Example #1

In this example, all MCPTT groups **share the same service area list**.

For example, LS MME Nodal test case configure

- Number of subscribers = 10
- # of subscribers in each MCPTT group = 5 (subscriber 0-4 are in the first group, and subscriber 5-9 are in the second group)
- # of eNodeB = 2
- Service Area Id configured for eNodeB#1 = 100, for eNodeB#2 = 101

Configuration:

Subscriber	MCPTT Group Index	Service Area ID	eNodeB Index
0	0	100	0
1	0	101	1
2	0	100	0
3	0	101	1
4	0	100	0
5	1	101	1
6	1	100	0
7	1	101	1
8	1	100	0
9	1	101	1

On IP Application Node test case, to match the service areas, we have two configuration options:

Option 1: Using one TMGI :

This way, each MCPTT group will have one TMGI and for that TMGI allocated by BM-SC, 100 and 101 will be the associated service areas.

Note:

The "Number of TMGIs per MCPTT

Option 2: Using two TMGIs

This way, each MCPTT group will have two TMGI, and for the first TMGI allocated by BM-SC, 100 will be the service area ID associated with it, and for the second TMGI, the associated service area ID will be 101.

Example #2

In this example, more than one MME Nodal test cases are used, some MCPTT groups are on totally different service areas from the other groups.

we have 2 MME Nodal test cases. Some MCPTT groups are formed with subscribers from Test Case #1, the rest of the groups are subscribers from Test Case #2.

MME Nodal Test Case #1:

- Number of subscribers = 10
- # of subscribers in each MCPTT group = 5
- # of eNodeB = 1
- Starting Service Area Id = 100
- # of Service Areas per eNodeB = 1

MME Nodal Test Case #2:

- Number of subscribers = 10
- # of subscribers in each MCPTT group = 5
- # of eNodeB = 2
- Starting Service Area Id = 200
- # of Service Areas per eNodeB = 2

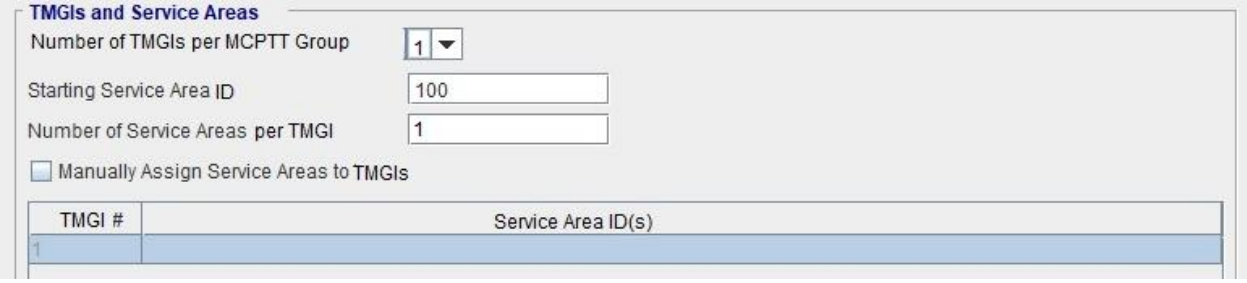
Configuration:

Test Case Index	Subscriber	MCPTT Group Index	Service Area ID	eNodeB Index
0	0	0	100	0
0	1	0	100	0
0	2	0	100	0
0	3	0	100	0
0	4	0	100	0
0	5	1	100	0
0	6	1	100	0
0	7	1	100	0
0	8	1	100	0
0	9	1	100	0
1	0	2	200, 201	0
1	1	2	202, 203	1
1	2	2	200, 201	0
1	3	2	202, 203	1
1	4	2	200, 201	0
1	5	3	202, 203	1
1	6	3	200, 201	0
1	7	3	202, 203	1
1	8	3	200, 201	0
1	9	3	202, 203	1

In this example, because different MCPTT groups have different service area configurations, it **cannot** be tested using the same IP Application Node test case.

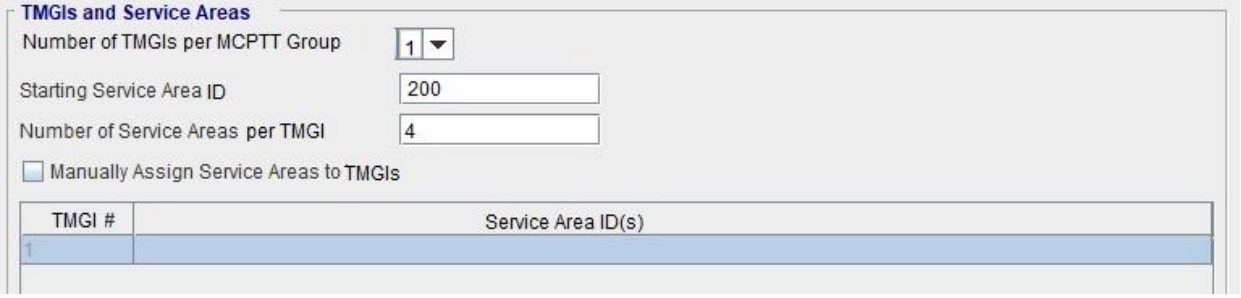
However, we can have **two** IP Application Node test case to emulate two GCS-AS.

MCPTT group 0 and 1 can be tested against IP Application Node test case #1 with the following service area configuration:

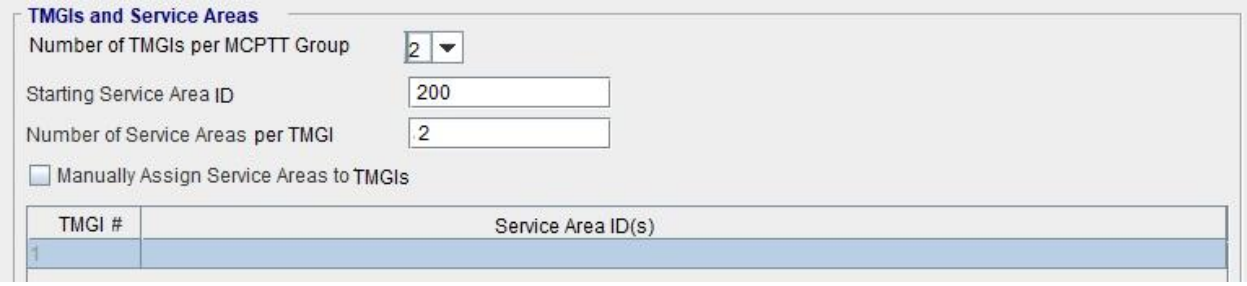


MCPTT group 2 and 3 can be tested against IP Application Node test case #2 with the following service area configurations:

Using one TMGI per group:



Or using 2 TMGIs per group:



Example #3

In this we have 3 MME Nodal test cases. Some MCPTT groups **are formed with 3 subscribers from Test Case #1 and 2 subscribers from Test Case #2**. The rest of the groups are all subscribers from Test Case #3.

MME Nodal Test Case #1:

- Number of subscribers = 6
- # of subscribers in each MCPTT group = 5
- # of eNodeB = 1
- Starting Service Area Id = 100
- # of Service Areas per eNodeB = 1

MME Nodal Test Case #2:

- Number of subscribers = 4
- # of subscribers in each MCPTT group = 5
- # of eNodeB = 2
- Starting Service Area Id = 200
- # of Service Areas per eNodeB = 2

MME Nodal Test Case #3:

- Number of subscribers = 10
- # of subscribers in each MCPTT group = 5
- # of eNodeB = 2
- Starting Service Area Id = 400
- # of Service Areas per eNodeB = 2

Configuration:

Test Case Index	Subscriber	MCPTT Group Index	Service Area ID	eNodeB Index
0	0	0	100	0
0	1	0	100	0
0	2	0	100	0
1	0	0	200,201	0
1	1	0	202, 203	1
0	3	1	100	0
0	4	1	100	0
0	5	1	100	0
1	2	1	200,201	0
1	3	1	202,203	1
2	0	2	400, 401	0
2	1	2	402,403	1
2	2	2	400, 401	0
2	3	2	402,403	1
2	4	2	400, 401	0
2	5	3	402,403	1
2	6	3	400, 401	0
2	7	3	402,403	1
2	8	3	400, 401	0
2	9	3	402,403	1

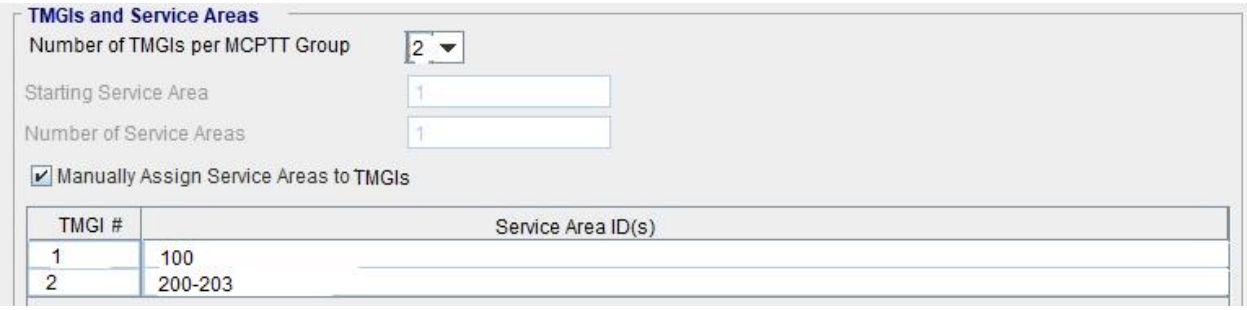
In this example, again, because different MCPTT groups have different service area configurations, it **cannot** be tested using a single IP Application Node test case.

However, we can have **two** IP Application Node test case to emulate two GCS-AS.

MCPTT group 0 and 1 can be tested against IP Application Node test case #1 with the following service area configuration:

Using one TMGI

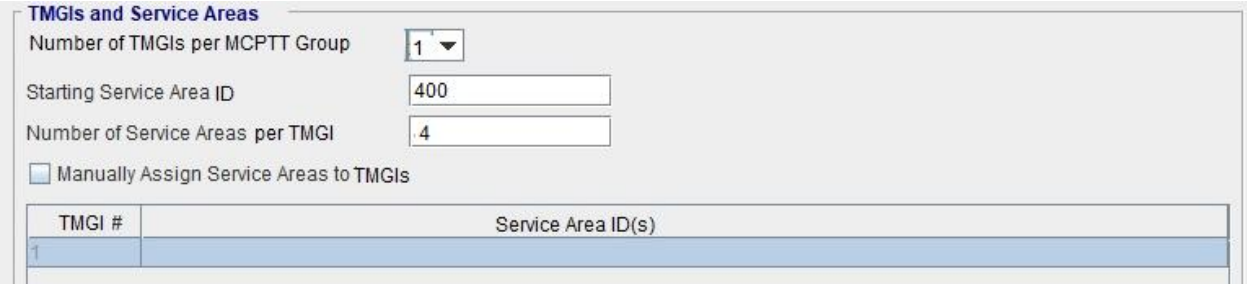
Or using two TMGIs



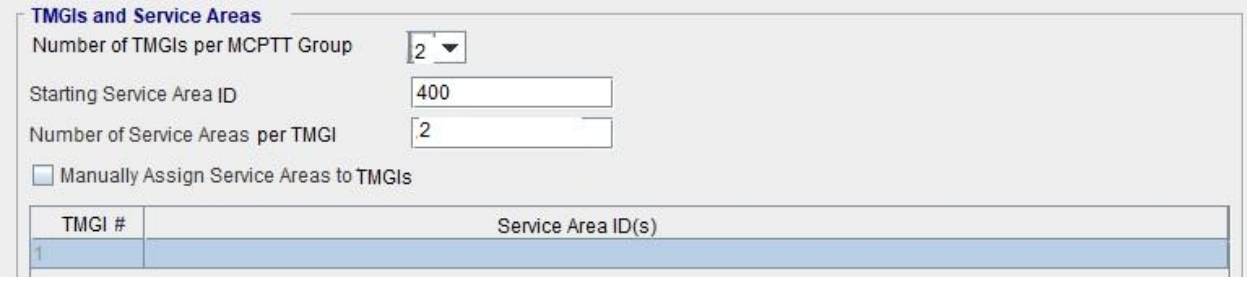
Or even more than two TMGIs, which is not shown here.

MCPTT group 2 and 3 can be tested against IP Application Node test case #2 with the following service area configurations:

Using one TMGI per group:



Or using 2 TMGIs per group:



Or even more than two TMGIs, which is not shown here.

Example #4

In this example, many MCPTT groups have **all different** service area list.

For example, LS MME Nodal test case configure

- Number of subscribers = 1000
- # of subscribers in each MCPTT group = 5 (subscriber 0-4 are in the first group, and subscriber 5-9 are in the second group, and so on)
- # of eNodeB = 1000
- Service Area Id configured for eNodeB#1 = 100, for eNodeB#2 = 101, and so on

In this case, every subscriber is on a unique eNodeB, respectively. Also, each subscriber has unique service area.

Configuration:

Subscriber	MCPTT Group Index	Service Area ID	eNodeB Index
0	0	100	0
1	0	101	1
2	0	102	2
3	0	103	3
4	0	104	4
5	1	105	5
6	1	106	6
7	1	107	7
8	1	108	8
9	1	109	9
...	...	...	...

...	...	...	...
995	199	1095	995
996	199	1096	996
997	199	1097	997
998	199	1098	998
999	199	1099	999

From the table above, we can see MCPTT group #0 covers service area 100-104, group #1 covers service area 105-109, and so on, till the last group #199 covers service area 1095-1099.

In this case, with the current design, 200 IP Application test cases must be used to emulate 200 GCS-AS, so that all 200 groups can be tested again them.

This will be the caveat of the current LS emulated GCS-AS, since 200 IP Application test cases seem infeasible.