



## Can You Use Unmanaged Switches for RSTP?



An unmanaged switch allows Ethernet devices (such as a PC and a network printer) to communicate with one another. They are typically “plug and play” devices that operate right out of the box and automatically configure their data rate and duplex using the auto-negotiation protocol. However, they have a fixed configuration. Managed switches provide all the features of an unmanaged switch plus provide the ability to configure, manage, and monitor your LAN. This gives you greater control over how data travels over the network.

An important feature of a managed switch is redundancy. Redundancy provides the ability to safeguard a network in case a connection or cable fails by providing an alternate data path for traffic. Managed switches utilize the Rapid Spanning Tree Protocol (RSTP) to identify and

quickly recover from network changes or failures. RSTP allows redundant paths while preventing loops created by multiple active paths between switches. However, a question arises concerning RSTP whether managed and unmanaged switches can be on the same network.

To avoid problems associated with redundant links, RSTP monitors the network topology. Every link between switches, and in particular redundant links are cataloged. One managed switch is designated as the root bridge. It determines the preferred network path and it constantly communicates with the other switches in the LAN using the Bridge Protocol Data Units (BPDUs). Unmanaged switches do not originate BDU messages for RSTP or communicate link changes.

Let's look at the network in Figure 1. It consists of four managed switches (M's) and two unmanaged switches (U's) with a redundant link between M2 and M4. M1 is the root bridge. This network works fine with RSTP and can almost immediately recover from a break in the link between any of the managed switches. However, the network will lose

the devices connected to U1 or U2 if either of their cables are severed. Adding a cable between switches U1 and U2 won't work as this creates a switching loop resulting in broadcast radiations and forwarding information base instability. The entire LAN would fail in that situation.

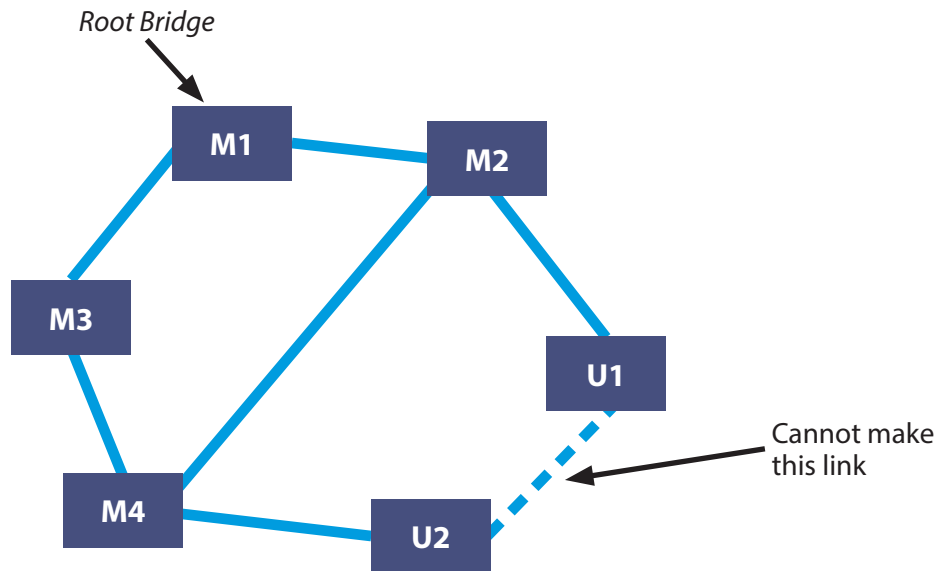


Figure 1

Consider the network in Figure 2. This network is working fine, and it is even possible to connect managed switches M1 and M2 together as these managed switches will not put their ports directly in forwarding state. (RSTP has five states; blocking, listening, learning, forwarding, or

disabled). However, if a cable break occurs between U1 and U2 and the switch in the blocking state is not changed (this will not occur automatically), then the network fragments into two separate networks that cannot communicate with one another.

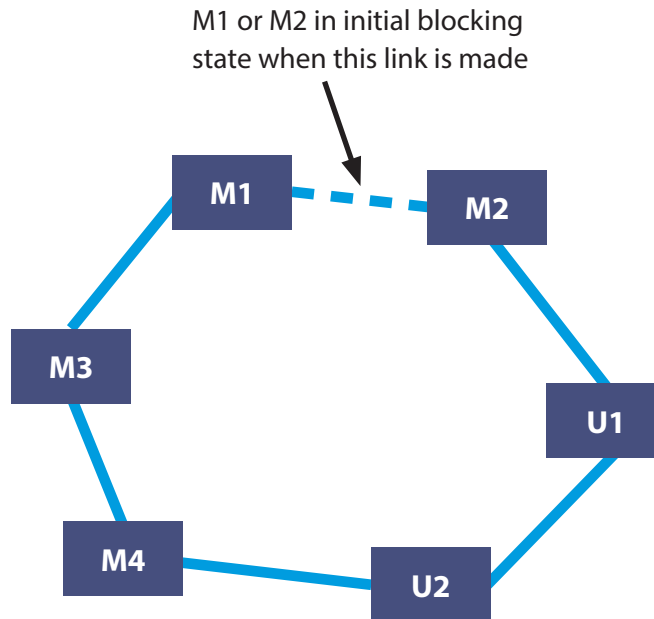


Figure 2

As you can see, you cannot mix managed and unmanaged switches together in a network where safeguarding the network from connection or cable failure is important. It is

not possible to establish redundant loops with unmanaged switches.

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