

Token-Ring, 100VG-AnyLAN, ATM

	<u>Token-Ring</u>	<u>Switched Token-Ring</u>	<u>Full-Duplex Token-Ring</u>
Data Rate	4 or 16 Mbps (shared)	4 or 16 Mbps (dedicated)	32 Mbps (dedicated)
Frame type	Token-Ring	Token-Ring	Token-Ring
Topology	Star wired ring	Star	Star
Media (most common)	UTP-3, 5 / STP / Fiber	UTP-3, 5 / STP	UTP-3, 5 / STP
Equipment needed	N/A	Use existing Token-Ring adapter; Switch	Full duplex adapters; Switch
Access method	Token-passing	Token-passing	Full duplex dedicated link
Standard supported	IEEE 802.5	IEEE 802.5 standard work in progress	IEEE 802.5 standard work in progress
Maximum transmission distance	100 m recommended (PC to hub) 2536 ft w/o repeaters (ring) 2 km (node-to-node on fiber)	Same as Token-Ring	Same as Token-Ring
Max nodes (shared domain)	260	One to Token-Ring maximum	One
Max nodes (with bridges)	Practical: up to about 15,000; Actual: unlimited	Practical: up to about 15,000	Practical: up to about 15,000
Maximum frame size	17,997 bytes (16 Mbps) 4,500 bytes (4 Mbps)	4,500 bytes	4,500 bytes
Adapter price range	\$295 - \$765	\$295 - \$765	\$295 - \$765
IBM products	Adapter: ISA, EISA, MCA, PCI, PCMCIA; Hub: 8228, 8230, 8250, 8260	Adapter: existing Token-Ring; Switch: 8272 LANStreamer	Auto 16/4 Token-Ring ISA Adapter, Auto LANStreamer MC 32, Dual LANStreamer MC 32, Auto LANStreamer PCI Adapter; Switch: 8272 LANStreamer

	<u>100VG-AnyLAN</u>	<u>ATM</u>
Data Rate	100 Mbps (shared)	25.6, 51, 100, 155, 622 Mbps (dedicated)
Frame type	Ethernet or Token-Ring (not at same time)	ATM 53 byte cell
Topology	Star	Star
Media (most common)	UTP-3, 5 (4 pair) / STP (2 pair) / Fiber	UTP-3 (25, 51) / UTP-5 (25-100) / STP (25-100) / Fiber (25-622)
Equipment needed	Adapter; Hub or switch	Adapter; Hub or switch; LAN emulation software (to use existing software)
Access method	Demand Priority	Full duplex dedicated link
Standard supported	IEEE 802.12 standard work in progress	ATM Forum
Maximum transmission distance	Same as Ethernet 10baseT	100 m on UTP/STP 2 km on fiber ATM is a LAN and WAN technology
Max nodes (shared domain)	None specified in standard	One (dedicated link per node)
Max nodes (with bridges)	ATM is likely backbone	Unlimited
Maximum frame size	Token-Ring (4,520); Ethernet (1,518 bytes)	53 bytes (all same size cells)
Adapter price range	\$250 - 600	\$400 - \$2000
IBM products	Adapter: none Hub: none	TURBOWAYS 25 ATM Adapter (ISA), TURBOWAYS 100 ATM Adapter (MCA); Hub: 8260; Switch: 8282, 2220

SWITCHED TOKEN-RING

- ⇒ A Token-Ring switch gives each of its ports its own network
- ⇒ Can attach either a single node or a whole LAN segment into each port
- ⇒ The switch essentially "bridges" between the ports
- ⇒ If only one node uses port, the full 16 Mbps bandwidth is dedicated to individual station

FULL DUPLEX TOKEN-RING

- ⇒ Requires both a switch with full duplex support and a full duplex adapter
- ⇒ Only attach a single node to each port
- ⇒ Do not need to wait for token before transmitting
- ⇒ No token passing is necessary because link is dedicated to one station
- ⇒ Supports simultaneous transmit and receive on two pair cable, doubling from 16 Mbps to 32 Mbps
- ⇒ Token access, token recovery, frame repeating, frame stripping, and end-of-frame status update protocols are removed

100VG-AnyLAN

- ⇒ Accommodates either ethernet or Token-Ring standard frame formats (although not in the same physical hub)
- ⇒ Uses Demand Priority Access Method which is a protocol supporting guaranteed bandwidth through a priority polling scheme (replaces CSMA/CD); similar to a round robin access method
- ⇒ On UTP transmits using Quartet Signaling by segmenting into quarters and sending concurrently across 4 pairs of wires
- ⇒ Only need to change adapters and hubs (do not change NOS, applications, or cabling)
- ⇒ Hubs assume control for LAN access rather than adapters
- ⇒ Max distance is 100 meter radius for UTP-3, 100 meters for UTP-5 and STP, and 500 to 2000 meters for fiber (depends on tranceiver)
- ⇒ Some vendors support 10baseT and 100VG-AnyLAN on the same adapter