IBM 7299 Express Hub for AS/400 Systems

- ***Maximum throughput to 5250 Express Adapters***
- ***Support for 5250 Express Data Stream***
- ***Support for legacy 5250-type applications***
- ***Choice of active and passive models with RJ-45 or RJ-11 connectors***
- ***Line speed of 1 Mbps or 2 Mbps***
- ***Advanced dc filtering and transient suppression***
- ***Simple-to-configure connectivity solution***
- ***Low-cost way to connect 5250-type devices over short distances***

The IBM 7299 Express Hub for midrange systems is a family of networking hubs for connecting 5250-type devices (such as PCs with 5250 emulation adapters, twinaxial-attached printers and InfoWindow® displays) to AS/400®, System/36™, AS/400 Advance 36 and System/38™ hosts. The 7299 Express Hubs use low-cost, UTP wiring and can convert a midrange twinaxial cabling topology from daisy-chain to a highly flexible, expandable star topology.

Product Overview

The IBM 7299 Express Hub for AS/400 Systems can help you maximize throughput to your 5250 Express adapters and still support all of your legacy applications. This star hub offers four models that connect 5250-type devices to AS/400, AS/400 Advanced 36 or System/3x hosts by using low-cost category 5 UTP or FTP cabling.

If you currently use AS/400 Advanced 36 or System/3x computers and plan to migrate to an AS/400 host, the 7299 can pave the way. It's easier to configure than the IBM 6299 Hub for Midrange Systems, and it supports the connection of all types of IBM compatible 5250 devices to AS/400 and System/3x hosts. The 7299 supports all models of AS/400, AS/400 Advanced 36 and System/3x, IBM 5394 and 5494 Remote Controllers and all legacy 5250-type adapters, displays and printers that run at the standard 1-Mbps, non-optimized data rate, for maximum investment protection.

If you're planning a new installation or you need the 5250 Express Data Stream's higher performance, choose the 7299. For existing 6299 hub installations or those where hub modularity is essential, the 6299 is still a good solution. The 7299 is compatible with the 6299 multiplexer, distribution block and baluns.

The 7299 supports all models of AS/400, System/36, AS/400 Advanced 36 and legacy 5250-type adapters, displays and printers that run at the standard 1-Mbps, non-optimized data rate.

The 2-port, active star hub — Model 2EX — supports up to 14 attached devices. Benefits also include advanced noise suppression and impedance-matching to ensure 5250 device performance and reliability. A unique LED indicates when the devices attached are running at the faster, 2-Mbps data rate supported by the 5250 Express Adapters. You can use the LED to debug network problems and ensure that your attached devices are running at the faster rate. Model 2FX is the same as Model 2EX except that it has shielded RJ-45 connectors.

Models 1PA and 2PA are passive UTP hubs that connect all types of 5250-type devices to AS/400 or System/3x hosts over short distances. Model 1PA supports one host port and seven devices. Model 2PA supports two host ports and 14 devices. Neither model requires power and can be used in wiring closets with no power available.

When used with an AS/400 host—such as the AS/400 Advanced Entry Model 150—and 5250 Express adapters, the 7299 supports all the features of the 5250 Express Data Stream. That means increased throughput to 5250 Express adapters—up to four times as fast—and increased productivity through reduction of transmission-related delays. The 5250 Express Data Stream has two enhanced modes not found in the legacy 5250 data stream. Optimized mode reduces the number of bits required to transmit the same amount of data compared to the traditional 5250 data stream. The 2-Mbps mode doubles overall line speed from 1 Mbps to 2 Mbps. When both optimized and 2-Mbps modes are in use, throughput can increase by up to four times. Of course actual application performance improvements depend on host and PC processor speed and system load.

Say good-bye to twinaxial daisy-chaining

The 7299 provides a superior alternative to twinaxial cabling for connecting to AS/400 and System/3x hosts. Twisted-pair cabling is far less expensive than twinaxial—about one-fifth the cost—and it can be used for other voice and data connections as well. All 7299 models connect one or two twinaxial workstation controller ports to seven or fourteen 5250-type devices, for maximum versatility. Each device is connected directly to the hub using star topology, so you can use a patch panel to connect each user instead of twinaxial daisy-chain topology.

What's the advantage of star topology? It's simple. Devices are individually cabled to an isolated hub port instead of physically daisy-chained together as with twinaxial cabling. Removing a device and its attachment cable from a twinaxial line will break the chain—and bring down everyone else on the line. Star topology allows devices to be dynamically added, moved or deleted without affecting other devices.

Active models for noise reduction

7299 Models 2EX and 2FX are 2-port, active star hubs that support up to 14 attached devices. Their receiver circuitry provides improved impedance-matching and reduces reflection problems. Advanced dc filtering and transient suppression provide excellent immunity to ac power line noise. These models provide true protocol transparency, for maximum 5250-type device performance and reliability. When used in conjunction with the 6299 Hub for Midrange Systems balun, which filters out noise, these models provide a clear transmission path and prevent noise-related session loss. They also have phase-correcting circuitry that detects reverse twinaxial phase and automatically corrects it, thereby maintaining the correct phase for all connections.

These models have two host LEDs per host port and 14 device LEDs. One of the host LEDs and all of the device LEDs indicate host and device port activity—useful for debugging connection problems. The other host port LED indicates when the devices attached are running at the faster 2-Mbps data rate supported by the 5250 Express adapters. This unique feature helps you debug network problems by indicating when your attached devices are running at the faster rate. Model 2FX has shielded RJ-45 connectors, whereas Model 2EX has either unshielded RJ-45 or RJ-11 connectors.

Passive models for low-cost connectivity

If you're looking for a low-cost solution for connecting 5250-type devices to AS/400, AS/400 Advanced 36 or System/3x systems over short distances using category 5 twisted-pair cabling, here it is. 7299 Models 1PA and 2PA are passive UTP hubs that are an excellent choice for short-distance connections. In fact the 7299 replaces the IBM 5299 Terminal Multiconnector as the IBM passive UTP hub offering. The 7299 Model 2PA supports two host ports and is rack-mountable, unlike the 5299. Model 1PA is functionally identical to the 5299—with a lower price.

Both passive models include true star circuitry, eliminating the need for cable-tuning and preventing interference from shorted or open devices. Model 1PA supports one host port and seven devices, whereas Model 2PA supports 2 host ports and 14 devices. Neither model requires power and can be used in wiring closets with no power available for active devices. Both models split the host signal from each host port and distribute it evenly among attached devices.

7299 Express Hub for AS/400 Systems Specifications

Model options

Models	Host ports	Device ports	International power supply included	Diagnostic LEDs	Connector type	FC
2EX	2	14	Yes	Yes	U RJ-45	4545
2EX	2	14	Yes	Yes	U RJ-11	1111
2FX	2	14	Yes	Yes	S RJ-45	N/A
1PA	1	7	No	No	U RJ-45	4545
1PA	1	7	No	No	U RJ-11	1111
2PA	2	14	No	No	U RJ-45	4545
2PA	2	14	No	No	U RJ-11	1111

Maximum configuration

The 7299 Models 2EX, 2FX and 2PA support a maximum of 2 host ports and 14 devices each.
The 7299 Model 1PA supports a maximum of 1 host port and 7 devices

Physical specifications

Models	Width	Depth	Height	Weight
2EX/2FX	437 mm (17.2 in.)	222 mm (8.7 in.)	42 mm (1.65 in.)	1.9 kg (4.2 lb)
1PA	229 mm (9 in.)	222 mm (8.7 in.)	42 mm (1.65 in.)	1.7 kg (3.7 lb)
2PA	437 mm (17.2 in.)	222 mm (8.7 in.)	42 mm (1.65 in.)	2.1 kg (4.6 lb)

Operating environment

Temperature	0° to 55° C (32° to 131° F)
Relative humidity	10% to 90%
Maximum wet-bulb temperature (caloric value)	26.7° C (80° F)
Capacity of exhaust	None (no fan)
Noise level	None (no fan)
For Models 2EX and 2FX only:	• Electrical power: 0.023 kVA • Power consumption in active mode: 14 watts • Leakage and starting current: 0.00075/50 A

Compatibility

The IBM 7299 Express Hub for AS/400 Systems is compatible with all AS/400, System/36, System/38 and IBM 5394 amd 5494 remote twinaxial controllers. The 7299 is also compatible with all IBM 5250-type devices and 100% IBM compatible 5250-type devices.

Distance limitations

Models	Connection	Maximum distance at 1 Mbps	Maximum distance at 1 Mbps
2EX	Host to 7299	610 m (2000 ft)	457 m (1500 ft)
2EX	7299 to device	670 m (2200 ft)	503 m (1650 ft)
2FX	Host to 7299	610 m (2000 ft)	457 m (1500 ft)
2FX	7299 to device	670 m (2200 ft)	503 m (1650 ft)
1PA	Host to device	91 m (300 ft)	69 m (226 ft)
2PA	Host to device	91 m (300 ft)	69 m (226 ft)

Installation information

Hardware The IBM 7299 Express Hub for AS/400 Systems attaches to the Twinaxial Workstation Controller of any model of the AS/400, AS/400 Advanced 36, System/36, System/38, 5394 Remote Controller or 5494 Remote Controller. 5250 Express Data Stream support requires an IBM AS/400 Advanced Entry 9401 Model 150 configured with the Workstation/Communications Adapter (FC 2720) and the latest PTF applied at the host. The 5250 Express Data Stream also requires an IBM 5250 Express ISA, PCI or PC Card installed in a supported PC.

Software The AS/400 host must be running OS/400® V3R7 with the latest PTF to take advantage of the 5250 Express Data Stream. If an earlier version of OS/400 is being used, the product will operate at the standard 5250 data stream rates. To determine what PC software is required to support the 5250 Express Data Stream on PCs with 5250 Express adapters installed, refer to the IBM 5250 Express ISA, PCI and PC Card Adapter specification sheets.

Publication *IBM 7299 Express Hub Planning, Installation and Maintenance Guide* S05J-3355

Cables

Compatible with all of the IBM 6299 Hub for Midrange Systems baluns. The following baluns work on most 5250 devices:

Description

Twinaxial-to-UTP balun, RJ-45 (4/5) with 3-m (10-ft) UTP male-to-male
Twinaxial-to-UTP balun, RJ-11 (2/5) with 3-m (10-ft) UTP male-to-male
Twinaxial-to-UTP balun, RJ-11 (3/4) with 3-m (10-ft) UTP male-to-male
Twinaxial-to-UTP balun, RJ-45 (1/2) with 3-m (10-ft) UTP male-to-male
Twinaxial-to-UTP balun, RJ-45 (3/6) with 3-m (10-ft) UTP male-to-male

The following baluns are for IBM 3179, 3180, 3196 and 3197 displays only:

Description

Twinaxial-to-UTP balun, self-terminating RJ-45 (4/5) with 3-m (10-ft) UTP male-to-male
Twinaxial-to-UTP balun, self-terminating RJ-11 (2/5) with 3-m (10-ft) UTP male-to-male

The following baluns are for IBM 5250 Express Adapters or IBM 5250 Emulation Adapters only:

Description

DB-15-to-UTP balun, self-terminating RJ-45 (4/5) with 3-m (10-ft) UTP male-to-male
DB-15-to-UTP balun, self-terminating RJ-11 (2/5) with 3-m (10-ft) UTP male-to-male

Key Customer Benefits

- Reduces transmission-related delays
- Saves money over twinaxial; can be used for other twisted-pair cabling/voice or data connections in addition to the 5250 connection
- Investment protection
- Makes setup easier and quicker
- Optimizes transmission capabilities

Supplementary Information

- Information on the IBM 7299 Express Hub for AS/400 Systems is available at: *www.networking.ibm.com/525/525home.html*