Chapter 5. Particle-Based Systems

This chapter covers the following key topics:

- Buffer Management Using Particles

- The Cisco 7200 Series Routers

- Packet Switching on the Cisco 7200 Series Routers

All the packet buffering schemes discussed so far have one thing in common: they carve up pools of various-sized buffers, and then allocate one buffer per packet. These types of buffers often are called *contiguous* buffers because the entire contents of a packet reside in a single buffer in one contiguous area of memory. Buffers either are sized to accommodate the largest packet possible on an interface or they're sized according to a fixed schedule.

Although contiguous buffers are easy to manipulate, they don't always provide the most efficient use of memory. Contiguous buffering schemes can waste memory by oversizing buffers or by promoting buffer usage imbalances. Consider the Cbus MEMD scheme, for example. The MEMD scheme creates interface buffers to be at least as large as the MTU of the interface—the size of the largest packet that can appear. If the average packet received is much smaller than the MTU, then much of the packet buffer is wasted. For example, if an interface's MTU is 4 KB, but most of its packets (90 percent) are less than 1 KB, 75 percent of the interface's buffer memory is wasted 90 percent of the time!

In IOS Release 11.1CA, Cisco introduced a new buffering scheme called *particle buffering* designed to address the inefficiencies of contiguous buffers. Although not universally supported on all platforms, particle buffering is used on the Cisco 2600 series, the Cisco 3600 series, the Cisco 7500 VIP, the Cisco 7200 series, and the derivatives of the 7200, such as the Cisco 7100 and the Cisco 6400 NRP. This chapter covers particle buffering and examines how it's used for packet switching on one of the supported platforms, the Cisco 7200 series router.

< BACK   Make Note | Bookmark   CONTINUE >

Index terms contained in this section

buffers
    contiguous
    particle buffering
contiguous buffers
packet buffering
    contiguous buffers
    particle buffering
particle buffering

About Us | Advertise On InformIT | Contact Us | Legal Notice | Privacy Policy