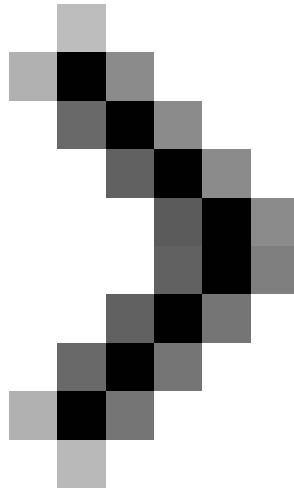
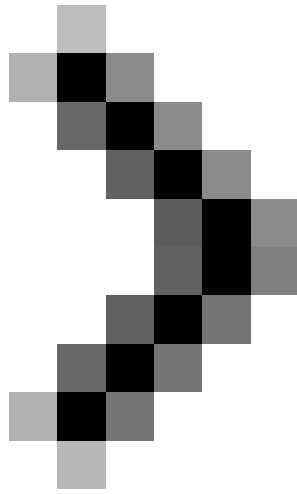


Adjust bandwidth saving via QoS (Part 4)

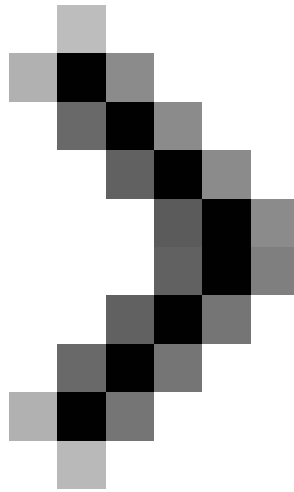
So far in this article, I have talked about QoS and how it can be used to regulate traffic in a network.



Adjust bandwidth saving via QoS (Part 1)



Adjust bandwidth saving via QoS (Part 2)



Adjust bandwidth saving via QoS (Part 3)

Brien M. Posey

So far in this article, I have talked about QoS and how it can be used to regulate traffic in a network. Each part of this series has introduced QoS from the perspective of time-sensitive traffic, such as video and voice traffic on a high-quality network. In this section we want to focus on the ways in which QoS is used to regulate traffic on low-speed or unreliable links.

QoS and Modem

In the age of popular bandwidth available today, referring to modems seems a strange thing. Even so, there are many small businesses and home users who use modems to connect to the Internet. For example, we recently saw a number of large corporations use modems to connect satellite offices located in remote areas, where there is no bandwidth coverage.

Obviously the biggest problem with using modems is the limited amount of bandwidth they provide. Less obvious but also quite important is that users do not change their online behavior when using a modem link. We can be sure that a certain user may not download a large file when connected to the Internet via a modem, but the rest of them usually only perform such large file downloads when they use it. Use broadband connection.

Typically, users do not think about opening Microsoft Outlook continuously and surfing the Internet while they download a file in the background. Some users can even open IM (instant messaging). The problem with this behavior is that each of these applications or tasks consumes a significant amount of Internet bandwidth.

To see how QoS can help, let's look at what happens under normal conditions when QoS is not used. Typically, the first application that accesses the Internet is accepted for exclusive use of the connection. This does not mean that no other application can use the Internet connection, but rather Windows acknowledges that no other application will use the connection.

Once the connection has been established, Windows will begin to dynamically adjust the TCP receive window size. The TCP receive window size is based on the amount of data that can be sent before waiting for confirmation that the data has been received. The larger the size of this window, the more data packets a sender can transmit before having to wait for the response to the response to receive success.

This receive window size must be carefully adjusted. If the TCP receive window is set too small, the effect will be adversely affected because TCP will require regular response messages to confirm successful submission. If the window size is too large, the computer will have to transmit a lot of data before knowing that a problem occurs during transmission. This also causes the retransmission of a large amount of data, which also adversely affects efficiency.

When an application starts using a dial-up note, Windows will dynamically adjust the TCP receive window size when the packets have been sent. The purpose of Windows here is to achieve a stable state in which the TCP receive window size is optimally set.

At this point, let's assume that a user opens a second application that also requires an Internet connection. When doing so, Windows will initiate an algorithm that is responsible for adjusting the TCP receive window size to get the optimal value. However, the problem here is that TCP is being used by the running application which will affect the second application at two issues. First, the second application will take longer to reach the optimal TCP receive window size. Secondly, the data transfer rate of the second application will always be slower than the previously opened application.

However, you can fix this problem in Windows XP and Windows Server 2003 by enabling the QOS packet scheduler. When you do, QOS packet scheduler will automatically use Deficit Round Robin so that Windows can detect slow links.

Deficit Round Robin works by dynamically creating a distinguished queue for each application that requires an Internet connection. Windows will sponsor these queues in a Robin-like fashion, creating a way to significantly improve the efficiency of all applications that need to access the Internet. In this case, you might wonder why Deficit Round Robin is also included in Windows 2000 Server but not automatically activated.

Share Internet connection

In Windows XP and Windows Server 2003, QoS also supports Internet connection sharing. Perhaps you all know, Internet connection sharing is a simple way of creating a NAT-based router. The physically connected computer acts as a router and DHCP server for other computers on the network, thus allowing them to access the Internet through that host. A typical shared Internet connection is used only in small, peer-to-peer networks, which do not have the proper domain infrastructure. Larger networks often use hardware routers or routing services or remote access.

In the previous section, we explained how Windows adjusts the TCP receive window size. This dynamic adjustment can sometimes be as effective as expected when Internet connection sharing is used. The reason for this is that the connection between computers in the same local network is very fast, up to 100 Mb Ethernet.

The client needs to communicate on the Internet, but it cannot perform communication directly, but instead uses the Internet connection to share the configuration as an authorization. When Windows calculates the optimal TCP receive window size, it relies only on the speed of the connection between the local machine and the Internet connection sharing machine. The difference between the amount of data that the local computer can receive from the Internet and the amount of data that can be received based on the speed connected to the Internet-connected configuration machine can cause many problems. In particular, there are many differences in the link speed that can cause the data to accumulate in the queue that is connected to the slow link.

This is where QoS represents its role. If you install the QoS packet scheduler on the Internet Connection Sharing host, this host will overwrite the TCP receive window size. This means that the Internet-connected host will set up on the local host a TCP receive window size equal to the size if it connects directly to the Internet. This can alleviate problems caused by unsuitable network speeds.

Conclude

In this section, we have introduced you to QoS and how it is used to regulate traffic flow across different types of network links. As you have learned in the article, QoS can make network performance much improved by taking advantage of the lull time of the network, while ensuring fast delivery of available data flow. High priority level.

You finished reading the article "**Adjust bandwidth saving via QoS (Part 4)**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.