

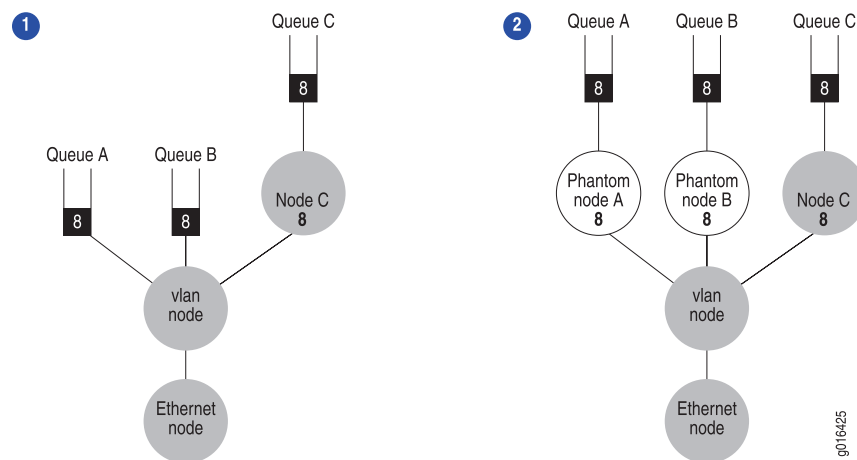
## Shadow Node Overview

The frame forwarding ASIC (FFA) and the 10-Gigabit Ethernet forwarding ASIC (TFA) require that all queues be above the port scheduler node with two additional scheduler nodes. The router implicitly creates *phantom nodes* when you do not specify two scheduler nodes above the port interface. Phantom nodes cannot be monitored using **show** commands.

Phantom nodes have the same weight as the associated queues and are not shaped, which preserves the behavior of the queues as if they are at their original level.

Figure 1 on page 1 compares a scheduler hierarchy with and without phantom nodes.

**Figure 1: Phantom Nodes**



The first scheduler hierarchy displayed in Figure 1 on page 1 shows Queue A, Queue B, and Node C at the same scheduler level and with the same weight of 8. They equally share the bandwidth available to the level 1 node.

The second scheduler hierarchy in Figure 1 on page 1 shows the phantom nodes the router added for Queue A and Queue B. It also shows the weight associated with Queue A and Queue B. As the result, Phantom A, Phantom B, and Node C share the bandwidth of the level 1 node. The phantom nodes do not change the behavior of Queue A and Queue B.

