Cypress Semiconductor: Life in the Fast LANE
By Kelly Jackson Higgins

When you're shipping hefty CAD designs around a network, a 10-Mbps Ethernet backbone just doesn't fly—in fact, it crawls. Just ask Cypress Semiconductor Corp., which during the past year has accelerated its backbone with a combination of ATM at the core and 10/100BASE-T Ethernet in its subnets. Cypress chose 155-Mbps ATM at the backbone because, at the time, it was the only technology for running multimedia applications. Gigabit Ethernet products hadn't yet surfaced.

"ATM gives us the building blocks to implement multimedia when we're ready," says Norene Waters, senior network engineer for Cypress, a maker of integrated circuits for computer and network systems.

Cypress' faster and redundant Ethernet-ATM combo has its trade-offs, too: The company has to manage two different types of network technologies. "Troubleshooting is a challenge," Waters says. "You have to use different fault-management and performance tools." That means toggling between one tool to check the Ethernet segment, and another to track that segment's path into the ATM backbone. "Sometimes it's not easy. You have to look at an analyzer in line with the PC, and when it gets to the ATM switch, you look at its tables," Waters says. "Sometimes it takes a couple of people" to troubleshoot one user issue.

The key technology tying together the Ethernet and ATM worlds is LANE (LAN Emulation), which let Cypress preserve the existing Ethernet LAN configuration within its buildings. And to optimize the performance of its two main Ethernet subnets, the MIS and CAD departments, Cypress placed each LES (LAN Emulation Server) on its own nearby 3Com Corp. CoreBuilder 7000HD ATM switch.

Cypress has a total of four ELANs (Emulated LANs)—one each for CAD, MIS, auditing and network management. Each CoreBuilder can handle 16 ELANs, but Cypress' current strategy is to stick with one LES per switch. "Each Ethernet LAN has its own LES," Waters says. "For the size of our implementation, the approach of putting each LES on a separate switch was a wise move."

Another benefit with this configuration is that it helps minimize traffic jams at Cypress' servers. "If you have a heavily utilized server with nearly a thousand users, you want to make sure the ATM switch attached to it doesn't have to do so many functions," Waters says.

Cypress was careful to map the overall design of the ATM backbone so that no single ATM switch could be overloaded. The 21 CoreBuilders sit in the four buildings on Cypress' campus, each with an Ethernet module that talks to the LAN side.

The Ethernet-ATM network supports Cypress' chip-design applications, which eat up the most bandwidth, as well as its client/server business and project-management applications. Videoconferencing may be the next wave for the network. "We have some pilot testing with users videoconferencing across buildings," Waters says.