SuperStack II and CoreBuilder™ Family
Token Ring Switches

High-performance, cost-effective switching options for Token Ring networks

Combining a rich set of features, all designed to meet the challenges of expanding networks, the SuperStack II Switch 2000 TR (shown) and the CoreBuilder 6000 Token Ring Switching Module offer segmentation, bandwidth, and value while securing a migration path for future network expansion.

3Com offers two flexible Token Ring switching products for growing client-server networks. Both products support source route, transparent, and SRT bridging.

The SuperStack™ II Switch 2000 TR is a 12-port Token Ring stackable switch that boasts throughput rates of 400,000 packets per second and fits comfortably within data center or workgroup environments.

The CoreBuilder™ 6000 Token Ring Switching Module (TRSM) brings Token Ring switching functions to the CoreBuilder 6000 platform. This unique module offers high port density by supporting up to 88 switched Token Rings and through Fiber Distributed Data Interface (FDDI) translation allows for high-performance, direct server attachments.

**Key Benefits:**

- **Cost-effective Segmentation.** 3Com Token Ring switches offer a cost-effective method for segmenting bandwidth-hungry networks. When used in place of 2-port PC bridges or costly routers, 3Com switches provide a simple solution for expanding networks and increasing bandwidth.

- **Investment Protection.** Due to investments already made in IBM-based environments, 3Com Token Ring switches offer a drop-in solution that increases the performance of your Token Ring network. Existing adapters, hubs and IBM-based equipment do not need to be replaced allowing for an easy expansion of your existing network infrastructure.

- **Network Manageability.** Both Token Ring switches support SNMP RMON network management through Transcend® applications.

- **Port Population.** Offering compact, high-density port population, these Token Ring switches immediately relieve network congestion on each port and support 4 or 16 Mbps per port. In addition, they are easy to install and configure and have ports for direct server connections.

- **Future Migration.** Both switches supply high-speed options for either FDDI or ATM and ensure a logical, growth-oriented, path for future network expansion.
Performance Migration with Token Ring Switches

Despite their obvious benefits, high-performance servers and client workstations can actually impede end-user performance in traditional network environments. Instead of sharing the computing power through a central resource, the bandwidth focus comes from the desktop. As a result the entire network becomes the computing backplane and dramatically increases the need for segmentation, bandwidth, and management.

As the number of users increase, the demand for bandwidth, server access, and network control increase proportionately. To solve this problem it is necessary and desirable to dilute the demand using segmentation and at the same time provide a migration path for future high-speed technologies. Segmentation with switches divides up the resources and provides greater performance within local workgroups while eliminating PC-based bridges or costly, under-utilized routers.

3Com’s Transcend Networking strategy provides a logical, well-planned migration path that solves immediate bandwidth constraints, management limitations, and intratechnology challenges in addition to protecting and preparing networks for the future.

These diagrams show you how to use 3Com’s Transcend Networking strategy to develop an effective, cost-conscious migration path to Token Ring switching and beyond.
• **Flexible Downlink Options.** The SuperStack II Switch 2000 TR offers optional High-Speed Downlink modules for connection to FDDI or ATM backbones. The FDDI Downlink module (SAS and DAS options) provides a 100 Mbps point of aggregation for multiple Token Ring switched segments and also supports a direct server attachment for FDDI connections. The ATM Downlink module supplies a 155 Mbps ATM UNI interface. In addition, the module provides ATM signaling and industry standard LAN emulation client software. All virtual LAN configuration data is preserved by the ATM Downlink module.

• **Transcend Management for Network Control.** Comprehensive management of the Token Ring switches is critical in understanding and improving the operation of any network. Transcend for Windows and UNIX supports the SuperStack II Switch 2000 TR with features such as statistical data and graphical configuration. The Automatic Topology Discovery feature allows integrated management of 3Com Token Ring products through Simple Network Management Protocol (SNMP).

• **VLAN Support for Increased Manageability, Security, and Broadcast Containment.** The SuperStack II Switch 2000 TR supports Virtual LAN operation by allowing any port to be a member of one of 15 individual workgroups. VLANs simplify LAN administration by making moves, adds, and changes easier and also provide a method for bulk configuration downloads across workgroups. VLANs also enhance security and increase network efficiency by controlling traffic flow and containing broadcasts. In addition, VLANs are preserved over the High-Speed Cascade Interface. Industry-standard LAN Emulation provides a method for creating enterprise-wide Virtual LANs that reflect how networks and businesses actually function.

### CoreBuilder 6000 Token Ring Switching Module at a Glance

The CoreBuilder 6000 Token Ring Switching Module is a switching hub slide-in module for the CoreBuilder 6000 series, a powerful switch designed for data centers. Combining Token Ring, Ethernet and FDDI LAN switching, FDDI concentration, translation bridging, and intra-network routing, the CoreBuilder 6000 switch provides high reliability in a 4-slot or 12-slot modular chassis.

Providing high-speed, high-density switching for up to eight Token Ring ports, the CoreBuilder 6000 TRSM is capable of segmenting Token Ring LANs selectively on a per port basis and supports up to 88 switched Token Rings. Boosted bandwidth, increased performance, and a drop-in solution for your current IBM®-based environment are all immediate benefits of the CoreBuilder 6000 TRSM.

Each of the eight RJ-45 Token Ring ports support a full Token Ring of up to 260 (802.5 standard) users. Ports can be configured to support 4 or 16 Mbps. Alternately, two designated ports provide a direct connection for a workstation or file server.

Support for source route, transparent, and SRT bridging allows the TRSM to fit nicely into existing SNA network environments that include dual Token Ring connections and multiple redundant paths for fault tolerance and load balancing.

Full of features and designed for flexibility, the CoreBuilder 6000 TRSM represents an attractive alternative to existing internetworking options such as low-performance, 2-port PC bridges or costly, under-utilized routers.

• **Token Ring to FDDI Translation.** The CoreBuilder 6000 TRSM provides Token Ring to FDDI translation which relieves traffic congestion between Token Ring LANs and FDDI backbones. In addition, FDDI servers can be attached directly to the LANplex switching hub via FDDI or management modules allowing Token Ring users to communicate directly to a FDDI server on the FDDI backbone.

• **Standards-Compliant Switching.** Full source route, transparent, and SRT bridging modes provide a seamless integration into existing Token Ring networks. Full 802.1d and IBM Spanning Tree support also guarantees network integrity.

• **Fault Tolerance.** CRC alignment and packet length are tested on all packets to prevent data errors from permeating the network.
Transcend Networking Stage 2:
As the need for high-speed technologies such as FDDI or ATM becomes apparent, direct attachment to critical resources such as floor-based hubs or servers is simply a downlink module away. In addition, introducing segmentation at the network periphery is readily available with switching and provides direct attachment to local servers.

In addition, SuperStack II Hub TR hubs offer a roving RMON agent that manages any hub within a stack in a switched environment. This agent eliminates the need for separate management modules for each switched segment.

Transcend Networking Stage 3:
Migrate to ATM easily. Critical resources attach directly to high-speed technologies preserving investment in hardware and merge easily with existing network management applications. This allows additional switches, servers, and stations to be seamlessly introduced via direct connections.
SuperStack II Switch 2000 TR at a Glance

The SuperStack II Switch 2000 TR delivers a high-throughput solution for bandwidth-constrained networks. Built using custom-designed ASICs, the SuperStack II Switch 2000 TR is a 12-port switch that optimizes performance through LAN segmentation. Capable of supporting 12 fully-populated Token Ring networks*, the SuperStack II Switch 2000 TR eases bottlenecks while boasting wire-speed forwarding rates on all ports.

Appropriate for either the data center or the workgroup, SuperStack II Switch 2000 TR provides a migration path to high-speed technologies such as FDDI and/or Asynchronous Transfer Mode (ATM) where backbone connections are desired or increased segmentation is necessary. As a key component of the 3Com SuperStack™ II system, the SuperStack II Switch 2000 TR further supports 3Com’s ongoing commitment to IBM-based environments by providing sophisticated, advanced-technology Token Ring and SNA products.

* Four of the twelve ports can be configured for direct station attachments.

- **High Throughput for Increased Performance.** Designed using the 3Com Token Ring Switching Engine (TRSE) ASIC, the SuperStack II Switch 2000 TR offers wire-speed Token Ring switching capabilities exceeding 400,000 pps aggregate per unit. The SuperStack II Switch 2000 TR employs Flow Control, which eliminates dropped packets. The SuperStack II Switch 2000 TR also uses Priority Control, a Token Ring priority feature that allows the switch to prioritize traffic on a per-port basis. This feature improves performance in mission-critical desktop-to-server and multimedia applications.

- **Low Latency for Greater Efficiency.** Cut-through switching provides very low latency Token Ring switching for delay-sensitive applications, while store-and-forward switching prevents forwarding errors. The SuperStack II Switch 2000 TR provides dynamic cut-through which monitors error rates. Any SuperStack II Switch 2000 TR port configured for dynamic cut-through switching can automatically change back to store-and-forward mode when user-defined error thresholds are exceeded. This reduces the number of errored packets forwarded. Error-free cut-through is a feature designed to aid in troubleshooting switched Token Ring networks. By controlling the permeation of errors which can result from cut-through operation, error statistics are contained to the source ring eliminating inaccurate error reporting.

- **Full SRT Functionality for Fault-Tolerant Legacy IBM LANs.** Many Token Ring networks have a mix of source route traffic and transparent traffic. The combination of these two sparks the need for full SRT bridging. The SuperStack II Switch 2000 TR accommodates any mix of source route or transparent traffic. Standards-based SRT compliance also supports redundant mainframe configurations using dual TIC connections configured with identical MAC addresses.

The SuperStack II Switch 2000 TR supports both 802.1d and IBM Spanning Tree. This reduces network reconfiguration when migrating to Token Ring switching and permits integration with an existing Token Ring infrastructure.

- **High-Speed Cascade Interface.** The SuperStack II Switch 2000 TR has a built-in High-Speed Cascade Interface which enables six units to connect to form a single, large switched domain. By aggregating the SuperStack II Switch 2000 TR units, greater Token Ring port density is achieved without increasing cost. Combined with High-Speed Downlink modules, these flexible options allow you to grow your network as your needs demand.
Specifications
SuperStack II and CoreBuilder 6000 Token Ring Switches

CoreBuilder 6000 Token Ring Switching Module (TRSM)

Software Requirements
CoreBuilder system software release 6.0 or greater

Standards Supported
IEEE 802.5 Token Ring
IEEE 802.1d MAC-layer Bridging
SNMP Management

Indicators
Module status
Port Status
Port Mode

Media Options
Connectors: 8 STP RJ-45 connectors
Standard IEEE 802.5 compliant
Cable Type: STP/UTP cable, 85-150 ohm impedance, 22-26 AWG conductor size
Maximum Cable Lengths:
- UTP Cat. 3: @4 Mbps —460/200m
- UTP Cat. 4/5: @4 Mbps —1300/400m
- UTP Cat. 4/5: @16 Mbps —660/200m
Type 1: @4 Mbps —2000/600m

Environmental
Operating Temperature: 32˚ to 120˚ F (0˚ to 50˚ C)
Operating Humidity: 10% to 95% non-condensing
Storage Temperature: -22˚ to 140˚ F (-30˚ to 70˚ C)
Storage Humidity: 10% to 95% non-condensing

Safety Certifications
UL 1950
CSA 950
EN 60950

EMI Certifications
CE Mark
FCC Class A
EN 55022 (CISPR 22, Class A)
IEC 801 2-5

Power Requirements
Input Voltage Range: 100-240VAC
Input Frequency: 50/60 Hz

LinkSwitch 2000 TR Token Ring Switch

Standards Supported
IEEE 802.5 Token Ring
IEEE 802.1d MAC-layer Bridging
SNMP Management

Indicators
LCD front panel with status information
Port status
Management Status
Cascade Status
Option Slot Status

Media Options
Connectors: 12 UTP/STP RJ-45 connectors
Standard IEEE 802.5 compliant
Cable Type: STP/UTP cable, 85-150 ohm impedance, 22-26 AWG conductor size
Maximum Cable Lengths:
- UTP Cat. 3: @4 Mbps —660/200m
- UTP Cat. 4/5: @4 Mbps —1300/400m
- UTP Cat. 4/5: @16 Mbps —660/200m
Type 1: @4 Mbps —2000/600m
- @16 Mbps —1000/300m

Environmental
Operating Temperature: 32˚ to 120˚ F (0˚ to 50˚ C)
Operating Humidity: 10% to 95% non-condensing
Storage Temperature: -22˚ to 140˚ F (-30˚ to 70˚ C)
Storage Humidity: 10% to 95% non-condensing

Safety Certifications
UL 1950
CSA 950
EN 60950

EMI Certifications
CE Mark
FCC Class A
EN 55022 (CISPR 22, Class A)
IEC 801 2-5

Power Requirements
Input Voltage Range: 90-240VAC
Input Frequency: 50/60 Hz

Cut-through, Store-and-Forward, Adaptive Cut-through or Error Free Cut-through modes
Supports source route, transparent, and SRT bridging modes
Supports IBM and 802.1D Spanning Tree

Management
SNMP over IP
SNMP MIB II (RFC1213)
SNMP RMON
Bridge MIB (RFC 1493)
Source route extensions (RFC 1525)

Interfaces
12 Token Ring ports (RJ-45 connectors), 4 ports which may be configured for direct station attachment
1 RS-232 (DB-9 connector for local console)
Flexible Option Slot
2 SCSI cascade interface connectors (100 Mbps)

Dimensions
Height: 2 3/4” / 7.0 cm
Width: 17 1/4” / 44 cm
Depth: 12 ’/ 30.5 cm

Mounting
Includes hardware for mounting in a standard 19” rack

Ordering Information
CoreBuilder 6000
12-slot chassis
(single power supply) 3C6012-001
CoreBuilder 6000
12-slot chassis
(dual power supplies) 3C6012-002
CoreBuilder 6000
4-slot chassis
(single power supply) 3C6004-001
CoreBuilder 6000 Token Ring Switching Module
(8 ports, STP/UTP, RJ-45) 3C6408-000
LinkSwitch 2000 TR
12-port stackable switch
(12 ports, STP/UTP, RJ-45) 3C51000

Warranty Summary
The CoreBuilder 6000, the CoreBuilder 6000 Token Ring Switching Module, and the LinkSwitch 2000 TR are covered by 3Com’s one-year warranty.

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