idcs500
Networking Software
Programming Guide

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Issued: August 10, 2001

A. Networking Setup

1. QSIG trunk setup

MMC 820. System Link ID
- Self : System Self ID, mandatory
- No.xx: Connected System ID, optional → For similar display intercom call about extension number and station group number

MMC 821. QSIG Trunk

MMC 823. Networking COS
- Use Default data

MMC 825. Networking Options
- Name:Number Info : Append number information at name information
- Remote VM : For centralized VM

2. LCR setup

MMC 210. LCR Enable

MMC 710. LCR Digits
- Node number + Extension number : For intercom call at another node. → Node number from network LCR translation
- Node number + Station group number : For intercom call at another node. → Node number from network LCR translation
- Outgoing digits : For outgoing via another node trunks → Append node number by LCR insert digit

MMC 711. LCR Times

MMC 712. LCR Routes
- If 2 or more QSIG PRI connection then separate routing path

MMC 713. LCR Modify Digits
- If outgoing via another node trunks then append node number and index number by insert digit

3. Dialing setup

MMC 714. DID Digits Translation
- Extension number : repeat
- Station group number : repeat
- Outgoing index from another node : set DID pass-through

MMC 724. Numbering Plan
- Unique sets network LCR number, extension number and station group number
- For centralized attendant, operator code change to network LCR number

MMC 824. Network LCR Translation
- Extension number : Append node number

- Station group number : Append node number
- For centralized attendant code : Translate to node number + station group number

4. Grouping

MMC 601. Station Groups

MMC 603. Trunk Groups

B. Networking Call

1. Basic Call

- Internal call : Dialing another node's extension or station group number for intercom or transit call.
- Incoming call : Assign destination to network LCR code at DID translation → using DID pass-through.
- Outgoing call : Assign destination to LCR code at DID translation → using DID pass-through.

2. Unique numbering plan

- Assign another node's extension or station group start number.
- Using network LCR code
- Extension and station group numbers are only unique.

3. Number and name display

- Calling party : Make comparing network LCR translation from dialing number.
- Called party : Make comparing network LCR translation from calling party number remove node ID.
- Making until network LCR translation's size.
- If dialed number and connected number are different, in case of forward or transfer, use called or connected name information
- Append extension number at name information → Set MMC 825. NAME:NUMB APPEND:YES
- Number and name save opposite number and name field.
- When LCD display, saved extension number and name display, instead of trunk number and name.
- CONP key is meaningless.

4. Transfer and recall

- Operation is the same normal internal call.
- Transfer recall only when transfer by join. Transfer not recall when transfer by rerouting.
  → Set 823. TRSF REROUT : N
- If transferred extension doesn't answer until transfer recall time then recall to transferring extension.
- Transfer to xxxx and Transfer fm xxxx display. Recall form xxxx display.
- When transfer, new called name and connect name information transmitted. Append extension number and name at name information → Set MMC 825. NAME:NUMB APPEND:YES
- Append extension number at called name, connected name and calling name information.
- If transfer destination sets forward then follow forward operation.
- In case of transfer to voice mail in same node, same operation that normal flow.
- In case of transfer to voice mail in different node, not same operation that normal flow. → Need more operation.
- In case of transfer to extension that extension set forward to voice mail, not same operation that normal flow. → Need more operation.

5. Route optimization

- In case of calling extension and connected extension are same nodes, make normal intercom call and clear PRI connection.
- In case of calling extension and connected extension are different nodes, use PR (Path

Replacement), PTHR key emulation.

- When QSIG call ring answer, route optimize timer attach. When the timer expire, calling party check.
- In case of transfer by join, when transfer update information receive, route optimize timer attach.

6. Centralized Attendant

- Each node has local operator group for attendant recall.
- Assign 0 at network LCR code.
- Don’t support centralized TAPI service (Smart Operator, …).

C. Networking Features

1. Name Identification

- Name information transmitted following COS set.
- Use default data : all support presentation, all not support restriction, CONP level is 3.

2. Forwarding

- CFU(Call Forward Unconditional), CFB(Call Forward Busy), CFNR(Call Forward No Reply) service
- In case of can make extension or station group number by network LCR translation, CFU to xxxx display.
- Cannot set previous forward and networking forward same time.
- Must set MMC 400. TRK FORWARD: ON.
- Must set COS allow.
- Forward call is always reroute from calling party. → In case of forward destination is same node, make internal forward call.
- Do not support rerouting count. → Need change.
- FWD→ xxxx:Riging and xxxx FWD form xxxx display. Forward extension name display.
- QSIG call, trunk incoming and intercom call are can make networking forward.

3. Call Offer (Camp-On)

- In case of PATH RETAIN:N, auto camp on.
- Follow COS set.

4. Call Intrusion (Barge-In)

- In case of CALL OFFER:Y and PATH RETAIN:N, CI does not work.
- CI calling party capability level should be higher than CI called partys protection level.
- Follow COS set.

5. Call Completion (Callback)

- CCBS(Call Completion Busy) and CCNR(Call Completion No Replay) service
- Use virtual connection
- Many case COS set and need test.
- Follow COS set.

6. DND & DND override

- Set MMC 400. TRK INC DND: OFF.
- Follow COS set. Use default data → Not support DND override.
- DNDO calling party capability level should be higher than DNDO called partys protection level.
- In case of DND TONE:Y, connect DND tone during 5 seconds after disconnect call.
- Not support DND display.

7. Path Replacement

- When press PTHR key, the call path replaced
- Both node's COS should be Y set.

8. Centralized VM

- Remote call to voice mail : From QSIG trunk to voice mail, send call type ICM call instead of

DID call with caller extension number.

- In case of forward call, append forward extension information at calling name field. → Set MMC 825. NAME:NUMB APPEND:YES
- In case of MMC 824 MB:Y, automatically make remote mail box. → For test only.
- VM call scenario : system TEL message send to voice mail, voice mail TEL status send to system, if the TEL is remote extension number, system MWI Activate or Deactivate message send to remote system, remote system VMMSG LED on or off.
- In case of MMC 825.USE REMOTE VM:YES and exist MMC 825. REMOTE VM NUMBER, if press VMMSG key then call to remote voice mail number via network LCR translation.
- When phone restart, in case of MMC 825.USE REMOTE VM:YES and exist MMC 825. REMOTE VM NUMBER, MWI Interrogate message send to remote voice mail.
- When receive MWI Interrogate message, TEL message send to voice mail.
- MWI message are buffering and every 2.5 seconds send one message.
- Normal voice mail only service. → AME, MEMO, CR and other voice mail features are not service.
- Not support VT key
- Not support display

9. Original features

- Transfer and recall display, Transfer retrieve
- Call forward display, Internal/external call forward
- CID, ANI and CLI transfer to network node
- Call hold and recall
- LCR and DID pass-through
- Traveling Class Of Service

D. Networking Programming Example

	System A	System B	System C
System Description	Terminate Node 1 QSIG. PRI 701: Connected system B 1 Normal PRI 725: Connect to PSTN 1 CADENCE 5249: Centralized VM Centralized Attendant	Transit Node 2 QSIG. PRI 701: Connect to system A 725: Connect to system C	Terminate Node 1 QSIG. PRI 701: Connect to system B
System Link ID	002	003	004
Extension number	2xx	3xx	4xx
Station Group number	52xx	53xx	54xx
Trunk number	7xx	7xx	7xx
Trunk Group number	8xx	8xx	8xx

MMC	System A	System B	System C
206. Barge-In Type	With Tone	With Tone	With Tone
210. Tenant On/Off	LCR ENABLE : ON ICM EXT FWD : ON	LCR ENABLE : ON ICM EXT FWD : ON	LCR ENABLE : ON ICM EXT FWD : ON
400. Trunk On/Off	TRK INC DND : OFF TRK FORWARD : ON	TRK INC DND : OFF TRK FORWARD : ON	TRK INC DND : OFF TRK FORWARD : ON
601. Station Groups	Group: Type Remarks 5200:Operator Centralized ATT 5249:Cadence Centralized VM	Group: Type Remarks 5300:Operator Local ATT	Group: Type Remarks 5400:Operator Local ATT
603. Trunk Groups	Group Member Remarks 800 701-723 QSIG trunks 801 725-747 Normal trunks	Group Member Remarks 800 701-723 QSIG trunks 801 725-747 QSIG trunks	Group Member Remarks 800 701-723 QSIG trunks
701. Class Of Service	DND : Yes DND OVRD : No FORWARD : Yes OUT TRSF : Yes OVERRIDE : Yes SECURE : No	DND : Yes DND OVRD : No FORWARD : Yes OUT TRSF : Yes OVERRIDE : Yes SECURE : No	DND : Yes DND OVRD : No FORWARD : Yes OUT TRSF : Yes OVERRIDE : Yes SECURE : No
710. LCR Digits	Entry Digit Length RT 1 003 6 1 2 004 6 1 3 3 10 2	Entry Digit Length RT 1 002 6 1 2 004 6 2 3 3 10 3	Entry Digit Length RT 1 002 6 1 2 003 6 1 3 3 10 2
711. LCR Times	SUN(A) HHMM:0000 LCRT:1 . SAT(A) HHMM:0000 LCRT:1	SUN(A) HHMM:0000 LCRT:1 . SAT(A) HHMM:0000 LCRT:1	SUN(A) HHMM:0000 LCRT:1 . SAT(A) HHMM:0000 LCRT:1
712. LCR Routes	(01:1) C:1 G:800 M:--- (02:1) C:1 G:801 M:---	(01:1) C:1 G:800 M:--- (02:1) C:1 G:801 M:--- (03:1) C:1 G:800 M:001	(01:1) C:1 G:800 M:--- (02:1) C:1 G:800 M:001
713. LCR Modify Digits		Entry Delete Insert Append 1 0 002999	Entry Delete Insert Append 1 0 002999

714. DID Translations	Entry Digits Destination Delete 1 2** 1-6: B 0 2 3** 1-6: 3 1 3 4** 1-6: 4 1 4 52** 1-6: B 0 5 53** 1-6: 52 2 6 54** 1-6: 53 3 7 999 1-6: 9 3	Entry Digits Destination Delete 1 3** 1-6: B 0 2 53** 1-6: B 0	Entry Digits Destination Delete 1 4** 1-6: B 0 2 54** 1-6: B 0
722. Key Programming	PTHR,CONP,VMMSG key assign	PTHR,CONP,VMMSG key assign	PTHR,CONP,VMMSG key assign
724. Numbering Plan	Station Number : 2** Station Group No. : 52** Features : LCR:9, OPER:0 Network LCR No. : 01:3 02:4 03:53 04:54	Station Number : 3** Station Group No. : 53** Features : LCR:9, OPER:NONE Network LCR No. : 01:2 02:4 03:52 04:54 05:0	Station Number : 4** Station Group No. : 54** Features : LCR:9, OPER:NONE Network LCR No. : 01:2 02:3 03:52 04:53 05:0
820. System Link ID	SELF : 002 NO.01: 003 NO.02: 004	SELF : 003 NO.01: 002 NO.02: 004	SELF : 004 NO.01: 002 NO.02: 003
821. QSIG Trunks	701: QSIG trunk --- Connected to system B 725: Normal trunk --- Connected to PSTN	701: QSIG trunk --- Connected to system A 725: QSIG trunk --- Connected to system C	701: QSIG trunk --- Connected to system B
823. Networking COS	CI PROTECT : 1 DND TONE : Y Others :Use default data	CI PROTECT : 1 DND TONE : Y Others :Use default data	CI PROTECT : 1 DND TONE : Y Others :Use default data
824. Networking LCR Translations	Entry(No) Digit Size Max MB 1 (3) 0033 3 6 Y 2 (4) 0044 3 6 Y 3 (53) 00353 4 7 N 4 (54) 00454 4 7 N	Entry(No) Digit Size Max MB 1 (2) 0022 3 6 N 2 (4) 0044 3 6 N 3 (52) 00252 4 7 N 4 (54) 00454 4 7 N 5 (0) 0025200 1 7 N	Entry(No) Digit Size Max MB 1 (2) 0022 3 6 N 2 (3) 0033 3 6 N 3 (52) 00252 4 7 N 4 (53) 00353 4 7 N 5 (0) 0025200 1 7 N
825. Networking Options	NAME:NUMB APPEND : YES USE REMOTE VM : NO REMOTE VM NUMBER :	NAME:NUMB APPEND : YES USE REMOTE VM : YES REMOTE VM NUMBER : 5249	NAME:NUMB APPEND : YES USE REMOTE VM : YES REMOTE VM NUMBER : 5249

E. Networking Call Example

1. **Basic Call**
   - Intercom call : 2xx dialing 3xx or 4xx, 3xx dialing 4xx or 2xx, 4xx dialing 2xx or 3xx
   - Incoming call: System A trunk 725 incoming to 3xx or 4xx
   - Outgoing call: 3xx or 4xx dialing 9+3055922900 --- dialing to system A trunk 725

2. **Route Optimization**
   - 2xx conversation with 310, 2xx transfer to 320 and hang up, 320 answer and conversation with 310, after 10 seconds make intercom call and PRI connect release
   - 3xx conversation with 710, 3xx transfer to 220 and hang up, 220 answer and conversation with 710, after 10 seconds make new connection
   - Forward call is always re-route from calling party.

3. **Centralized Attendant**
   - 3xx or 4xx dial 0 to 5200 at system A
   - Does not support CTI
   - Does not support Attendant recall, support transfer recall

4. **CT (Transfer & Recall)**
   - Transfer by Join : MMC 823 CT RE-ROUTE : N --- 2xx conversation, transfer to 3xx or 4xx, 2xx hang up when 3xx or 4xx answer or not. I f 3xx or 4xx does not answer until transfer recall time then recall to 2xx
   - Transfer by Reroute : MMC 823 CT RE-ROUTE : Y ---2xx conversation, transfer to 3xx or 4xx, 2xx hang up when 3xx or 4xx answer or not. I f 3xx or 4xx does not answer until transfer recall time then continue ringing at 3xx or 4xx
   - Transfer to Remote VM --- need check mailbox
   - Transfer to 2xx, 2xx Forwarded to Remote VM --- need check mailbox

5. **CF (Forwarding)**
   - CFU, CFB, CFNR service
   - Follow COS set status
   - If CF set then CFU/CFB/CFNR to xxx display
   - Calling party --- FWD->xxx:Ringing display
   - Called party --- xxx FWD from xxx display, Forwarded extension name does not display

6. **CO (Call Offer) --- Camp-On**
   - Use CAMP key
   - Follow COS set status
   - If MMC 823 PATH RETAIN : Y then Auto Camp-On

7. **CI (Call Intrusion) --- Barge-In**
   - Use BARGE key
   - Follow COS set status
   - If MMC 823 PATH RETAIN : Y and CO : Y then CI does not work

8. **DND**
   - Follow COS set status --- DND Override default N set

- If MMC 823 DND TONE : Y then connect DND Tone during 5 seconds after hang up

9. CC (Call Completion) --- Callback

- CCBS, CCNR service
- Follow COS set status
- Use CBK key

10. PR (Path Replacement)

- Follow COS set status
- Use PTHR key
- If press PTHR key then new path setup

11. Centralized VM

- Use Remote VM
- Mailbox making by manual --- Auto making for test.
- Forwarded to VM or Transferred to VM --- need check mailbox
- If press VMMSG key when MMC 825, USE REMOTE VM : YES and REMOTE VM NUMBER exist, then call to remote VM number.
- AME, MEMO, CR and other VM features --- Not support