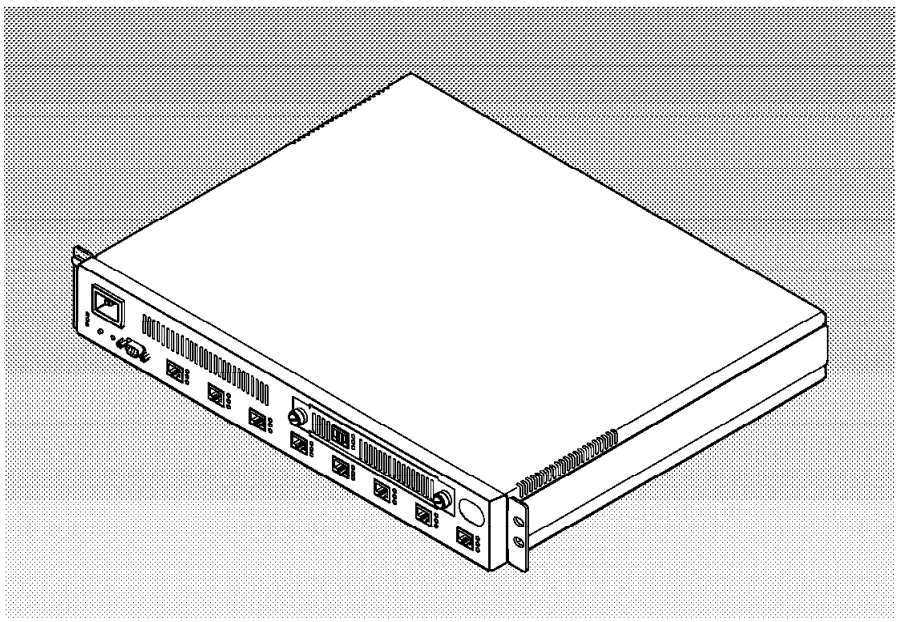
A Preview of the IBM 8272 LANStreamer™ Switch

Evolutionary steps to improved Token-Ring Performance



Product previews are provided in order to facilitate customer planning and reflect IBM's current plans, which are subject to change for business or technical reasons.

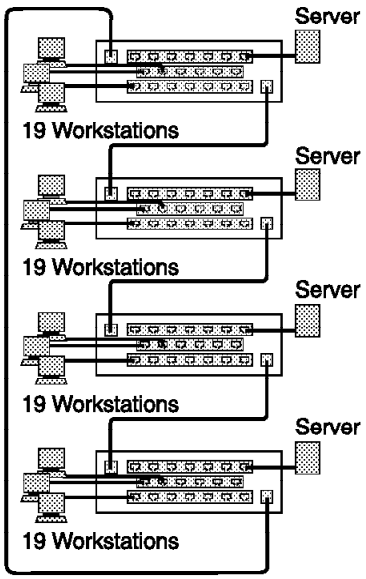
As shared-media LANs like token-ring add stations to the network and generate more traffic, congestion increases and performance decreases. Some high-demand applications become impossible to run smoothly. Both the network and its users become less effective. Until now, the only solution has been to move on to a higher data-rate network and wait for the demand to catch up with the new capacity again. Network administrators and planners face the prospect of rebuilding their entire networking infrastructure every few years.

The IBM™ 8272 LANStreamer™ Switch is another in a series of new products that helps you solve your network capacity problems without tearing down everything that you have already built. Instead, the 8272 works within the infrastructure with minimal disruption to help you address your most pressing needs. You don't replace building cabling. You don't rewrite or reinstall software. You don't swap out all of the adapters in your machines. But you do solve network performance problems quickly and at low cost.

Staging your way to better performance

The 8272 allows you to make incremental changes in your network to address both immediate and long-range performance challenges. For example, a token-ring LAN of 80 stations including 4 servers is beginning to experience performance problems as a result of increased traffic. As it is currently structured,

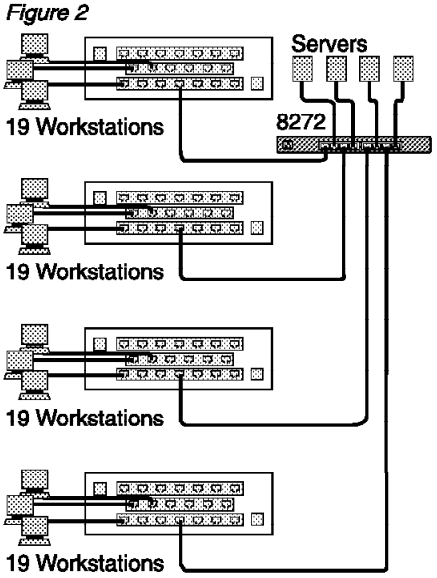
Figure 1



the LAN looks like the one in Figure 1. All of the stations are attached to access units located in a single wiring closet. Now let's install an 8272 in the same wiring closet. First, we will divide the LAN into 4 segments of 20 stations each. One access-unit port from each segment will be connected to a port on the 8272 via a patch cable. Finally, the four servers are removed from the access units to which they have been attached and their cables moved to four ports on the 8272 (Figure 2).

Each group of 19 users attached to an access unit now shares a dedicated 16-Mbps path to the server. Each server has a dedicated 16-Mbps path upon which to service requests. The overall capacity of this solution is 64 Mbps, and all we have done to the network is install the 8272, install four new patch cables, and relocate the connection of four others. No building wiring has been changed. No new adapters have been installed. No software has been rewritten. And the network capacity has been increased fourfold.

Figure 2



Relieving the overstressed backbone

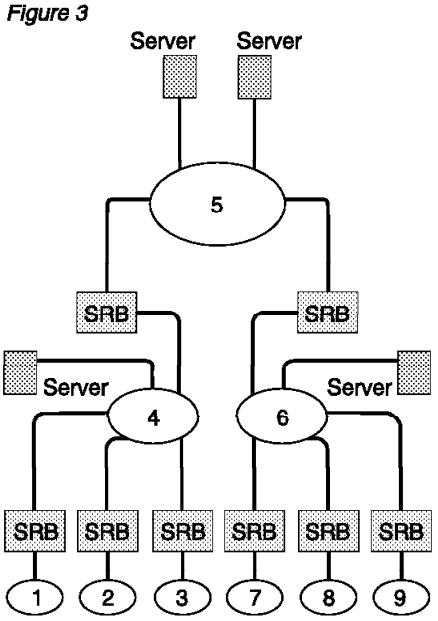
Some large, multisegment, hierarchical token-ring networks experience congestion at the campus backbone level. Although this congestion may often be relieved by converting the backbone to a higher speed, shared-media protocol or installing additional bridges or dual backbones to eliminate bottlenecks, the dedicated media offered by the 8272 may be longer-lived or more economical if either higher demand applications or an ATM WAN is in your future. Let's look at a couple of possible uses of 8272 switches in the network shown in Figure 3. This network is a three-level hierarchy, spanning-tree-compliant campus network.

In Figure 4, the congested campus backbone and the source-routing bridges attached to it have been replaced by an 8272. Because the 8272 looks similar to a transparent bridge from a network management perspective, LAN segments 4, 5, and 6 in Figure 4 have become a single segment (*5* for purposes of identification).

The next step

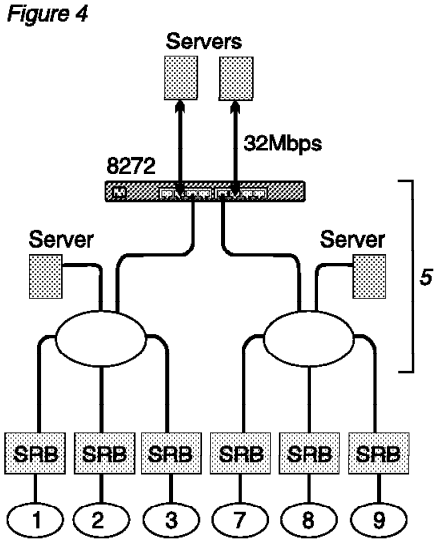
Typically, the first point of congestion in our newly configured network would be the servers. Because the usual mode of operation for a token-ring adapter is half-duplex, the

Figure 3



servers can either send or receive information with one other segment attached to the switch. So, if the servers are equipped with full-duplex adapters, such as the IBM Auto LANStreamer MC 32 Adapter, the IBM Auto LANStreamer PCI Adapter, or the IBM Dual LANStreamer MC 32 Adapter attached as single-station segments as shown in Figure 4, they can send and receive data simultaneously. The capacity of each server is now 32 Mbps per port (that is, 64 Mbps for the Dual LANStreamer Adapter).

Figure 4



The new threshold

However, network congestion is not always at the backbone level. In Figure 5, we have replaced rings 4 and 6 and all of the bridges "below" them in the hierarchy with 8272s. All of the stations in the former rings 1, 2, and 3 and 7, 8, and 9 are now seen as part of segments *4* and *6* from a network management perspective. Bottlenecks between users and departmental servers have been markedly decreased.

Finally, when the traffic on the backbone increases, the optional ATM uplink feature of the 8272 will allow you to connect to a scalable ATM network through the 8272, as shown in Figure 6.

Putting it all together

The 8272 lets you preserve the cabling infrastructure that you are currently using for either token-ring or Ethernet LANs. The switch supports use of the following cables:

- Categories 3, 4, or 5, 100-ohm UTP cables with RJ-45 connectors wired to support token ring
- 150-ohm, STP cables with shielded RJ-45 connectors wired to support token ring

Management to smooth the way

In addition to supporting the industry-standard SNMP-management MIBs that allow the 8272 to be managed by any SNMP-based management system, we also support, through a separate program product, 8272 NetView® for Windows™, an economical network management application for the Windows environment. This product-specific module is installed on the IBM NetView for Windows platform. Support for BOOTP/TFTP helps you manage the 8272 from a remote location in RFC 951-compliant environments by virtually eliminating the need to go to the switch for configuration or to download the 8272 microcode.

Figure 5

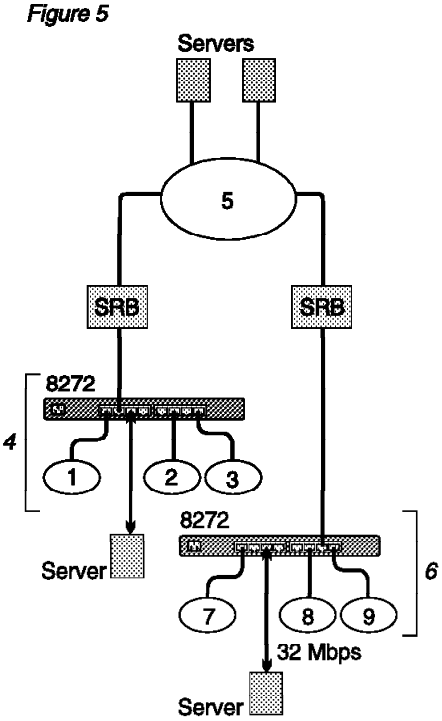
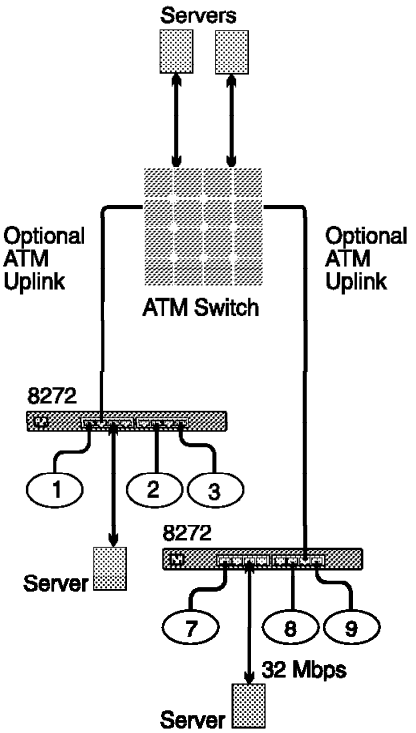


Figure 6



For more information

The 8272 is part of a new generation of low-cost, high-data-rate switches that provide the benefits of dedicated-media, high-speed switching to serve emerging high-demand LAN applications.

To learn more about the IBM 8272 LANStreamer Switch and other high-performance IBM communications and networking products, call your IBM marketing representative or contact your local IBM-authorized remarketer.

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