

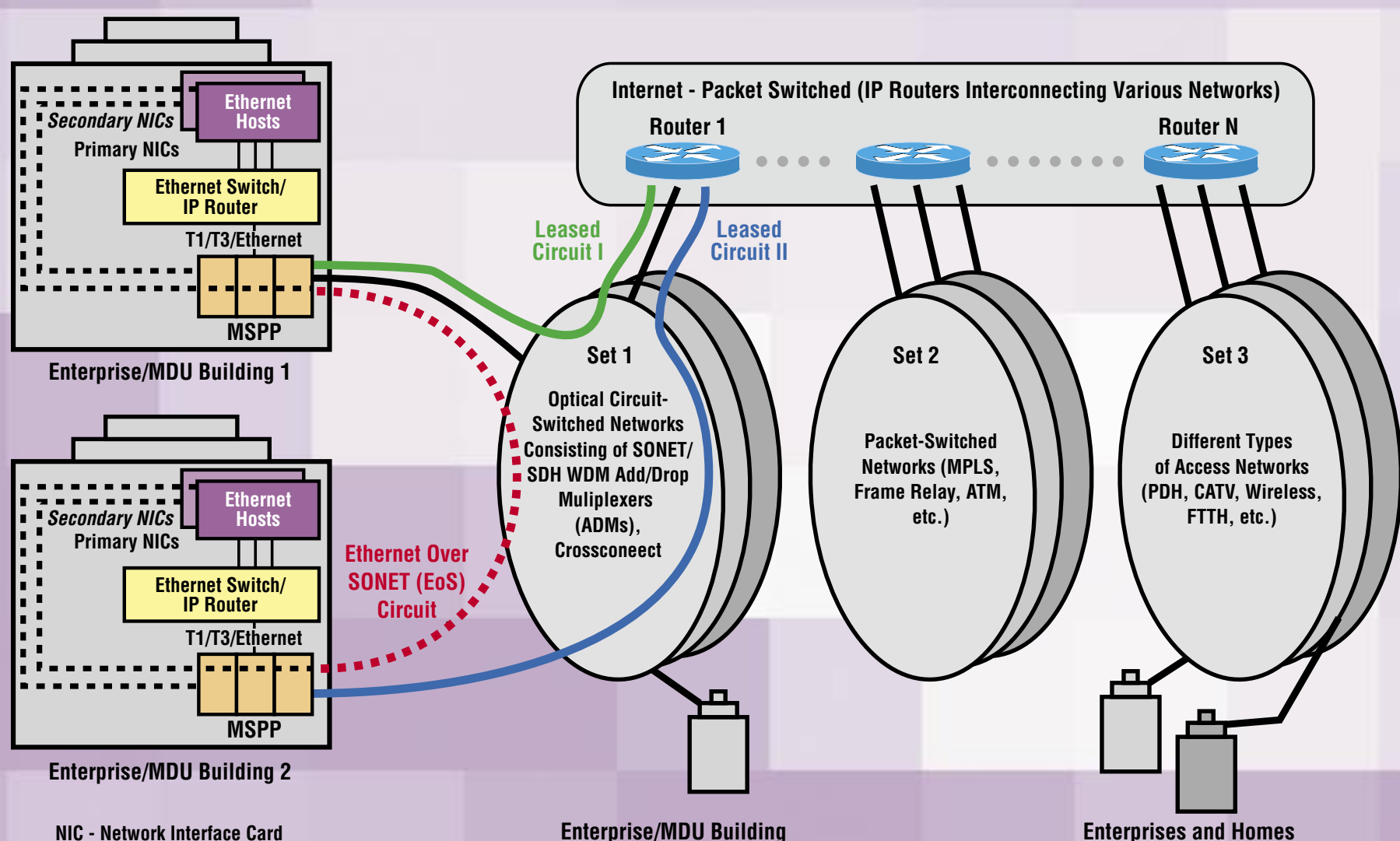
# CHEETAH: Circuit-switched High-speed End-to-End Transport Architecture

Leveraging the dominance of Ethernet in LANs and SONET/SDH in MANs and WANs, we propose a service called CHEETAH (Circuit-switched High-speed End-to-End Transport Architecture). This service will provide end hosts with high-speed, end-to-end circuit connectivity on a call-by-call shared basis, where a “circuit” consists of an end-

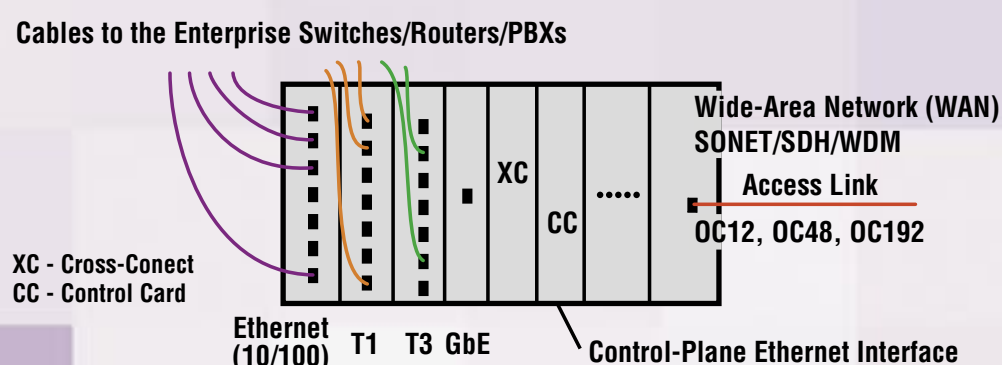
to-end Ethernet path or Ethernet segments at the ends that are mapped into Ethernet-over-SONET long-distance circuits.

Currently, our research focuses on the file-transfer capabilities over such circuits. We leverage the CHEETAH service as an add-on to the primary Internet access service already in place for

enterprise hosts. This allows an end host that is sending a file to first attempt setting up an end-to-end Ethernet circuit or an end-to-end Ethernet/ EoS circuit, and if rejected, fall back to the TCP/IP path. If the circuit setup is successful, the end host will enjoy a much shorter file-transfer delay than on the TCP/IP path.



*Current Architecture: IP Routers Interconnect Different Types of Networks. Some Enterprises Have MSPPs. CHEETAH Enables Direct Ethernet/EoS Circuits Between Hosts (see dashed lines and text in italics); File Transfers Between End Hosts In Enterprise Building 1 and Enterprise Building 2 Have A Choice of Two Paths: (i) TCP/IP Path Through Primary NICs, Ethernet Switches, Leased circuits I and II and IP Router I, (ii) Ethernet/EoS Circuit Through Secondary NICs, MSPPs, Optical Circuit-Switched Network*



An Example Multiservice Provisioning Platform Architecture

## RELATED PUBLICATIONS

- M. Veeraraghavan, X. Zheng, W. Feng, H. Lee, E. Chong, and H. Li, *Scheduling and Transport for File Transfers on High-speed Optical Circuits*, 2<sup>nd</sup> International Workshop on Protocols for Fast Long-Distance Networks, Argonne, IL, February 2004.
- M. Veeraraghavan, X. Zheng, H. Lee, M. Gardner, and W. Feng, *CHEETAH: Circuit-Switched High-Speed End-to-End Transport Architecture*, Best Paper Award, SPIE/IEEE Optical Networking and Computer Communications Conference (OptiComm), Dallas, TX, October 2003.

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