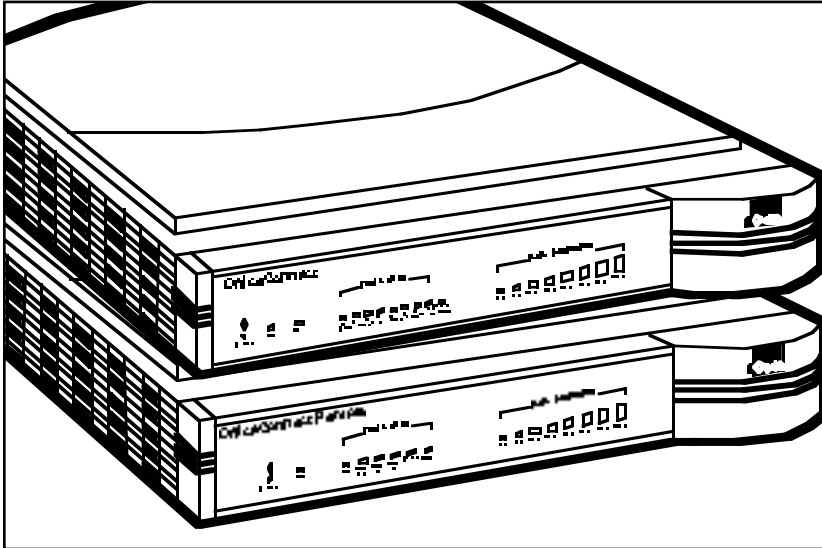


# BLACK BOX<sup>®</sup>

## NETWORK SERVICES

### 3Com<sup>®</sup> OfficeConnect SYSTEM



*Everything you need to set up and run an integrated networking system.*

## Key Features

- ▶ **Share network resources in your small business or office.**
- ▶ **Extend your intranet to remote branch offices.**
- ▶ **All models conveniently stack and clip together, so it's a snap to add users.**
- ▶ **Specifically designed for quick and easy installation.**

The 3Com<sup>®</sup> OfficeConnect system is ideal for creating small networks. A single OfficeConnect hub lets you create a small network with up to eight workstations. If you need to connect more workstations, simply connect and clip another OfficeConnect hub to form a stack (each stack functions as a single repeater).

The Hubs available are:

- Hub TP/4—four shielded 10BASE-T ports;
- Hub TP/4 Combo—four shielded 10BASE-T ports plus one AUI and one BNC port;
- Hub TPO/8—eight 10BASE-T ports plus diagnostic LEDs and alert LED;
- Hub TPC/8—eight 10BASE-T ports, one 10BASE2 port, and network-utilization LEDs;
- Hub TPM/8—eight 10BASE-T ports and one 10BASE2 port, network-utilization LEDs, and

one DB9 serial port for management and SNMP support;

- Hub TP100—eight 100BASE-TX ports plus diagnostic LEDs and eight network-utilization LEDs;
- Hub TP/16C—sixteen 10BASE-T ports, one BNC connector, and a crossover switch so you can cascade multiple hubs.

The 3Com OfficeConnect Remote Router (530U) is ideal for linking remote offices or workgroups. This Router transmits information over a Wide Area Network service provided by telephone carrier organizations. It supports ISDN, leased lines, and integral voice data lines.

NetBuilder Routers (141, 142, 143, and 147) offer remote branch office routing. 141 has Boundary Routing system architecture; 142 specializes in IP/IPX routing; and 143 is used for Boundary Routing

for SNA. Or choose 147, which supports all major WAN protocols. These Routers are available with either U or S/T interfaces.

The OfficeConnect Switch 400 has four auto-sensing 10/100BASE-TX ports.

If you want to access the Internet with a Novell IPX network (via high-speed ISDN connections), the Office-Connect Gateway 535 is what you need. It provides ISDN only, leased-line only, or simultaneous ISDN and leased-line operation.

For complete peripheral sharing, use the Print, Fax, and CD-ROM Servers. The Print Server supports up to two shared printers in a networked environment. The Fax Server lets you send and receive faxes from any networked PC. And the CD-ROM Server gives you

*(continued on page 2)*

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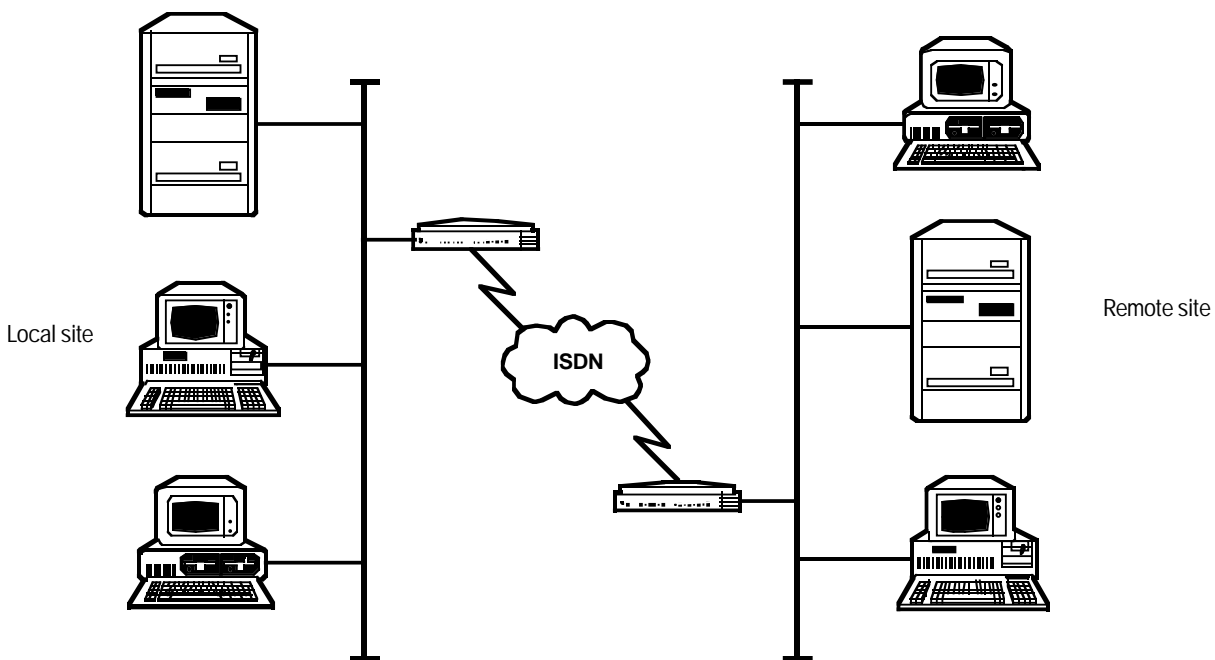
network-direct connections for up to seven attached CD-ROM

drives. All three servers can be installed easily: Just connect the appropriate cables and then complete a brief software-configuration process.

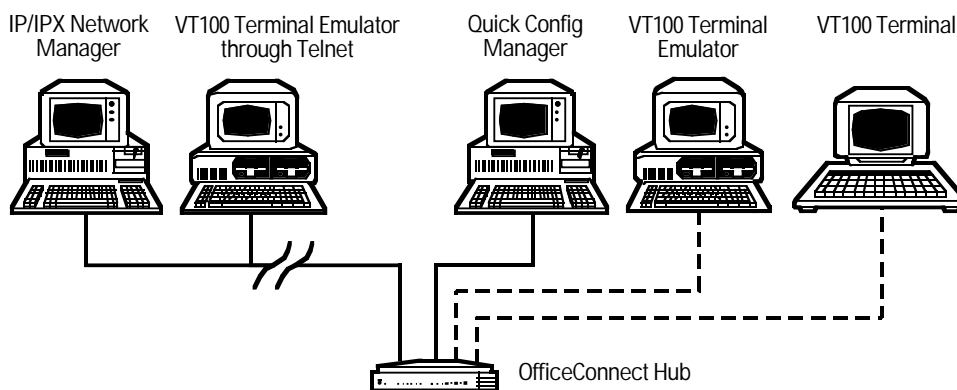
The Remote Access Server 1000 provides guaranteed network access for your business travelers and tele-workers regardless of their location. Use

the Access Server for dial-in connections to the corporate intranet and e-mail, and dial-out connections to fax and modem pooling and the Internet.

## Create a local or remote network—and manage that network in a variety of ways—with the Office Connect Hubs.



*This illustration shows a typical ISDN network.*



*Different management connections to the OfficeConnect Hub.*

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## Creating a WAN with OfficeConnect Remote

The OfficeConnect Remote Router or Remote Access Server connects a LAN at one location with a number of other LANs at remote locations. The LAN could be made up of any number of PCs, servers, or other computing equipment, which in an office or small-business environment are typically linked together using a centrally located OfficeConnect Hub. In order to interconnect the Hubs in different locations, the OfficeConnect Remote unit transmits information over a WAN (Wide Area Network) service provided by telephone carrier organizations.

The most modern and most efficient of these WAN services is ISDN (Integrated Services Digital Network). This provides a high-speed dialup facility to allow your OfficeConnect Remote to automatically and quickly dial remote offices, transmit your data between remote PCs just as speedily, and then disconnect the call. You incur minimum ISDN telephone charges since calls are made only when needed. This is known as Dial-on-Demand.

### Using ISDN to Support Leased-Line WAN Circuits

ISDN provides an ideal service to connect remote LANs.

The connecting bandwidth needed must be at least 64 kbps to achieve a realistic throughput. Slower-speed links can be used, but usually only when usage is low and infrequent, or if higher-speed circuits cannot be provided.

Leased digital point-to-point circuits can still be cost effective if usage spans many hours per day. However, as ISDN charges go down, this balance also changes. ISDN can be used to provide effective backup of these point-to-point WAN circuits in two ways:

- First, if the point-to-point circuit fails, an ISDN channel can be dialed up quickly and automatically to provide an alternative path to the remote unit.
- Second, if the leased circuit becomes heavily loaded due to peaks in the traffic between remote bridges or routers, additional bandwidth can be automatically dialed up to supplement the bandwidth of the leased circuit. The interconnected bridges would then treat the leased line and ISDN channel as parallel links, sharing the load across the two.

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## Print Server, Fax Server, and CD-ROM Server Features

### Print Server

- Fully self-contained unit integrating software and hardware for easy, one-step installation.
- Two parallel ports.
- No additional software needed for client PCs or file server.
- Compatible with Novell® NetWare®, Windows NT™, EtherTalk®, and UNIX® TCP/IP.
- Sophisticated print-queue management.
- High performance with the ability to handle continuous requests from multiple users.
- Solid reliability with responsiveness to network conditions; automatic reconnect and restart in case of disconnection.
- Easily add print servers to accommodate growth.

### Fax Server

- Single unit integrates software and hardware for easy one-step installation.
- One 14.4-kbps fax modem included in server.
- Send or receive faxes from any networked PC.
- High-quality outgoing faxes.
- Fax traffic management.

- Plain-paper printing of incoming faxes.
- Saves paper—you can display most faxes online.
- Compatible with cc:Mail™ and MHS gateway.

### CD-ROM Server

- Place multiple CD-ROM servers throughout the network.
- Independent; users can access files directly without a dedicated PC or burdening larger file servers with requests and data retrieval.
- Can be installed in any LAN segment.
- Users from different environments can simultaneously access drives.
- Can be accessed and managed directly without relying on other servers.
- Easily managed through an intuitive graphical management tool, such as Windows based software (included) or a Web browser.
- Supports hypertext links from other Web servers and can read HTML-formatted CDs.
- Security features include being able to restrict access to specific groups, hosts, or individuals.

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## Technically Speaking

Network management is not required to get your Hub working; it simply allows you to change the way it works and to monitor what is happening to your network. Each OfficeConnect Hub is a separate manageable entity so you manage each Hub individually.

Transcend Quick Configuration Manager, or Quick Config Manager, is supplied with your Hub and provides an easy-to-use graphical local management system via the Hub's serial port. Quick Config Manager uses a familiar Windows® interface with point-and-click operation.

You can also manage your Hub using a VT100™ terminal or any Telnet facility that emulates a VT100 terminal. VT100 uses a text-based user interface.

Using intelligent 3Com software distributed throughout the network, the Transcend management applications support all of today's platforms to give you total control over your entire network from a single management station.

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## Connecting OfficeConnect Hubs Together

You can increase the number of workstations that can connect to your network by adding more OfficeConnect Hubs. You can use 10BASE-T, 10BASE2, or 100BASE-T, depending on the model of your Hub.

- With 10BASE2 (for Hubs TPC/8 and TPM/8), you can connect up to 30 Hubs on a single coax segment, leaving all of the RJ-45 ports free for workstation connections.
- With 10BASE-T (for Hubs TPO/8, TPC/8, and TPM/8), you can connect up to four Hubs in series.
- With 100BASE-T (for TP100), you can connect two Hubs in series.

NOTE: You cannot connect the same two hubs together using both 10BASE-T and 10BASE2. This causes a network loop.

# Ordering Information

ITEM	CODE
OfficeConnect Hub	
4-Port	
TP/4 .....	3C16704A-US
TP/4 Combo .....	3C16703A-US
8-Port	
TPO/8 .....	3C16700A-US
TPO Ready Pak (with cable) includes	
(1) 3C16700 and	
(1) EVMSL05-0010 .....	3C16700-CABPAK
TPC/8 .....	3C16701A-US
TPC Ready Pak (with cable) includes	
(1) 3C16701 and	
(1) EVMSL05-0010 .....	3C16701-CABPAK
TPM/8 .....	3C16710-US
TP100 .....	3C16720
16-Port	
TP/16C .....	3C16702A-US
OfficeConnect Remote Router, 530U-ISDN, Integral Voice, and Leased Line .....	3C40027A-US
OfficeConnect NetBuilder Routers with S/T interface	
141 .....	3C8841A-US
142 .....	3C8842B-US
143 .....	3C8843
147 .....	3C8847B-US
with U interface	
142 .....	3C8852A-US
143 .....	3C8853
147 .....	3C8857B-US
OfficeConnect Switch 400 .....	3C16733-US
OfficeConnect Gateway 535 .....	3C410026
OfficeConnect Servers	
Print Server .....	66298600739
CD-ROM Server .....	66298600932
Fax Server .....	66298600745
OfficeConnect Remote Access Server 1000 .....	3C7102
<u>You may also want to order cable. . .</u>	
Category 5 Solid-Conductor Cable, 4-Pair, Straight-Pinned, PVC, 10-ft. (3-m) .....	EYN737MS-0010

# Specifications

## Standards —

Hubs (except TP100), Switch 400:

*Functional:* ISO 8802/3, IEEE 802.3

*Safety:* UL 1950, EN 60950, CSA 22.2 #950

*EMC:* EN 55022 Class B, EN 50082-1, FCC Part 15 Class B certified, C108.8 Class B, VCCI Class 2 (screened or shielded cables must be used to ensure compliance with these standards)

*Environmental:* EN 60068 (IEC 68), BABT Approval for U.K. users (for TPM/8 only), Ofel General Approval, NS/G/12345/J/100003, for indirect connection to a public telecommunications system (TPM/8 only)

Remote Router (3C40027A-US):

*Safety:* UL\*

*EMC:* FCC Part 15 Class B

CD-ROM Server:

FCC Class A, CE, UL, CSA (TBA)

8-Port Hub TP100 (3C16720):

*Functional:* ISO 8802/3, IEEE 802.3

*Safety:* UL 1950, EN 60950, CSA 22.2 #950

*EMC:* EN 55022 Class B, EN 50082-2, FCC Part 15 Class B, CSA C108.8-M1983 Class B, VCCI Class 2, EN 61000-4-5

Print Server and Fax Server:

*Functional:* IEEE 802.3

*Safety:* EN 60950, CSA NRTL/C

*EMC:* EN 55022 Class B, EN 50082-1, FCC Part 15 Class B, C108.8 Class B, VCCI Class 2, FCC Part 68, DOC (Fax Server only), BABT, German PTT (Fax Server only)

NetBuilder Routers:

*Safety:* UL, EN 60950

*EMC:* CE Mark, EN 55022 Class B, JATE, Austel, FCC, VCCI Class 1

## Power —

TP/4, TPO/8, TP/16C: 11 VAC;

TP100: 20 VAC;

TPM/8: 18 VAC;

Switch 400: 30 VAC;

TCP/8: 12 VAC;

Remote Router: 90–132 VAC RMS

(U.S.), 193–254 VAC RMS

(Europe);

NetBuilder Routers: 90–132 VAC

(U.S.), 180–264 VAC (Europe);

CD-ROM Server: 12–20 VAC, 1 amp;

Print Server, Fax Server: AC adapter

input: 110 VAC, 60 Hz, 15 VA

(U.S.), 230 VAC, 50 Hz, 15 VAC

(U.K.), 100 VAC, 50 Hz, 15 VA

(Japan), 220 VAC, 50 Hz, 15 VAC

(Continental Europe, South

Africa), 240 VAC, 50 Hz, 15 VA

(Australia), Server input: 13 VDC

unregulated, 4W (Print Server) or

6W (Fax Server)

**Size —** TP/4, TPO/8, TPC/8: 3.6H x

22.1W x 13.5D cm (1.4"H x

8.7"W x 5.3"D);

TP100, TPM/8, Remote Router,

TP/16C, Switch 400, NetBuilder

Routers: 5.3H x 22.1W x 18.5D cm

(2.1"H x 8.7"W x 7.3"D);

Fax Server: 6.1H x 22.2W x 20.3D cm

(2.4"H x 8.8"W x 8"D);

Print Server, CD-ROM Server: 4.1H x

22.1W x 15.2D cm (1.6"H x 8.7"W x

6"D)

**Weight —** TP/4, TPO/8, CD-ROM

Server: 0.5 kg (1.1 lb.);

TPC/8, Print Server: 0.5 kg (1.2 lb.);

TP100, Remote Router: 1 kg (2.2 lb.);

TP/16C, TPM/8, Switch 400: 1 kg

(2.1 lb.);

NetBuilder Routers: 2 kg (4.4 lb.);

Fax Server: 1 kg (2 lb.)