



Intercom
Computer
Systems



I-5590 "Chameleon" Tape and Printer Control Unit for IBM/390 and Open Systems

Highlights

The I-5590 Chameleon is an integrated control unit for IBM mainframes and open systems. It supports IBM compatible 36- 18- and 9- track tape drives and other tape formats as well as optical disks and printers. A channel extension feature provides connectivity over TCP/IP to remote tape drives and printers and to original IBM 34xx tape systems and IBM 32xx/42xx channel printers.

One Size Fits All

There are still millions of 9- 18- and 36 track tapes in the archives and these media are still used for data exchange. IBM terminated shipment some time ago and the remaining field units are worn out, short of spare parts, expensive to maintain and consume costly power and floor space. The same is principally true for printers.

The I-5590 Chameleon is the first and only universal channel control unit, maintaining all common tape and optical disk formats as well as impact and non-impact printers with a single control unit. By consolidating multiple tape and printer environments with the I-5590 "Chameleon", the user can save up to \$25,000 in maintenance fees, up to 48,000 KWh power consumption p. a. and up to 80 % in floor space. In addition to the savings, the user can benefit with features not available in original tape, optical disk and printer systems.

The I-5590 Chameleons can substitute as many as 4 control units for tapes, optical disk and printers. It supports ESCON as well as Parallel Channels and provides ESCON and Block Multiplex Channel connectivity to 9 track and 18 track tape drives and line printers, originally only equipped with Block Multiplex Channel interfaces.

Another useful feature is the capability of remote support. The I-5590 channel extension feature transfers channel data via TCP/IP (Ethernet, FDDI, ATM) to remote Intercom devices or to original IBM tape and printer systems.

The I-5590 can also be used as Data Mover between mainframes and open systems. It emulates one or more 3490 tape drives and transfers the tape data via TCP/IP into a Windows or UNIX file system for further processing.



Fault tolerance can be achieved by clustering two independent control units to a "TWIN". Redundant power supplies and RAID protected controller disks are additional improvements for security and availability.

Magnetic Tape Support

The I-5590 "Chameleon" tape system supports IBM 3490, 3480 and 3420/3422 compatible tape transports and provides full backward compatibility to 36- track and 18- track cartridges and to 9- track open

Supported Tape Systems

- Up to 16 or 32 Drives
- IBM 3490: 36 Track Cartridge
- IBM 3480: 18 Track Cartridge
- IBM 3420: 9 Track Open Reel
- StorageTek 9840
- FSC 3590
- LTO, DLT, AIT, Exabyte
- IBM 3570/75
- Magneto Optical Disk
- DVD and CD

Software Support

- IBM OS/390; MVS, VM/VSE
- IBM OS/400
- AIX
- FSC BS2000
- BULL GCOS 8
- UNIX, Windows NT/2000

IBM S/390 Connectivity

- ESCON
- Block Multiplex Channel

RS/6000 Connectivity

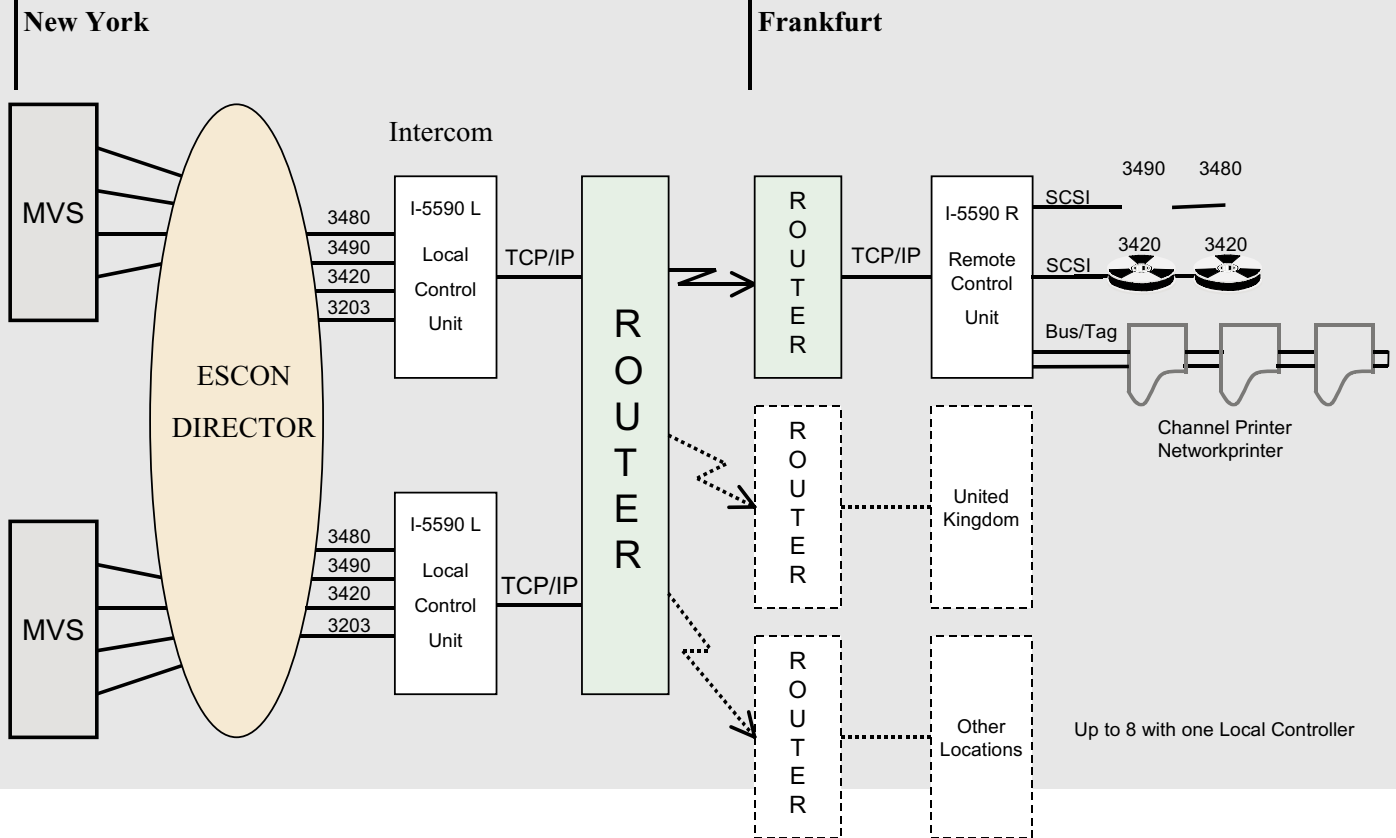
- I/F 2416
- I/F 2420

UNIX and WINDOWS Connectivity

- SCSI fast/wide
- Fibre Channel

Savings

- Maintenance: up to \$ 25,000 p.a
- Power: up to 48,000 kWh p.a.
- Floor Space: up to 80 %



reel tapes with densities of 6,260 1,600 and 800 bpi. Other supported technologies include StorageTek 9840, LTO Ultrium, DLT, AIT and virtual tape systems. Available are single tape drives Auto Loader with 7 to 14 cartridges and libraries with up to 500 TB storage capacity.

Optical Disk Support

With a life time of 30+ years and the Write Ones Read Multiple (WORM) capability, optical disks fulfill the legal requirements for long term archiving and micro fiche replacement. The fast access enables workflow and real-time processing.

The I-5590 Chameleon supports 12", 5¼" and 3 1/2" optical disks and CD/DVD as well as optical disk libraries with 164 to 46,000



cartridges, providing up to 424 TB near-online storage.

An automated CD/DVD production system supports mass production of CDs and DVDs for cost-effective data distribution, applications include mass production of catalogs and parts lists, printing on demand and data exchange.

Line Printer Support

The Chameleon supports impact printers with 500, 1,000 and 1,500 lines per minute as well as cutsheet and fanfold laser printers with 8 pages to 200 pages per minute for local and remote operation. Remote support is also available for original IBM, Xerox and OCE printers. Software compatibility is provided by IBM 3203, 3211, 4248 and 3800 emulation.

Universal Tape/Printer Control Unit

The I-5590 "Chameleon" provides an interface between the tape systems, optical disk systems and printers for one or more hosts. The multiprocessor control unit includes up to four microprocessor based Channel Directors, an Administration- and Control Unit and one to four Storage Directors. Remote Diagnostic via Internet or a telecommunication line is standard.

Two "Chameleons" can be clustered to build a TWIN System, providing higher throughput, more connectivity and fault tolerance. Redundant power supplies and system disk RAID protection is available as optional feature.

A Channel Director emulates one control unit image (either IBM 3490, 3480, 3422, 3211 etc.) and provides connectivity to the host system. Up to four Channel Directors in

a Single System and up to eight Channel Directors in a TWIN System support multiple control unit emulations and maintain connectivity to one or more hosts. Supported interfaces include ESCON with EMIF support and Block Multiplex Channel. Both channel types can coexist in the same control unit.

The Administration- and Control Unit controls I/O operation and performs error recovery. Remote Diagnostic via





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analog or digital public telephone or via the Internet is a standard feature.

The Storage Director includes the device drivers and provides connectivity to tape drives, optical disks and/or printers. In remote applications it transfers the data stream via TCP/IP or any other communication protocol to the remote side.

A Single Control Unit can be equipped with up to four Storage Directors and each Storage Director can support up to eight devices.

Library Support

Magnetic Tape Libraries and Optical Disk Jukeboxes with storage capacities up to 500 TB are supported by Intercom's I-5594, 7594 and 7595 Control Units.

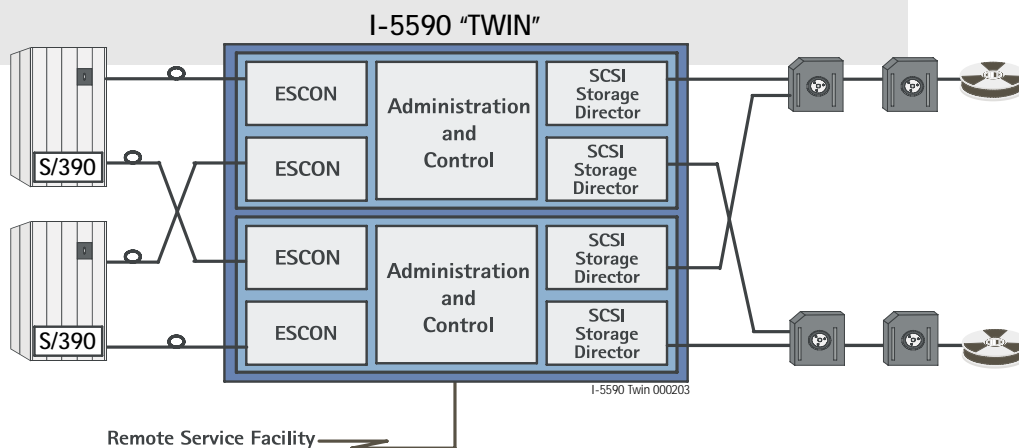
optical disks and printers are supported by a single control unit. Remote support is provided for Intercom tape units, optical disks and printer systems as well as for original IBM tape and printer systems and for Xerox and Océ printers.

Open Systems Connectivity

The tape system connects to AS/400 (Interface Feature 6501, 2621, 2420, 2644) and to RS/6000 (Interface Feature 2416, 2420). Drivers for UNIX, LINUX, Sun Solaris and Windows are available.

Flexibility

For example, one I-5590 "Chameleon" tape subsystem can include two 9 track tape drives, two 18 track and two 36 track cartridge drives and a line printer, all managed by the same control unit with ESCON



Virtual Tape System

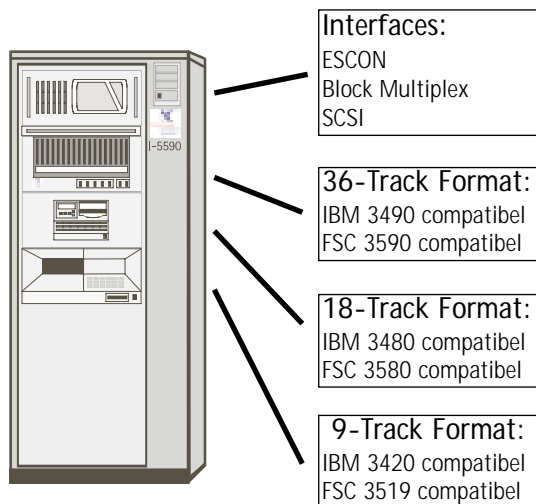
The I-5594 can be upgraded to the I-5990, or I-6984 Enterprise Virtual Tape Server (EVTS). It maintains up to 1 TB disk cache, up to 128 Virtual Tape Drives and provides also connectivity to mainframes and open systems.

The EVTS utilizes the full cartridge capacity, increases data throughput, reduces tape mounts, manages peak loads with a reduced number of tape drives and provides an enterprise wide tape storage area network for all system platforms.

IBM S/390 Connectivity

The "Chameleon" provides connectivity to IBM zSeries mainframes, S/390, BS2000, Bull and Unisys with up to eight ESCON and/or Block Multiplex Channel interfaces. Up to four cached Storage Directors maintain connectivity to a total of 32 devices. Tape drives with different tape formats,

and/or Block Multiplex Channel interface. Some or all I/O devices can be located locally or at remote locations. It handles all the outside of the library needs and line printer support for a data center.





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Specifications

Control Unit	Single	Twin
Total Number of Channels	4	8
Total Number of Storage Directors	2	4
Number of supported Devices	16	32
Control Unit Emulations	IBM 3490, IBM 3480, IBM 3420	
Supported Channel Types	ESCON, Block Multiplex, FIPS 60, SCSI	
Supported Tape Formats	36, 18 and 9 Track other tape formats on request	
Supported Printer Practical	Line Printer Mode IBM 3203, 3211, 4245, 4248	
Remote Support	via TCP/IP, Ethernet, ATM, FDDI	
Form Factor	19", 5 EIA high units	19", 9 EIA high units
Power	90 - 230 V, 200 W	90 - 230 V, 400 W
Heat output	680 BTU/h	1360 BTU/h
Weight	35 lb. (16 kg)	70 lb. (32 kg)

Cartridge Tape Drives	36 Track Unit	18 Track Unit
Write Format	36 Track	18 Track
Read Format	36/18 Track	18 Track
Cartridge Capacity	800 MB to 2400 MB*	200 MB to 600 MB*
Sustained Data Rate	6 MB/s to 12 MB/s*	3 MB/s to 9 MB/s*
Tape Speed (read and write)	4 m/s	2 m/s
Tape Speed (rewind and locate)	4 m/s	4 m/s
Data Compression	IDRC	IDRC
Cartridge Loader	7/10/14 Cartridges	10 Cartridges
Removable Cartridge Magazine	yes	yes
Form Factor w/o Cartridge Loader	19", 5 EIA high units	19", 5 EIA high units
Form Factor with Cartridge Loader	19", 5 EIA high units	1/2 19", 12 EIA high units
Desk Top Unit	Option	Option
Weight w/o Cartridge Loader	31 lb. (14 kg)	23 lb. (10 kg)
Weight with Cartridge Loader	56 lb. (25 kg)	56 lb. (25 kg)
Heat output	476 BTU/h	374 BTU/h
Power	90 to 260V, 140W	90 to 260V, 110 W

*Assuming 3:1 Data compression

9 Track Open Reel Tape Drive

Reel Size	6 inch to 10,5 inch diameter (1/2 inch tape - all reel sizes)	
Tape Loading	Auto Loading	
Tape Speed	125 inches per second, streaming	
Media	Computer grade half-inch magnetic tape ANSI-X3.40,1976	
Data Format and Data Rate	GCR 6250 bpi	625 KB/s
	PE 1600 bpi	160 KB/s
	NRZI 800 bpi	80 KB/s
Load Time	25 seconds maximum	
Rewind Time	180 seconds for 2400 foot tape	
Form Factor	19", 5 EIA high units	
Weight	77 lbs (37 kg)	
Heat output	680 BTU/h	
Power	110/220V, 50 - 60 Hz, 200 W	
Desk Top Unit	Option	

Cabinet

Form Factor	19 Inch, 32 EIA High Units
Weight	154 lb. (70 kg)

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