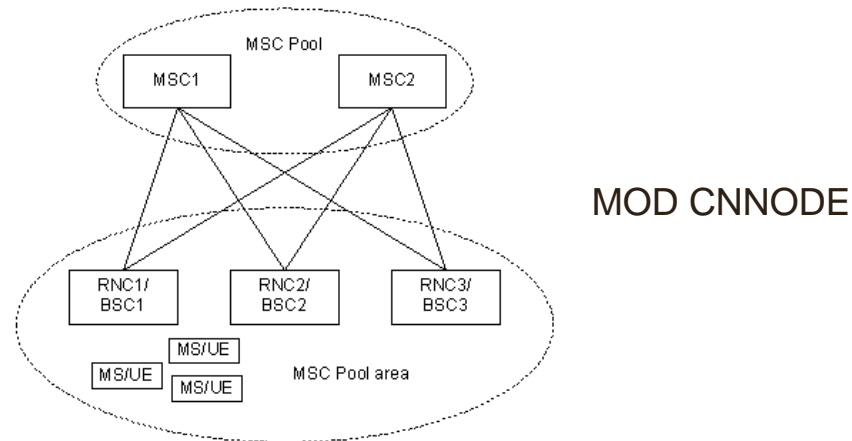
2,If paging is based on IMSI and without NRI information,RNC/BSC will record a temporary mapping between IMSI and MSC,to ensure send back the acknowledge to MSC.

RNC/BSC A-flex function is mostly provided by MGW in current netowrk.

Handover

Handover Within the MSC Pool Area

As any LAI in the MSC Pool could be served by all MSCs in Pool, only intra-MSC handover is performed in pool.

Therefore,compared with traditional networking, the number of inter-MSC handovers can be reduced, and the quality of calls can be improved.

Handover to the MSC Pool Area

MSCs outside the Pool can use any MSC in the Pool as the target MSC during handover.

Handover out of the MSC Pool Area

The adjacent MSC is set to the destination MSC of MSCs in the MSC Pool during handover (it is the same as the handover configuration for the MSC on the present network).

Pool

MSC B
（Default）
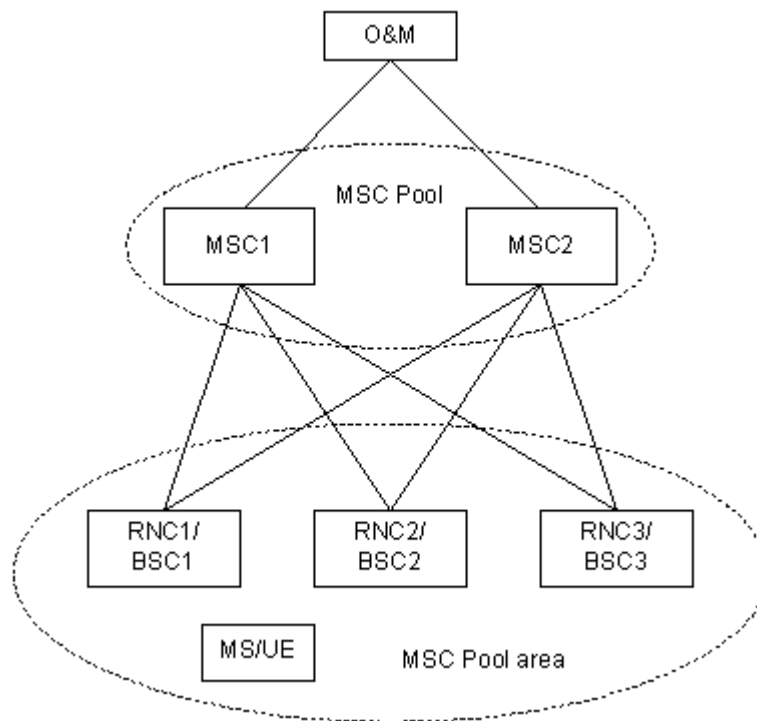
MSC A

MSC_Outside

HUAWEI
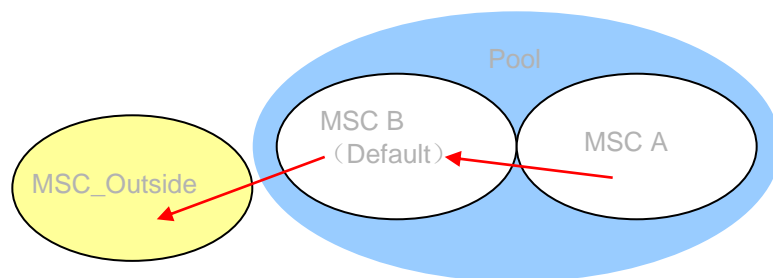
Subscriber Migration Between MSCs

Operators can trigger subscriber migration between MSCs in the MSC Pool through O&M commands.

For example, if one MSC needs to be upgraded,operators can transfer all the subscriber data in this MSC to other MSCs in the MSC Pool before upgrade.

Or adjust the traffic load between MSCs to make they averagely share the load.

There are two ways to migrate subscribers. 3GPP TS 23.236 protocol&Inter-office E interface redirection.

Subscriber Migration Between MSCs

1, Configure the status of MSC on MSCs and RNC/BSCs as **OFF-LOAD**.

2, When MS under off-load MSC initiates a service, the MSC allocates a TMSI containing null-NRI.The MSC also instructs the MS/UE that the current LAI is the Non-broadcast LAI.

3, After the MS finishes the current service, the Non-broadcast LAI enables the MS to trigger immediate location update.

4, When receiving a location update message containing null-NRI, the RNC/BSC selects a **valid** MSC according to the proportion capacity in the MSC Pool and routes the service to the selected MSC.
The selected MSC allocates a TMSI containing its own NRI for the MS. During registration, the selected MSC determines the original MSC where the MS/UE is registered according to the Non-broadcast LAI carried by the MS/UE and obtains subscriber data (IMSI and unused encryption parameters) from the original MSC.
In this way, an MS/UE is transferred from one MSC to another.

5,After migration is completed, stop migration through the O&M command and restore the MSC status on the MSCs and RNC/BSCs as **NORMAL**.

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A-Flex Function Proxy on MGW

The 3GPP TS 23.236 protocol requires the BSC in the MSC Pool supporting the A-flex function. To solve the problem that BSC in exsiting network can not support this function, Huawei MGW can provide the A-Flex function proxy

- No BSC upgrade required
- MSC server SPC and count is invisible for BSC,MGW provides single signal point to BSC
- MGW provides the function to identify MSC in pool and realizes load balancing according to proportion capacity configuration.

To achieve this purpose,two modes can be used: **M3UA Agent Networking** & **M3UA Forward Networking**

A-Flex Function Proxy on MGW

M3UA Agent Networking
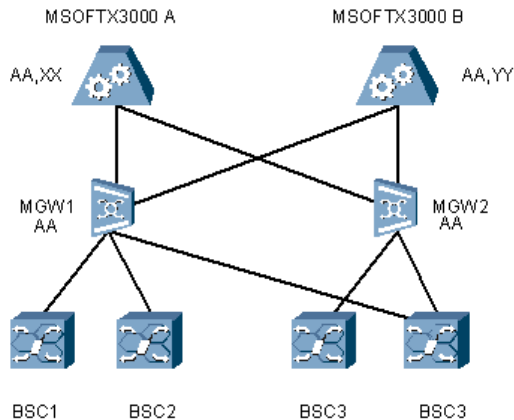
MSOFTX3000 SPC: XX,YY are used to integrate with external NEs(HLR,SCP,PSTN etc);
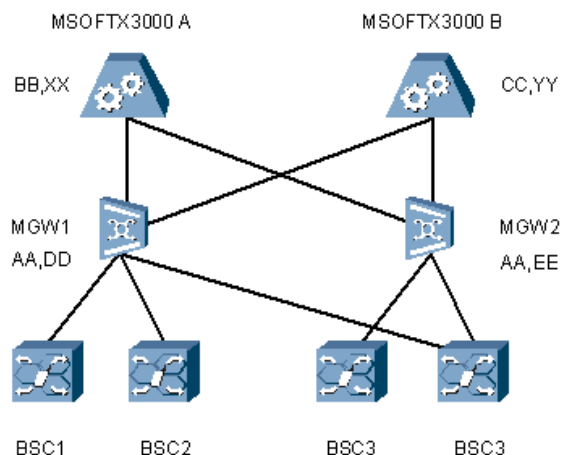
MSOFTX3000 SPC: AA,a common SPC in pool for integrating with BSC.

MGW SPC: MGW use the same SPC as MSOFTX3000,AA.

- MSC servers in the MSC Pool use a common SPC **AA** connecting with BSCs;
- MGW adopts the M3UA agent mode and shares the same SPC **AA** with MSC servers;
- MGW is divided into several VMGWs,the number is the same as that of MSCs in pool. Each VMGW is registered in an MSC server.
- The MSCe SPC configured on the BSC is **AA**.
- The algorithm for the MGW to select the MSC server is the same as that for the BSC,based on proportion capacity configured in MGW.

A-Flex Function Proxy on MGW

M3UA Forward Networking(Recommended)

MSOFTX3000 SPC: XX,YY are used to integrate with external NEs(HLR,SCP,PSTN etc);

MSOFTX3000 SPC: BB,CC for integrating with BSC.Using different SPC.

MGW SPC: MGW use the same SPC AA to integrate with BSC;use different SPC DD,EE to integrate with MSC.

- MSC servers in the MSC Pool use different SPC **BB,CC** connecting with BSCs;
- MGW adopts the M3UA Forward mode and shares the same SPC **AA** integrating with BSCs; Use different SPC **DD,EE** integrating with MSC Servers;
- MGW is divided into several VMGWs,the number is the same as that of MSCs in pool. Each VMGW is registered in an MSC server.
- The MSCe SPC configured on the BSC is **AA**.
- The algorithm for the MGW to select the MSC server is the same as that for the BSC,based on proportion capacity configured in MGW.

A-Flex Function Proxy on MGW

Why M3UA Forward Networking is Recommended?(See mixed networking)
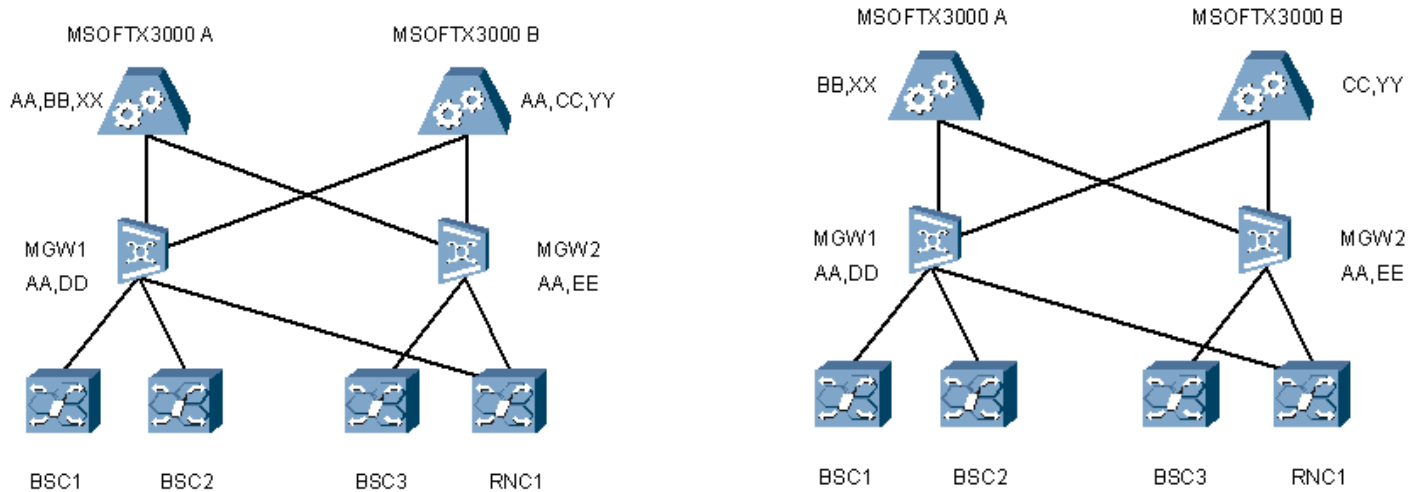
M3UA Agent Networking

M3UA Forward Networking

Content

- General Introduction&Conceptions
- Data Configuration
- Evolution to Pool

Data Configuration(MSOFTX3000)

ADD CDBFUNC
Enable A-Flex function in MSC Server.
ADD CDBFUNC: CDBMN= 102, FUNC=**AFLEX-1**;

ADD NRIMSC
Configure NRI information which is inserted into TMSI.All MSCs NRI in pool should be added to each MSC.
//Local NRI
ADD NRIMSC: DESC="SX1", **NRIV=1**, MSCNO=K'861390801, VLRNO=K'861390801, MSCNM="SX1";
//Local Null NRI
ADD NRIMSC: DESC="NULL NRI", **NRIV=10**, MSCNO=K'861390801, VLRNO=K'861390801, MSCNM="SX1", **NNRI=TRUE**;
//Other MSCs' NRI in pool
ADD NRIMSC: DESC="SX2_NRI", **NRIV=2**, MSCNO=K'861390802, VLRNO=K'861390802, MSCNM="SX2", **LOCMSC=FALSE**;
ADD NRIMSC: DESC="SX3_NRI", **NRIV=3**, MSCNO=K'861390803, VLRNO=K'861390803, MSCNM="SX3", **LOCMSC=FALSE**;

Data Configuration(MSOFTX3000)

ADD LAISAI

Define Non-broadcast LAI of local office.It is a unique LAI in this MSC.

ADD LAISAI: SAI="460004444", LAISAINAME="Non-broadcast", MSCN="861390801", VLRN="861390801", **NONBCLAI=YES**, NONBCLAIT=HVLR;

SET POOLINFO

Set MSC Pool function for local office.

SET POOLINFO: MSCPOOL=YES, Server=YES, MSCIDX=1, USRNUM=1000, NRILEN=6;

Designed Capacity in MSC Pool:

The unit is K,it does not include the subsciber capacity served by RNC/BSC outside pool.

Length of NRI bit:

This parameter must be consistent with the NRI configured in NRIMSC,the default value is 6,which means the default maximum NRI value that can be configured in NRIMSC is 63.

MOD BSC

Grant all affiliated BSC of local office with MGW proxy A-flex function.

MOD BSC: DPC="10B", OPC="801", BSCNM="BSC1", **CAPABILITY=MGWPROXYAFLEX-1**;

List of BSC capability:

Select *Support MGW Proxy A Flex*

HUAWEI

Data Configuration(MSOFTX3000)

SET OFI
Configure CNID of local ofice,which is used to identify a unique MSC in Pool. The CNID transits between MSC and RNC/BSC.
SET OFI: OFN="SX1", LOT=LOCMSC, NN=YES, NN2=YES, SN1=NAT, SN2=NATB, NPC="A80001", NP2C="801", NNS=SP24, NN2S=SP14, LAC="0755", LNC=K'86, **CNID=1**;

SET POOLBC
Set the timer for private traffic broadcasting message.The message is used to report MSC Server's traffic in private messag between MSC&RNC/BSC.Only after modifying P195 BIT0 can this message be enabled.
SET POOLBC: TMRVAL=60, STARTTIME=16&30;

SET MAPACCFG
Enable the TMSI reallocation function.
SET MAPACCFG: IFALTMSILU=YES, IFALTMSISA=YES
Allocate TMSI Upon Location Update: Set as YES
Allocate TMSI Upon Service Access: Set as YES
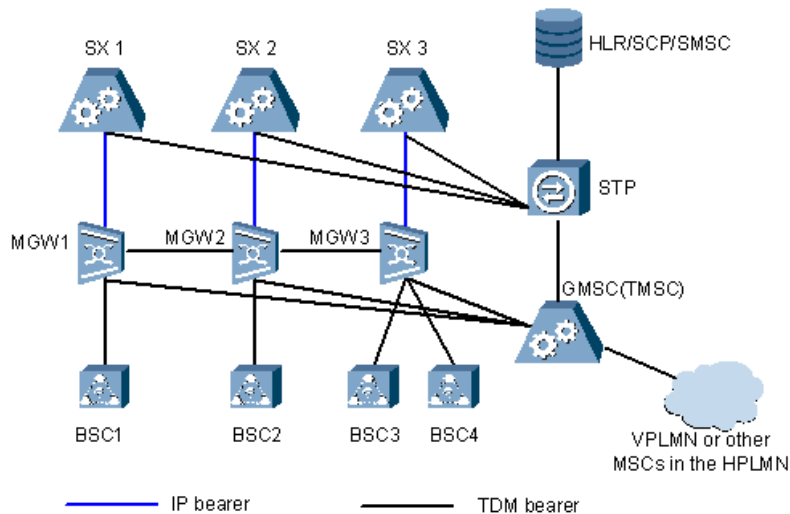
Data Configuration(UMG8900)

SET OFI

Configure CNID of local ofice,which is used to identify a unique MSC in Pool. The CNID transits between MSC and RNC/BSC.

Content

- General Introduction&Conceptions

- Data Configuration

- Evolution to Pool(2G network evolution to support pool)

Evolution to Pool
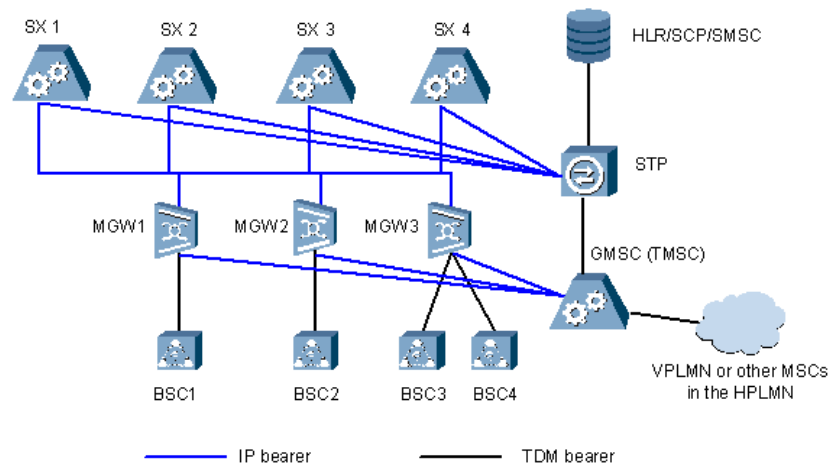
Networking diagram of an existing 2G network

SPC
- SX1: NA: **AA,** NAT: **DD**
- SX2: NA: **BB,** NAT: **EE**
- SX3: NA: **CC,** NAT: **FF**

Networking Description
- Mc: IP A interface: M2UA
- Nb: TDM bearer. Not all MGWs are directly connected.
- Voice: From MGW to GMSC in TDM
- Signaling: From MSC servers to MGW to STP in M3UA

Evolution to Pool

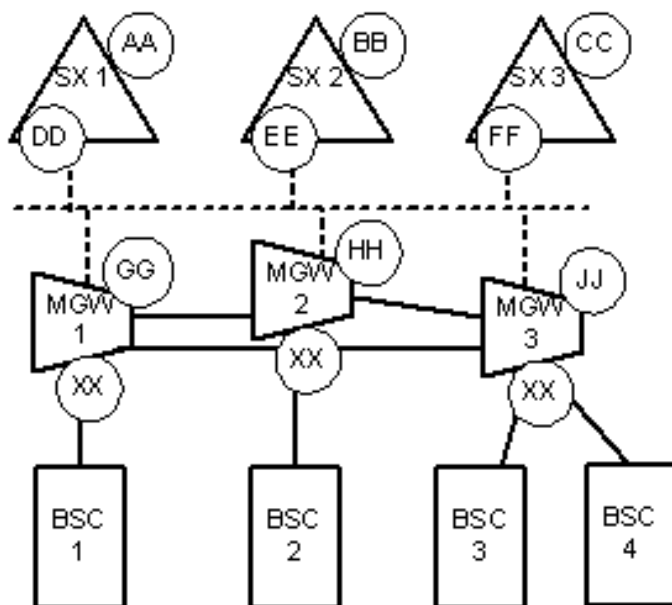## Networking diagram of a target network

SPC
- SX1: NA: **AA,** NAT: **DD**
- SX2: NA: **BB,** NAT: **EE**
- SX3: NA: **CC,** NAT: **FF**
- MGW1: NAT: **GG(To SX1),**NAT: **XX(To BSC)**
- MGW2: NAT: **HH(To SX1),**NAT: **XX(To BSC)**
- MGW3: NAT: **JJ(To SX1),**NAT: **XX(To BSC)**

Networking Description
- MSCs in pool are all connected by IP,using BICC
- Mc:IP
- A-interface: TDM
- Nb:IP,all MGW are connected by IP.

- The A-FLEX function is enabled on the MSC server and MGW. The BSC does not support the A-FLEX function
- The MGW is responsible for managing the A-interface circuits.
- The virtual MGW function is enabled on the MGW.

Evolution to Pool

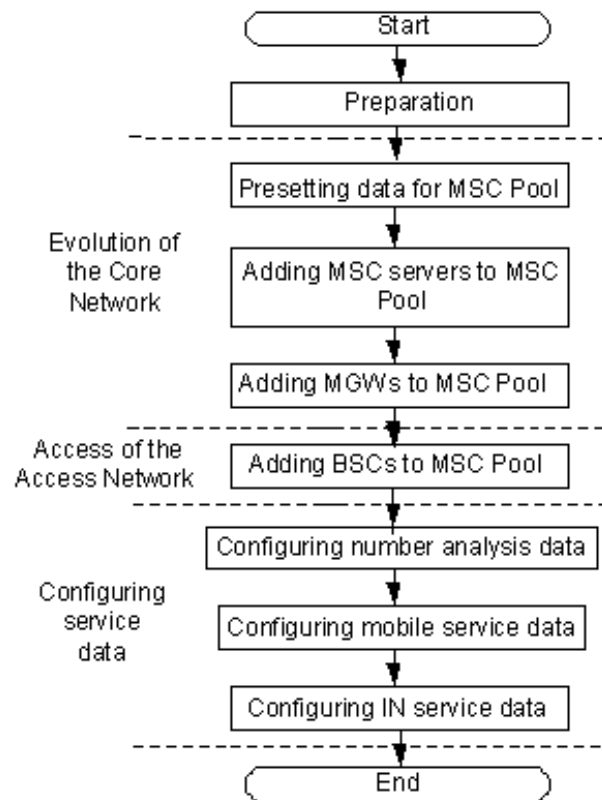## Networking diagram of a target network

SPC
- SX1: NA: **AA,** NAT: **DD**
- SX2: NA: **BB,** NAT: **EE**
- SX3: NA: **CC,** NAT: **FF**
- MGW1: NAT: **GG(To SX1),**NAT: **XX(To BSC)**
- MGW2: NAT: **HH(To SX1),**NAT: **XX(To BSC)**
- MGW3: NAT: **JJ(To SX1),**NAT: **XX(To BSC)**

Evolution to Pool

A. Basic data configuration flow of the MSC Pool

Evolution to Pool

B. Presetting data for MSC Pool

MSOFTX3000
Step1: Load license

Step2: Activate the A-FLEX function of all MSC servers
ADD CDBFUNC: CDBMN= 110, **FUNC=AFLEX-1**;

Step3: Set the NRI and default MSCs.
ADD NRIMSC: DESC="SX1", NRIV=1, MSCNO=K'861390801, VLRNO=K'861390801, MSCNM="SX1";
ADD NRIMSC: DESC="NULL NRI", NRIV=10, MSCNO=K'861390801, VLRNO=K'861390801, MSCNM="SX1", **NNRI=TRUE;**
ADD NRIMSC: DESC="SX2_NRI", NRIV=2, MSCNO=K'861390802, VLRNO=K'861390802, MSCNM="SX2", **LOCMSC=FALSE**;
ADD NRIMSC: DESC="SX3_NRI", NRIV=3, MSCNO=K'861390803, VLRNO=K'861390803, MSCNM="SX3", **LOCMSC=FALSE**;

Step4: Set the Non-broadcast LAI parameter
ADD LAISAI: SAI="460004444", LAISAINAME="Non-broadcast", MSCN="861390801", VLRN="861390801", **NONBCLAI=YES**, NONBCLAIT=HVLR;

Step5: Set the MSC Pool function information
SET POOLINFO: MSCPOOL=YES, SERVER=YES, MSCIDX=1, USRNUM=1000, NRILEN=6;

Evolution to Pool

B. Presetting data for MSC Pool

MSOFTX3000

Step6: Set all BSCs under each MSC server to support "using MGW to provide the A-FLEX function".
MOD BSC: DPC="10B", OPC="801", BSCNM="BSC1", **CAPABILITY=MGWPROXYAFLEX-1**;

Step7: Set the CN IDs of all MSC servers
SET OFI: OFN="SX1", LOT=LOCMSC, NN=YES, NN2=YES, SN1=NAT, SN2=NATB, NPC="A80001", NP2C="801", NNS=SP24, NN2S=SP14, LAC="0755", LNC=K'86, **CNID=1**;

Step 8: Set the parameters of the MSC Pool broadcast timer.
SET POOLBC: TMRVAL=60, STARTTIME=16&30;

Step 10: Start the TMSI reallocation function.
SET MAPACCFG: IFALTMSILU=YES, IFALTMSISA=YES;

UMG8900

**Step 1:** Add new signaling points for each MGW

Evolution to Pool

C. Core Network Evolution

1. Evolve the entire core network into an MSC Pool.

2. Add BSC 1, BSC 2, BSC 3, and BSC 4 into the MSC Pool.

Step1: Making MSC Server 1 and MGW 1 as an MSC Pool

l   Configure related M3UA data on MGW 1 and MSC server 1.

l   After configuring the data of the newly added M3UA, add mapping information on MGW 1. Set Manage Status corresponding to MSC server 1 to Inhibited.
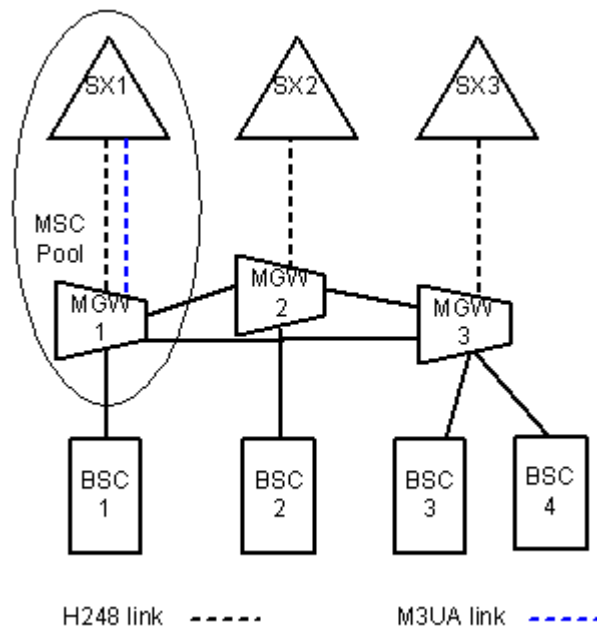
Evolution to Pool

Data Configuration In MSC Server 1
M3LE
M3DE
M3LKS
M3LNK
M3RT

Data Configuration In MGW 1
//Set MSC Pool function information
SET POOLINFO: MSCPOOLFLAG=YES, NRILEN=6, NULLNRI=10;
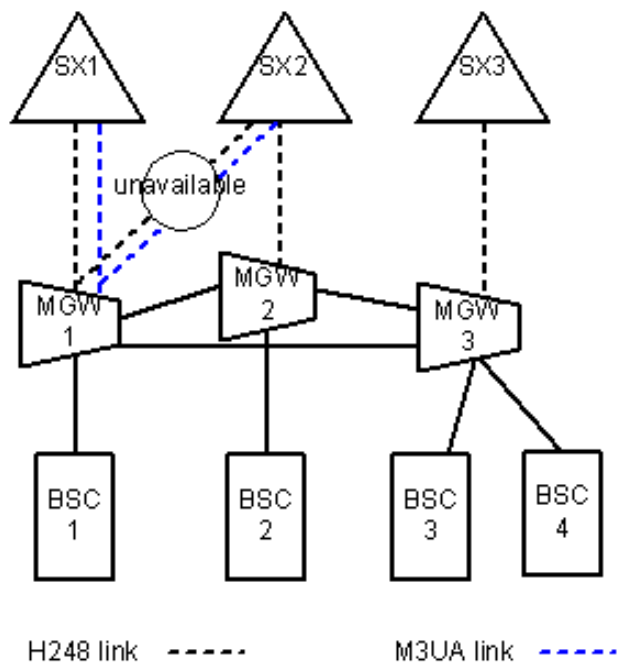
//Add the SIGTRAN configuration to MSC server 1
M3LE
M3DE
M3LKS
M3LNK

//Add a CN node of MSC server 1 and the mapping between NRI and MSC server 1
ADD CNNODE: CNID=1, CNNAME="SX1", MSCIDX=1, M3DEIDX=1, **MNGSTA=INHIBITED**;
ADD NRIMSC: NRIV=1, CNID=1;

Evolution to Pool

Step2: Adding MSC Server 2 into the MSC Pool

l Configure related data of the newly added H.248 link and M3UA link on MGW 1 and MSC server 2.

l After configuring the data of the newly added M3UA link and H.248 link, add mapping information on MGW 1. Set Manage Status corresponding to MSC server 2 to Inhibited.

Evolution to Pool

Data Configuration In MSC Server 2
ADD MGW
ADD H248LNK

ADD M3LE
ADD M3DE
ADD M3LKS
ADD M3LNK
ADD M3RT

Data Configuration In MGW 1
//Set VMGW in MGW1,and add H248 links to MSC Server 2
SET VMGW
ADD MGC
ADD H248LNK

//Add the SIGTRAN configuration to MSC server 2
ADD M3DE: DEX=2, DEN="SX2", DET=AS, NI=NATB, DPC=H'802, LEX=0,
NETTYPE=MSCPOOI;
M3LKS,M3LNK,M3RT

//Add a CN node of MSC server 1 and the mapping between NRI and MSC server 1
ADD CNNODE: CNID=2, CNNAME="SX2", MSCIDX=2, M3DEIDX=2, **MNGSTA=INHIBITED;**
ADD NRIMSC: NRIV=2, CNID=2;

Evolution to Pool

Step3: Adding MGW 2 into the MSC Pool

l   Configure related M3UA data on MGW 2 and MSC server 2, and use the existing H.248 data.

l   Configure related data of the newly added H.248 link and M3UA link on MGW 2 and MSC server 1.

l   After configuring the data of the newly added H.248 link and M3UA link, add mapping information on MGW 2. Set Manage Status corresponding to MSC server 1 to Inhibited.
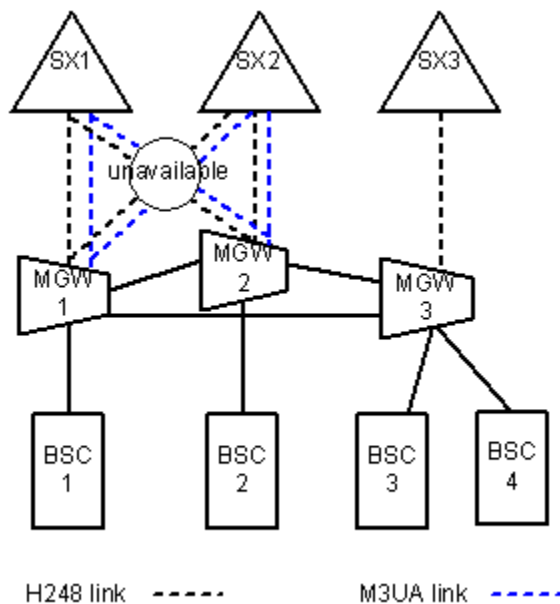
Evolution to Pool

Data Configuration In MSC Server 2
//M3UA to MGW 2
ADD M3LE
ADD M3DE
ADD M3LKS
ADD M3LNK
ADD M3RT

Data Configuration In MSC Server 1
//H248 to MGW 2
ADD MGW
ADD H248LNK

//M3UA to MGW 2
ADD M3LE
ADD M3DE
ADD M3LKS
ADD M3LNK
ADD M3RT

Evolution to Pool

Data Configuration In MGW 2

1 Set MSC Pool function information on MGW 2.
SET POOLINFO: MSCPOOLFLAG=YES, NRILEN=6, NULLNRI=0;

2 Set a virtual MGW on MGW 2, and add an H.248 link to interwork with MSC server 1.
SET VMGW
ADD MGC
ADD H248LNK

3 Add M3UA to MSC Server 1&MSC Server 2 where the Network Type is **MSC Pool**
//M3UA to MSC Server 1
ADD M3LE: LEX=0, LEN="MGW2_NATB", LET=SG, NI=NATB, OPC=H'2C;
ADD M3LE: LEX=1, LEN="MGW2_NATB_1", LET=SG, NI=NATB, OPC=H'902;
ADD M3DE: DEX=0, DEN="SX1", DET=AS, NI=NATB, DPC=H'801, LEX=0,
NETTYPE=MSCPOOI;
ADD M3DE: DEX=1, DEN="SX1", DET=AS, NI=NATB, DPC=H'801, LEX=1,
NETTYPE=MSCPOOI;
ADD M3LKS: LSX=0, LSN="SX1", ADX=0;
ADD M3RT: RN="SX1", DEX=0, LSX=0;
ADD M3LNK: LNK=0, BT=SPF, BN=1, LKN="SX1", LIP1="192.168.172.41", LP=2300,
RIP1="192.168.153.1", RP=2300, LSX=0, ASF=ACTIVE;

Evolution to Pool

Data Configuration In MGW 2
ADD M3DE: DEX=2, DEN="SX2", DET=AS, NI=NATB, DPC=H'802, LEX=0,
NETTYPE=MSCPOOI;
ADD M3DE: DEX=3, DEN="SX2", DET=AS, NI=NATB, DPC=H'802, LEX=1,
NETTYPE=MSCPOOI;
ADD M3LKS: LSX=1, LSN="SX2", ADX=1;
ADD M3RT: RN="SX2", DEX=1, LSX=1;
ADD M3LNK: LNK=1, BT=SPF, BN=1, LKN="SX2", LIP1="192.168.172.41", LP=5200,
RIP1="192.168.155.2", RP=5200, LSX=1, ASF=ACTIVE;

4   Add CN nodes of MSC server 1 and MSC server 2 and the mapping between NRI and
MSC server.The Manage Status is **Inhibited**.

ADD CNNODE: CNID=1, CNNAME="SX1", MSCIDX=1, M3DEIDX=1, **MNGSTA=INHIBITED**;
ADD NRIMSC: NRIV=1, CNID=1;

ADD CNNODE: CNID=2, CNNAME="SX2", MSCIDX=2, M3DEIDX=2, **MNGSTA=INHIBITED;**
ADD NRIMSC: NRIV=2, CNID=2;

Evolution to Pool

Step4: Adding MSC 3 into the MSC Pool

l   Configure related data of the newly added H.248 link and M3UA link on MGW 1, MGW 2, and MSC server 3.

l   After configuring the data of the newly added H.248 link and M3UA link, add mapping information on MGW 1 and MGW 2. Set Manage Status corresponding to MSC server 3 to Inhibited.
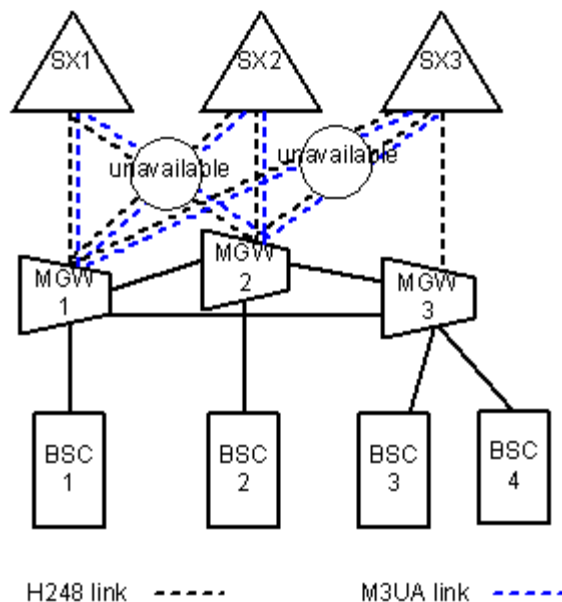
Evolution to Pool

Data Configuration In MSC Server 3

1 H248 Data and M3UA data to MGW1

2 H248 Data and M3UA data to MGW2

Data Configuration In MGW 1

1 Set new VMGW

2 Configure H248 Data to MSC Server 3

3 Configure M3UA Data to MSC Server 3

ADD M3DE: DEX=4, DEN="SX3", DET=AS, NI=NATB, DPC=H'803, LEX=0,
    NETTYPE=MSCPOOl;

ADD M3DE: DEX=5, DEN="SX3", DET=AS, NI=NATB, DPC=H'803, LEX=1,
    NETTYPE=MSCPOOl;

ADD M3LKS: LSX=2, LSN="SX3", ADX=2;

ADD M3RT: RN="SX3", DEX=2, LSX=2;

ADD M3LNK: LNK=2, BT=SPF, BN=1, LKN="SX3", LIP1="192.168.167.21", LP=3500,
    RIP1="192.168.151.3", RP=3500, LSX=2, ASF=ACTIVE;

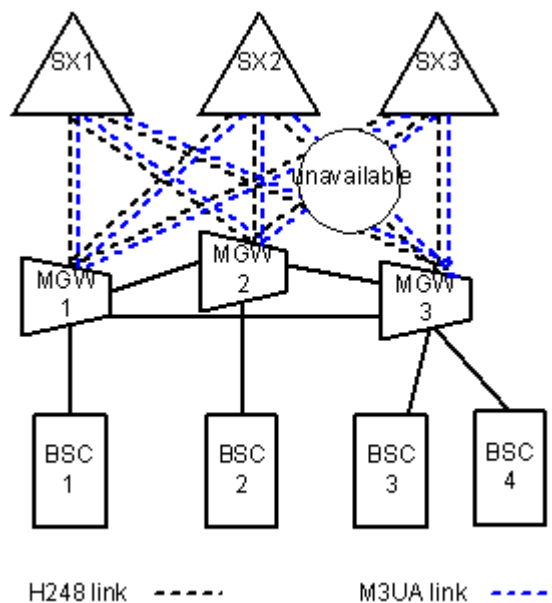4   Add CN nodes of MSC server 3 and the mapping between NRI and MSC server 3 on
    MGW1

Data Configuration In MGW 2

The same as that in MGW1

Evolution to Pool

Step5: Adding MGW 3 into the MSC Pool

l   Configure related M3UA data on MGW 3 and MSC server 3, and use the existing H.248 data.

l   Configure related data of the newly added H.248 link and M3UA link on MGW 3, MSC server 1 and MSC server 2.

l   After configuring the data of the newly added H.248 link and M3UA link, add mapping information on MGW 3. Set Manage Status corresponding to MSC server 1 and MSC server 2 to Inhibited.

Evolution to Pool

Data Configuration In MSC Server

1   Add M3UA data in MSC Server 3 to MGW 3

2   Add H248 data from MSC Server 1 to MGW 3;MSC Server 2 to MGW3

3   Add M3UA data from MSC Server 1 to MGW3;MSC Server 2 to MGW3

Data Configuration in MGW

1   Set MSC Pool function information on MGW 3

2   Set a virtual media gateway on MGW 3, and add an H.248 link for interworking with MSC server 1 and MSC server 2.

3   Add M3UA on MGW 3 for interworking with MSC server 1, MSC server 2, and MSC server 3 where **Network Type** is **MSCPOOl**.

4   Add CN nodes of MSC server 1, MSC server 2 and MSC server 3 and the mapping between NRI and MSC server 1, NRI and MSC server 2, and NRI and MSC server 3 on MGW 2 where **Manage Status** is **Inhibited**.

Summary:

The integration of core is finished,you can proceed if no followings are met

l   No fault alarm occurs.

l   The service dialing test is normal.

l   Entire system runs well for at least one periodic location update.

Evolution to Pool

D. Integrate with the Access Network

The BSC is added into the MSC Pool by following mode:

Mode 1: Allocate timeslots in the preliminary physical trunks and links. During the evolution of the core network, delete preliminary links and configure new links.

Mode 2: Add the physical trunks for the BSC. Configure links on the new trunk without affecting the current services. During the evolution of the core network, change physical trunks of the BSC, and delete preliminary links.

Mode 1 will interrupt the service for long time,mode 2 requires more trunks resource.

Evolution to Pool

Add BSC1 into MSC Pool,firstly into MSC1 and MGW1

Data Configuration on MSC Server

Step1   Add the M3UA destination entity and M3UA route on MSC server 1 for interworking with BSC 1.

ADD M3DE: DENM="TO_BSC1_NATB", NI=NATB, DPC="10B", DET=SP;

ADD M3RT: RTNM="TO_BSC1_NATB", DENM="TO_BSC1_NATB", LSNM="TO_MGW1_NATB";

Step2 Disable the circuit management switch of BSC 1 on MSC server 1.

MOD BSC: DPC="10B", OPC="801", BSCNM="BSC1", **MGWMAC=YES**;

Data Configuration on the MGW Based on Mode 2

Step1   Set Manage Status of MSC server 1 to **Normal** on MGW 1. Activate the MGW. (MSC Server 2,3 are still inhibited)

Step 2   Add the TDMIU data for interworking with BSC 1, and set **Relay type** to **ATRUNK**

ADD TDMIU: BT=E32, BN=6, TIDFV=64, TIDLV=127, VMGWID=0, **RT=ATRUNK;**

Step 3   Add configurations of narrowband signaling (N7DSP) for interworking with BSC 1, and set **Network Type** corresponding to N7DSP is **MSCPOOI**.

ADD N7DSP: INDEX=0, NAME="BSC1", NI=NATB, DPC=H'10b, OSPINDEX=0, **NETTYPE=MSCPOOI;**

ADD N7DSP: INDEX=1, NAME="BSC1_1", NI=NATB, DPC=H'10b, OSPINDEX=1, **NETTYPE=MSCPOOI;**

ADD N7LKS: INDEX=0, NAME="TO_BSC1", DSPIDX=0;

ADD MTP2LNK: LNKNO=0, LNKNAME="TO_BSC1", IFBT=E32, IFBN=6, E1T1N=2, STRTTS=18, ENDTS=18, SPFBN=1, SUBBN=0, SUBBCID=0, LNKTYPE=MTP364K;

ADD N7LNK: INDEX=0, NAME="TO_BSC1", LKSIDX=0, SLC=2, SNDSLC=2, TESTCODE=170, MTP2NO=0;

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Evolution to Pool

Step 4   Add related configurations of A-interface circuit management

ADD ACPOOL: ACN=0, BC=SFR1-1&SFR2-1&SFR3-1&SHR1-1&SHR2-1&SHR3-1&DFR-1&DHR-1;
ADD BSC: BSCID=0, BSCN="BSC 1", DPC=H'10b, NI=NATB, ACN=0, MEN=ON;
ADD AIETG: TGN=0, TGM="BSC1", DPC=H'10b, NI=NATB;
ADD AIETKC: TGN=0, TIDS=64, TIDNUM=32, CIC=64;

Then add BSC1 into MSC Server 2 and 3 by the same one,after configuration,MGW1 should active the VMGWs that are connecting to MSC Server 2 and 3.

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Thank you

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