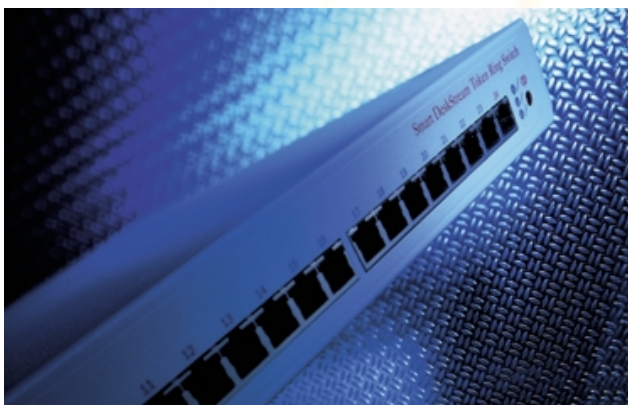


Guide to Desktop Switching



What is desktop switching?

The advantages of desktop switching over shared connections are clear. With a single, dedicated link, each networked user benefits from a more reliable, secure connection giving 16 Mbps (Full Duplex) of guaranteed bandwidth. The introduction of a desktop switch also allows access speeds to backbone resources to be increased. In addition, a fully switched network provides the network manager with greater levels of manageability and resilience, allowing support costs to be kept to a minimum.

Using low latency, cut-through switching technology, desktop switches allow Token Ring networks to be easily scaled to meet growing network demands, without impacting user connectivity to centralized resources. Token Ring desktop switches must protect the existing investment in Token Ring infrastructure by offering easy integration into the existing network environment. This includes supporting existing adapters, cabling and network protocols without requiring additional costs or PC re-configuration.

Finally, as well as supporting classical data application services on the network, Token Ring switches need to offer support for emerging voice, video and real-time data applications. This multi-service traffic will require the network infrastructure to allow prioritization of the packets of data from certain applications. To do this, Token Ring switches must offer a number of switching queues, in order to expedite time-sensitive traffic across the switch.



Introducing the Smart DeskStream™ Token Ring Switch

The Madge.connect Smart DeskStream has been designed to provide the benefits of full Token Ring switching for direct PC connections, at a price that makes switching to the desktop the only viable option. This guide shows how to use the Smart DeskStream to move from a network design typical of today's shared Token Ring networks to an easily manageable, reliable and high performance fully switched network.

Combining advanced ease of use functionality with exceptional performance, the Smart DeskStream Token Ring Switch signifies the arrival of true desktop switching for Token Ring users.

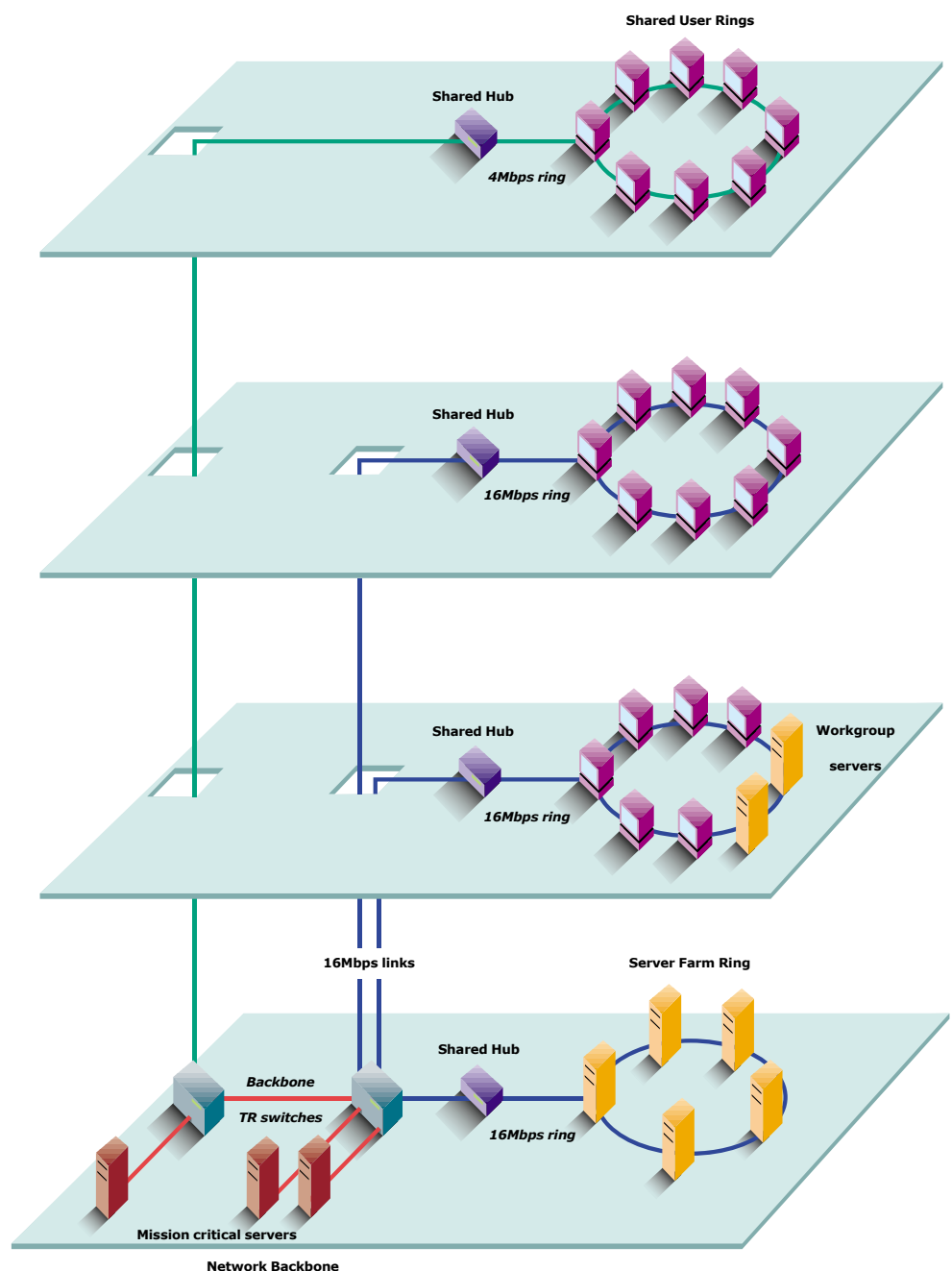
Desktop switching deployment

Stages of deployment for desktop switching

The following steps provide a guideline for deploying desktop switches for moving from the current shared TR hub environments to fully switched networking.

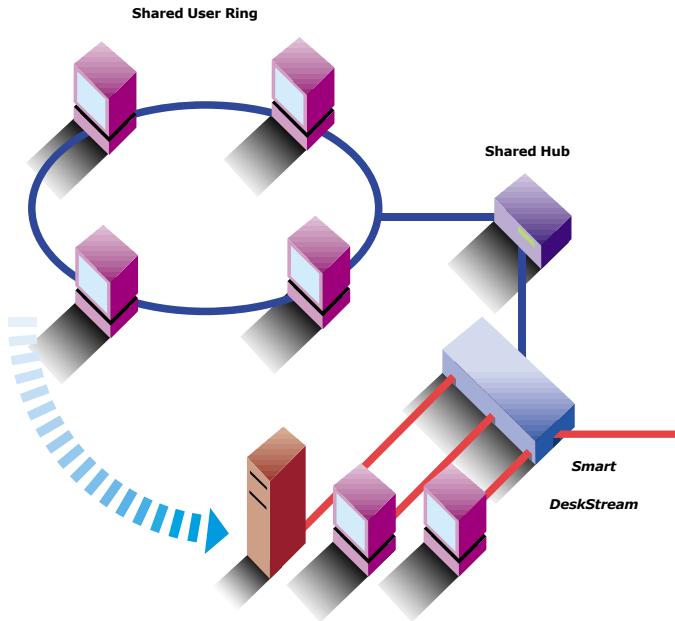
- User rings have between 40-100 users
- Rings may be running at 4 Mbps or 16 Mbps
- Token Ring switches may be used in the network backbone
- Enterprise servers and resources are located in the network backbone
- Workgroup servers are situated on user rings
- Fiber cabling may be used to connect user rings to network backbone

TYPICAL CENTRALIZED NETWORK DESIGN



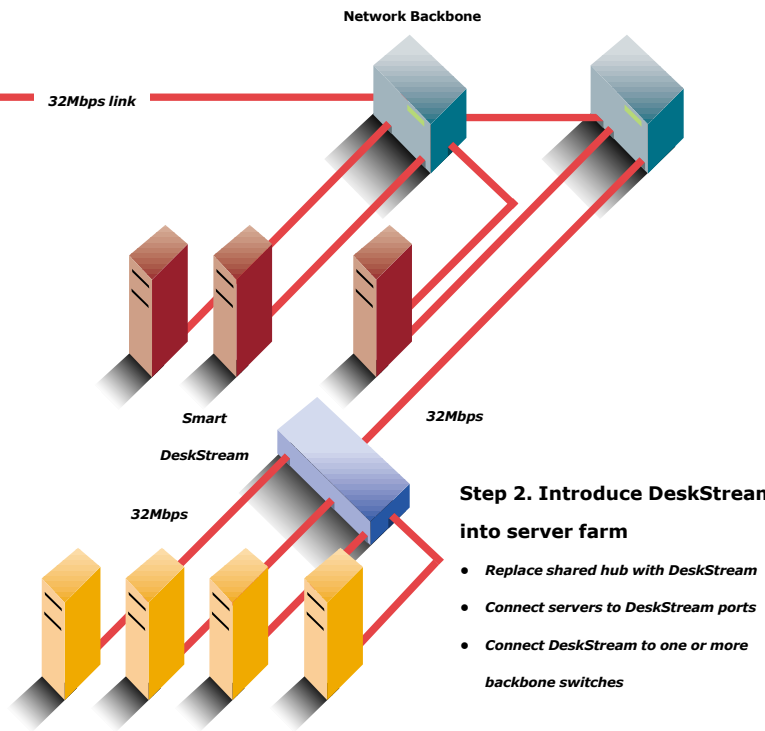
Stage 1 – Desktop switch integration

Connected between the hub and the backbone TR switch, a single Smart DeskStream provides a clear bandwidth improvement for all users, whilst auto-configuration and support for all traffic types means deployment costs are minimized.



Step 1. Move users to switched, DeskStream ports

- Install DeskStream into wiring rack next to shared hub
- Connect shared hub to master port on DeskStream
- Connect backbone link to DeskStream port (fiber or copper)
- Move power users and workgroup servers from hub ports to DeskStream ports



Step 2. Introduce DeskStream into server farm

- Replace shared hub with DeskStream
- Connect servers to DeskStream ports
- Connect DeskStream to one or more backbone switches

BENEFITS INCLUDE

- Plug 'n' play installation, no changes are needed to the desktop PC configuration
- Immediate performance improvement for power users and workgroup servers now connected on DeskStream
- Doubling of access bandwidth to backbone resources
- With fewer users, more bandwidth is available for users remaining on the shared Token Ring hub
- Servers in server farm benefit from higher performing and more reliable network connections

What is Full-Duplex/Dedicated Token Ring (DTR)?

Dedicated Token Ring (DTR) is an extension to the Token Ring standard for either switch-to-switch or switch-to-desktop connections. DTR provides

twice the bandwidth to that of traditional shared media Token Ring.

In order to take advantage of Dedicated

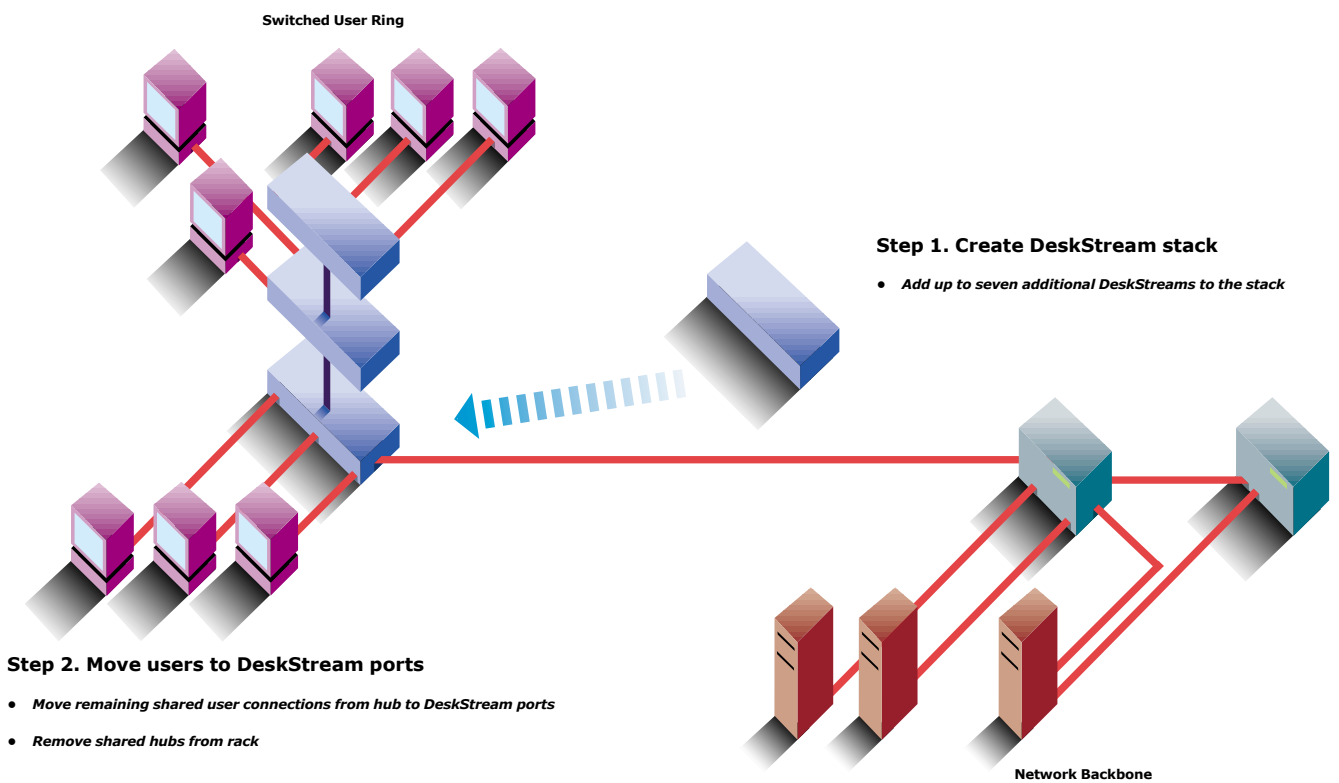
Token Ring (DTR), a Token Ring switch capable of supporting DTR is required. This can be used with standard Token Ring adapters to establish a direct connection to

Stage 2 – Hub replacement

With the first Smart DeskStream installed and configured in the shared hub rack, additional units can be easily added to create a single DeskStream stack. This allows all remaining shared users to be moved to direct switch connections. Shared hubs can then be removed, and users benefit from a fully switched TR environment.

BENEFITS INCLUDE

- Use Smart DeskStream Stacking Modules to add additional units to create a stack, configuration is automatic
- High port density provided by DeskStream means less racking space is required
- Shared hubs may be re-deployed to other areas of the network, replacing older shared hubs units
- All connections may be quickly and simply moved from shared to switched ports without changes needed to the user PC
- Additional user connections can be provided simply by adding DeskStreams to the stack, to offer up to 192 ports in total



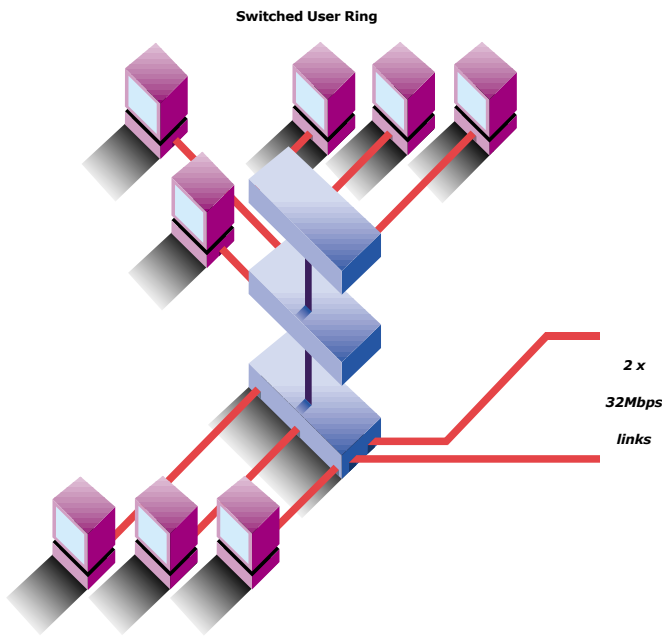
workstations or servers. When a station is directly connected to a Token Ring switch, it has access to all of the available 16 Mbps bandwidth. This can be further

enhanced if both the Token Ring adapter and the switch are capable of full-duplex DTR operation, which allows 16 Mbps of data to be transmitted and received

simultaneously using standard Token Ring cabling. Therefore increasing the total available bandwidth to an aggregate 32 Mbps.

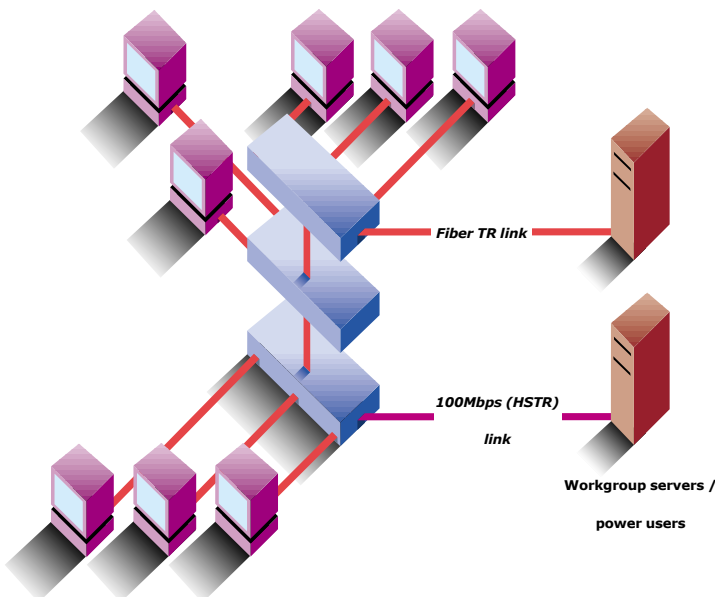
Stage 3 – Resilient connectivity

To maximize network uptime, the Smart DeskStream can be used to deliver a resilient network infrastructure. Using additional links to backbone switches, user connectivity is protected against cabling or device failures.



Direct server connectivity options

In addition to using the Fiber TR and the 100 Mbps (HSTR) modules to connect the Smart DeskStream to other TR switches, they can also be used

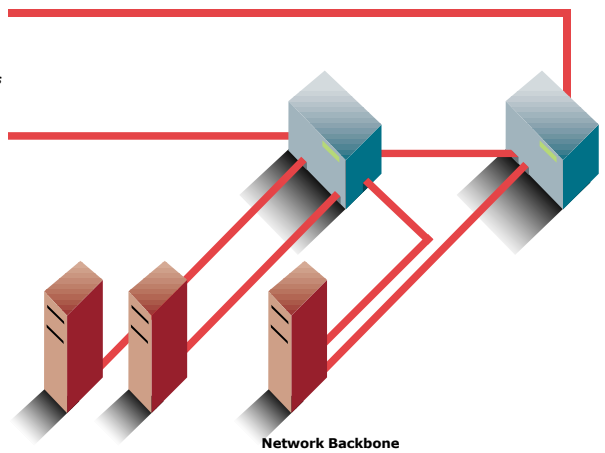


BENEFITS INCLUDE

- Flexible, cost-effective resilience, using low cost ports for uplink connections
- Redundant links in transparent environments provide resilient network connections
- In source routing environments, load sharing links provide greater bandwidth to backbone resources

Step 1. Add additional links to backbone

- Use spare ports on DeskStream for copper connections
- Add Fiber Modules for connections with Fiber Optic networks



to directly connect servers to a stack. For example, where servers are located close to the users, one of the ports on the 100 Mbps modules can connect to a server with a 100 Mbps adapter installed. The second 100 Mbps port, can be used to connect the stack to the backbone. Alternatively, multiple 100 Mbps or TR Fiber Modules can be installed in a DeskStream stack to increase the capacity for high speed server connections.

BENEFITS INCLUDE

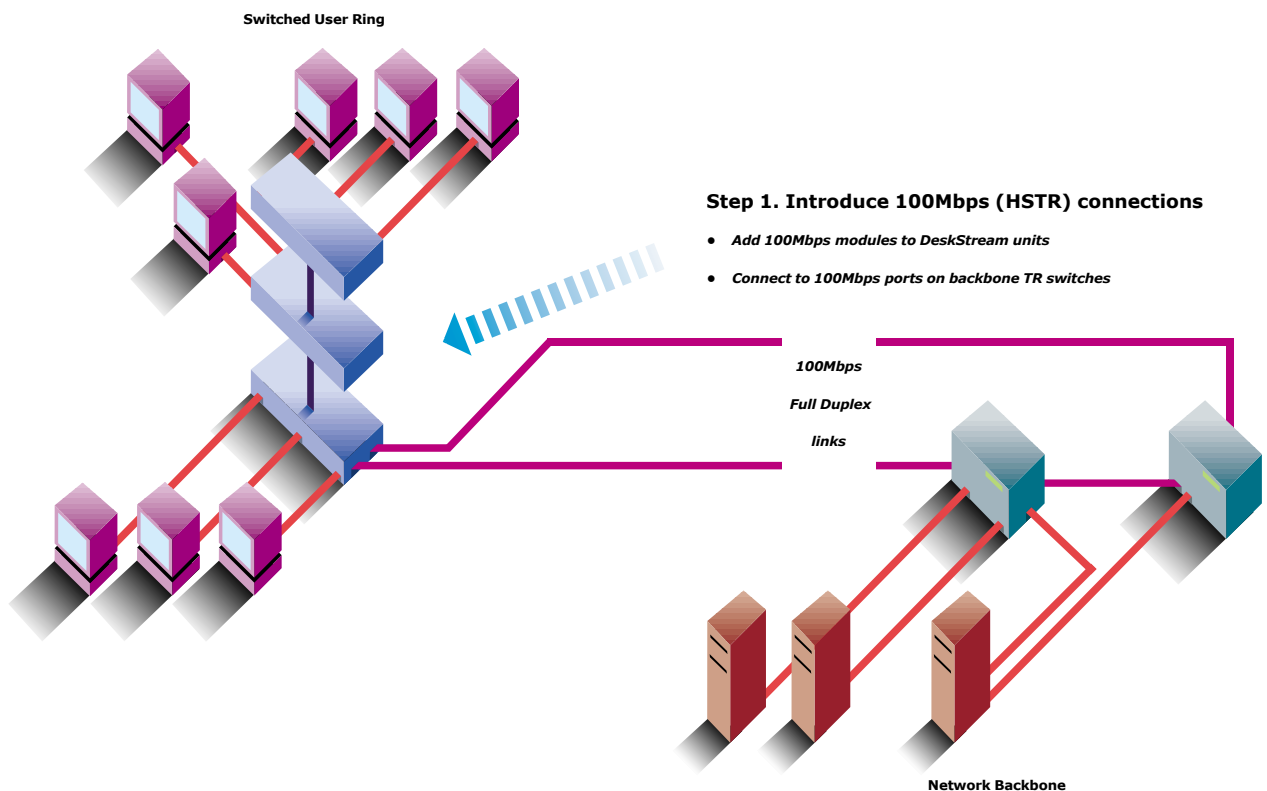
- Servers or power users can be connected to the Smart DeskStream using 100 Mbps links, delivering greater access speeds
- TR Fiber modules allow connectivity to servers or desktops over fiber cabling, and may be situated a large distance from the Smart DeskStream
- Direct connection of Ethernet devices such as printers to the Smart DeskStream using the 2 port Ethernet module

Stage 4 – High speed backbone access

When workgroup traffic to backbone resources (servers, internet gateways, mainframe access) rapidly increases, the speed and capacity to the backbone can be easily increased. Dual-port 100 Mbps modules can be added to Smart DeskStreams in the stack to offer up to a 400 Mbps aggregate connection.

BENEFITS INCLUDE

- Easy introduction of higher speed links into existing network environment
- Dual-port load sharing in Source Routing environments offers up to 400 Mbps aggregate bandwidth
- Resilient connection to an ATM backbone using the 155 Mbps ATM module featuring dual-redundant ports



What is 100 Mbps HSTR (High Speed Token Ring)?

100 Mbps (HSTR) products are designed to offer high speed links between Token Ring switches, and for connecting high performance servers to TR switches. Based on the Dedicated Token Ring standard, 100 Mbps Token Ring runs at 100 Mbps. Like Dedicated Token Ring, 100 Mbps Token Ring operates in full duplex mode.

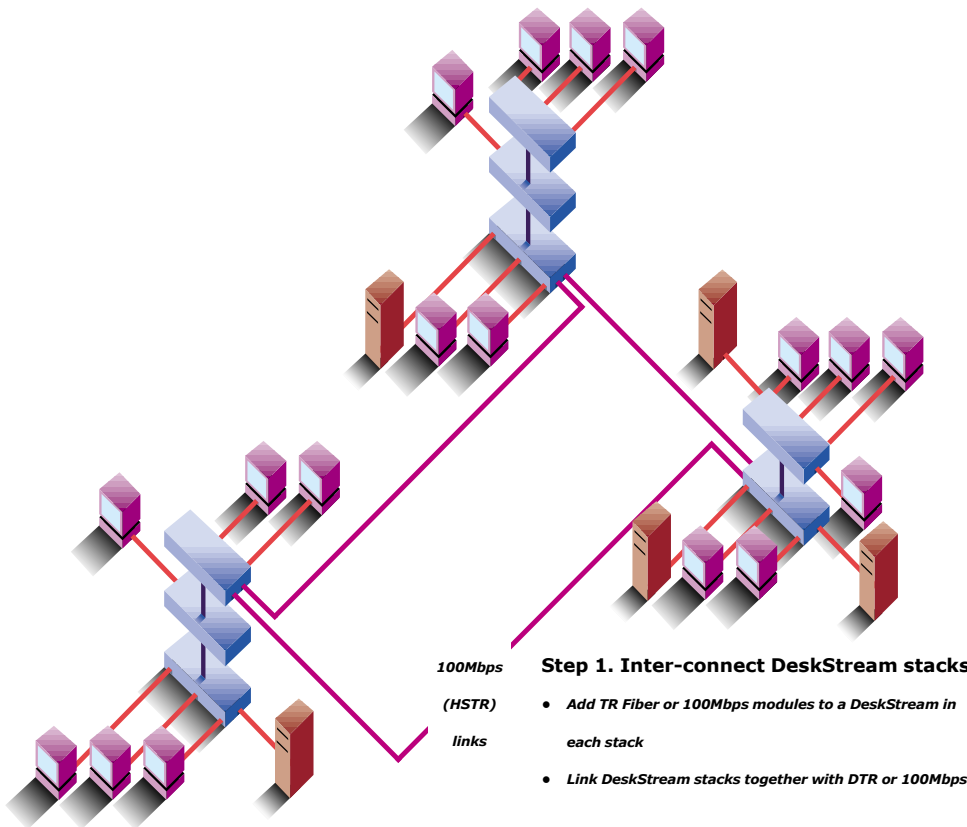
By preserving Token Ring's native packet formats, handling the full range of Token Ring packet sizes, and supporting Token Ring's source routing and packet priority capabilities, 100 Mbps Token Ring provides the means to expand the capacity of a switched Token Ring network without the compromises imposed by other solutions, and without network managers having to learn a new technology.

Distributed network designs



The networks shown in the previous examples are based upon a centralized network design, where resources are located together in a backbone environment.

Alternatively, Smart DeskStreams may be linked together in a distributed network approach, without the requirement for a central backbone switch.



Smart DeskStream Product Highlights

- 24 RJ45 ports supporting UTP/STP cabling
- Supports 4, 16 and 32 (DTR) Mbps, auto-speed sensing
- 1 U high
- Stackable 8 high, offering 192 ports
- Full Plug 'n' Play operation
- Graphical network management software
- Supports Source Route and Transparent traffic
- Fiber TR and Fiber and Copper 100 Mbps (HSTR) modules available
- Three priority switching queues per port for multi-service traffic
- Supports 5 groups of RMON
- Ethernet and ATM connectivity options

Smart DeskStream Product Details

Part No.	Description
58-30	Smart DeskStream Token Ring Switch
58-37	Smart DeskStream Stacking Module
58-34	Smart DeskStream TR Fiber Module
58-35	Smart DeskStream 100 Mbps Copper Module
58-36	Smart DeskStream 100 Mbps Fiber Module
58-38	Smart DeskStream ATM Module
58-39	Smart DeskStream Ethernet Module

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Part No. 60000370 07/02

For more information about the Smart DeskStream Token Ring Switch visit www.madge.com/deskstream