The use of the coupling links to exchange STP messages has the following advantages:

- By using the same links to exchange STP messages and CF messages in a Parallel Sysplex, STP can scale with distance. Servers that are exchanging messages over short distances, such as IFB or ICA SR links, can meet more stringent synchronization requirements than servers that exchange messages over long IFB LR links (distances up to 100 km (62 miles)). This advantage is an enhancement over the IBM Sysplex Timer implementation, which does not scale with distance.
- Coupling links also provide the connectivity that is necessary in a Parallel Sysplex. Therefore, a potential benefit can be realized of minimizing the number of cross-site links that is required in a multi-site Parallel Sysplex.

Between any two servers that are intended to exchange STP messages, configure each server so that at least two coupling links exist for communication between the servers. This configuration prevents the loss of one link from causing the loss of STP communication between the servers. If a server does not have a CF LPAR, timing-only links can be used to provide STP connectivity.

The z14 server does not support attachment to the IBM Sysplex Timer. A IBM z14™ server cannot be added into a Mixed CTN. It can participate in an STP-only CTN only.

STP enhancements on z14

Important: For more information about configuring an STP CTN with three or more servers, see the *Important Considerations for STP server role assignments* white paper that is available at the IBM Techdocs Library website.

If the guidelines are not followed, it might result in all the servers in the CTN becoming unsynchronized. This condition results in a sysplex-wide outage.

STP on z14 features the following enhancements:

- CTN split and CTN merge

  With HMC 2.14.1, Coordinated Timing Network split or merge are supported. CTN split defines a system-assisted method for dynamic splitting of a CTN, while CTN merge automates the time synchronization process and the STP role assignment in the merged CTN.

- Extra stratum level

  The limit was Stratum level 3 before z14. The extra stratum allows CPCs to operate as part of CTN stratum level 4, which can avoid the extra complexity and expense of system reconfiguration.

  Warning: This extra stratum level should be used only as a temporary state during reconfiguration. Customer should not run with machines at stratum level 4 for extended periods because of the lower quality of the time synchronization.

- Graphical display of a Coordinated Timing Network (CTN)

  This graphical display improved the user interface to STP controls. This type of visual display of the CTN status, which provided a clearer view of CTNs, can avoid outages, such as a user intentionally took down the CTS, but did not realize the BTS was down.