

13 Topologies of the BTS

About This Chapter

The BTS topologies are classified into star, chain, tree, and ring topologies. In practice, the topologies described above are used together. Using the networking mode reasonably can improve the service quality and save the investment on the transmission equipment.

13.1 Star Topology of the BTS

The star topology is commonly used in cities with large population.

13.2 Chain Topology of the BTS

The chain topology is suitable for the belt-shaped loosely populated areas, such as highways and railways.

13.3 Tree Topology of the BTS

The tree topology is suitable for the complicated networks and sites, such as vast areas with centralized hot spots and small areas with a lot of intersections.

13.4 Ring Topology of the BTS

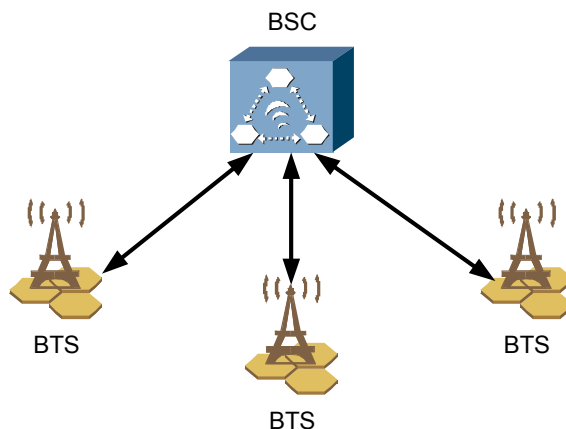
The ring topology is commonly used. The ring topology can be used as much as possible due to its good self-healing capability.

13.1 Star Topology of the BTS

The star topology is commonly used in cities with large population.

Figure 13-1 shows the star topology of the BTS.

Figure 13-1 Star topology of the BTS



Advantages of the Topology

- In the star topology, each BTS directly connects to the BSC with E1 cables. This facilitates the maintenance, construction, and capacity expansion of the network.
- Because the signals are directly transmitted to the BSC, the reliability of the link is high.

Disadvantages of the Topology

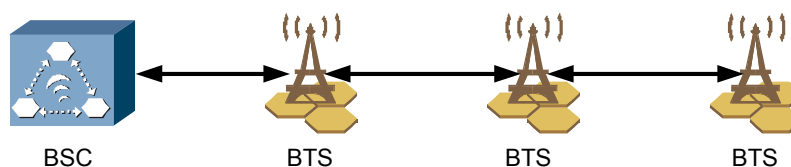
Compared with other topologies, the star topology requires much more transmission cables.

13.2 Chain Topology of the BTS

The chain topology is suitable for the belt-shaped loosely populated areas, such as highways and railways.

Figure 13-2 shows the chain topology of the BTS.

Figure 13-2 Chain topology of the BTS



Advantages of the Topology

The chain topology reduces cost in transmission equipment, construction, and transmission link lease.

Disadvantages of the Topology

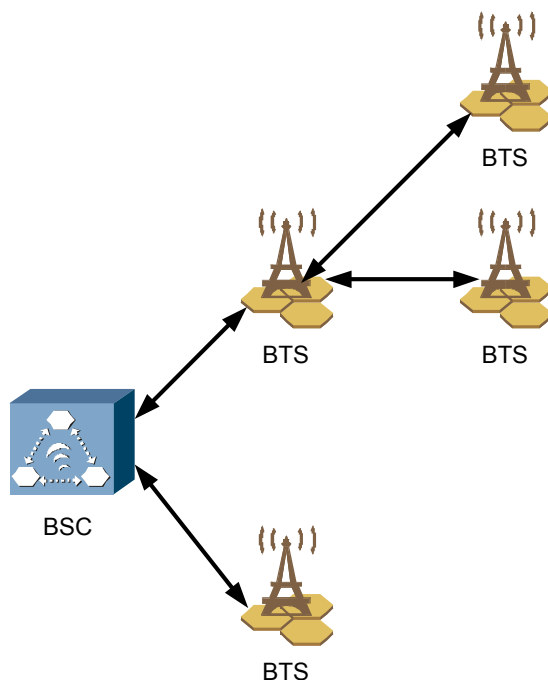
- Because signals go through many nodes, the transmission reliability in the chain topology is low.
- Faults in the upper-level BTSs may affect the lower-level BTSs.
- The number of levels in a chain network cannot exceed five.

13.3 Tree Topology of the BTS

The tree topology is suitable for the complicated networks and sites, such as vast areas with centralized hot spots and small areas with a lot of intersections.

Figure 13-3 shows the tree topology of the BTS.

Figure 13-3 Tree topology of the BTS



Advantages of the Topology

The tree topology requires less transmission cables than the star topology does.

Disadvantages of the Topology

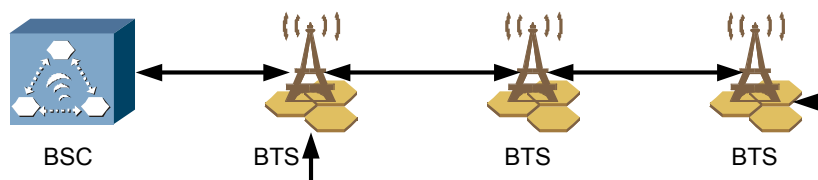
- Because signals go through many nodes, the transmission reliability is low. It is difficult for maintenance and engineering.
- Faults in the upper-level BTSs may affect the lower-level BTSs.
- Capacity expansion is difficult.
- The number of levels in the tree cannot exceed five.

13.4 Ring Topology of the BTS

The ring topology is commonly used. The ring topology can be used as much as possible due to its good self-healing capability.

Figure 13-4 shows the ring topology of the BTS.

Figure 13-4 Ring topology of the BTS



Advantages of the Topology

The ring networking has strong self-healing capability. If one point of the link breaks, the ring network can break into a chain network, and the service is not interrupted.

Disadvantages of the Topology

In the ring topology, there is always one section that does not transfer data.