OMNINET NETWORK INSTALLATION GUIDE

CORVUS SYSTEMS

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OMNINET™

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INTRODUCTION

Corvus OMNINET™ is a local network which uses a continuous-line trunk cable, called the common bus, to wire up to 64 stations together. The common bus consists of a pair of 20-gauge insulation wires twisted together inside a common insulated cover.

An OMNINET local network is composed of one or more twisted-pair trunk segments, with any single segment extending up to 1800 feet in length. When multiple segments are used, Active Junction Boxes™ are required to join the network segments. Two network devices can communicate as long as they are no further than 4000 feet apart. For additional information on connecting network segments, please refer to the CORVUS OMNINET ACTIVE JUNCTION BOX INSTALLATION GUIDE.

To attach a device to OMNINET, the device must have an OMNINET network interface. In the case of a microcomputer, a Transporter™ card for the specific microcomputer (such as an Apple II) is used. A shared peripheral (such as a disk drive or a printer) is attached to OMNINET with a network server, which has both an OMNINET interface and an interface to the shared device.

Each OMNINET network device has a Molex connector to attach the device to a twisted-pair tap cable. A Passive Tap Box,™ known as a network tap, connects each tap cable to the network trunk. Figure 1 shows these network components and their names.

INSTALLING THE CORVUS OMNINET | 1

DEFINITIONS

Network Trunk —The main OMNINET network wire, or common bus, used to interconnect devices. (Twisted pair wire 4000 feet maximum length.)

Network Segment —A length of trunk wire between any two Active Junction Boxes or between an Active Junction Box and a network terminator. (1800 feet maximum length.)

Active Junction Box— A signal booster which joins two or three network segments, allowing interconnected devices to communicate over extended distances.

Network Tap —A Passive Tap Box used to connect network devices. (A maximum of 64 network devices are allowed.)

Tap Cable —Twisted pair wire used to connect network device to network tap. (15 feet maximum length.)

Network Device —A computer or any peripheral equipment (such as a disk drive or a printer) connected to an OMNINET tap cable via either an OMNINET interface card or a network server.

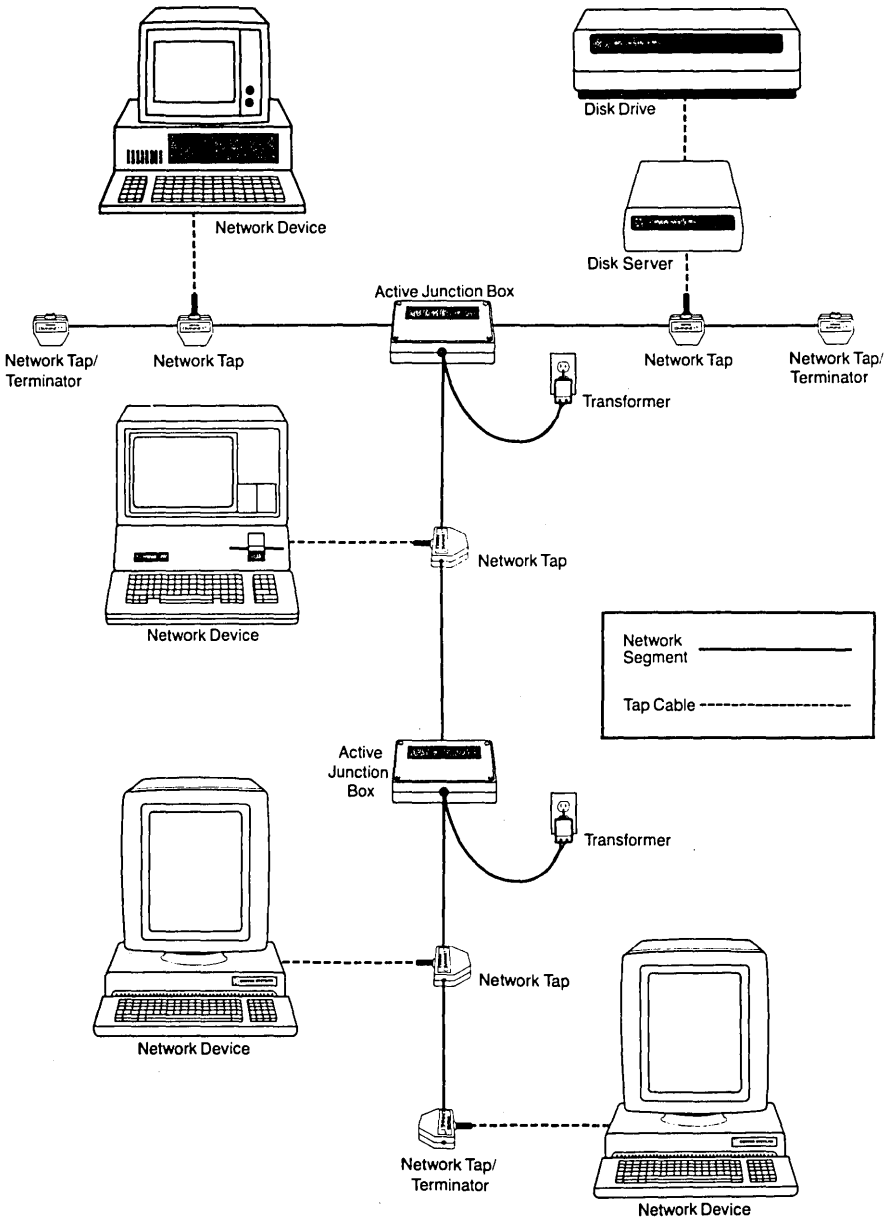

FIGURE 1: Network Components

Creating Network Taps

Network taps can easily be created using Tap Boxes™ supplied by Corvus. Figure 2 shows the general layout of a Tap Box, which is a two-piece molded plastic unit designed to be installed without special tools or training. The physical connection of the signal wires is made by insulation-displacement connectors molded into each Tap Box. These connectors eliminate the need to cut the network trunk wire, thus maintaining the operational continuity of the network at all times.

The cable used for the OMNINET network trunk is specified as unshielded twisted pair (Belden type 8205). If shielded wire (Belden type 8762) is used, each network segment should not exceed 500 feet. When Corvus-supplied Tap Boxes are used with shielded wire, the shield drain wire is left uncut, routed along the lower portion of the Tap Box, and tied to earth ground at one end only of the network.

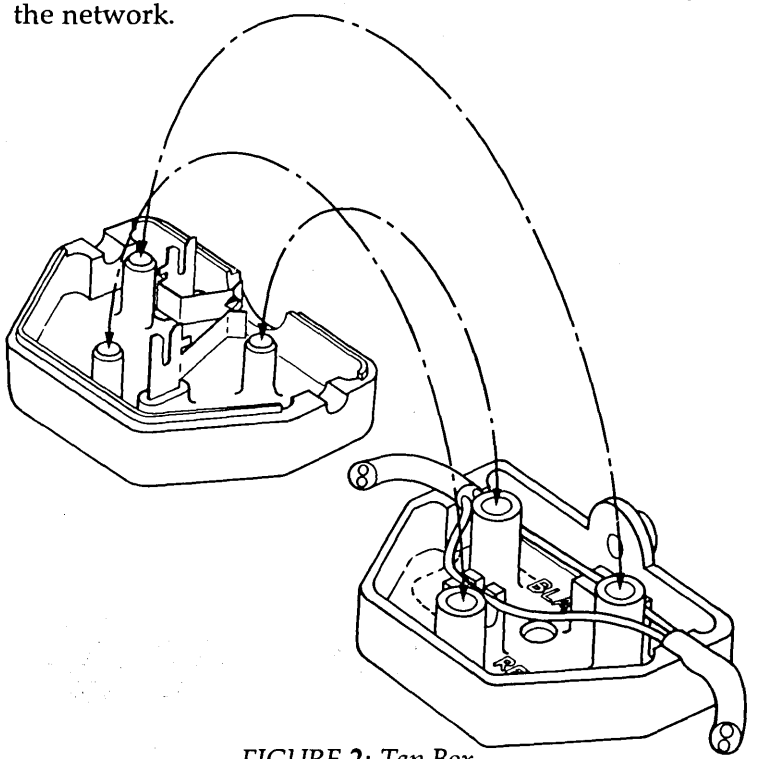

FIGURE 2: Tap Box

Belden is a registered trademark of Belden Corporation.

The Simple Network Tap

Figure 3 is a detailed wiring chart for a simple network tap using a Corvus-supplied Tap Box. The instructions which follow describe how to create the simple network tap.

1. Using a knife or razor blade, remove about two inches of the trunk wire's insulated cover, exposing the red and black signal wires.
2. On the back of the Tap Box are two plastic wire guides. Push the black signal wire onto the plastic wire guides labeled BLACK.
3. Push the red signal wire onto the plastic wire guide labeled RED.
4. Insuring that the trunk wire exits the Tap Box in the circular grooves provided, line up the top cover over the bottom and firmly squeeze the Tap Box halves together.

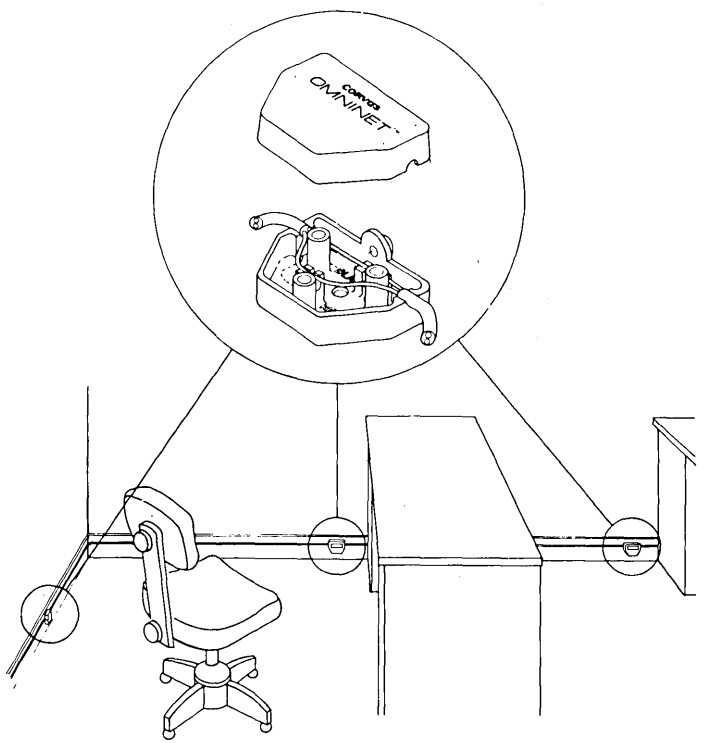

FIGURE 3: Simple Network Tap

Attaching a Device to a Network Tap

Each device is connected to a network tap by simply plugging in the Corvus-supplied tap cable. The following instructions are illustrated in Figure 4.

1. Insure that the power to the network device being connected is turned off.
2. Attach the Molex connector end of the tap cable to the network device.
3. Push the phono jack end of the tap cable into the top of the Tap Box. Be sure that the Tap Box cover is in place.

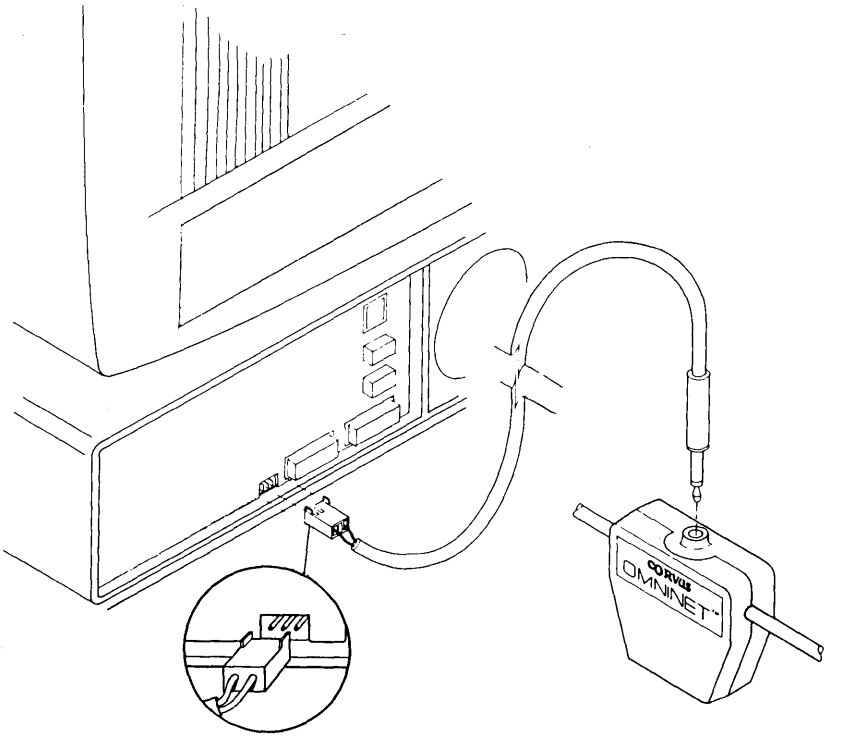

FIGURE 4: Attaching a Device to a Network Tap

Network Terminators

The network trunk must be terminated at both ends. This is achieved by installing a 100 OHM, ¼ WATT, 5% resistor, such as the ones supplied by Corvus, between the black wire and the red wire at each end of the network trunk. The resistor is inserted into the metal connectors in the ending network taps. Figure 5 shows where to install the network terminator resistor in the network Tap Box. The instructions which follow describe how to install the terminating resistor.

1. Using a knife or razor blade, remove about one inch of insulation from the end of the network trunk wire, exposing the red and black signal wires.
2. On the back of the Tap Box are two plastic wire guides. Push the black signal wire onto the plastic wire guides labeled BLACK.
3. Push the red signal wire onto the plastic wire guide labeled RED.
4. Place the wire leads of the 100 OHM resistor into the grooves provided on the metal connectors molded into the front cover of the Tap Box.
5. Insuring that the trunk wire exits the Tap Box in the circular grooves provided, line up the top cover over the bottom and firmly squeeze the Tap Box halves together.

NOTE: A network device can be attached to the network tap/terminator, just as it is attached to any other network tap, by using a standard tap cable.

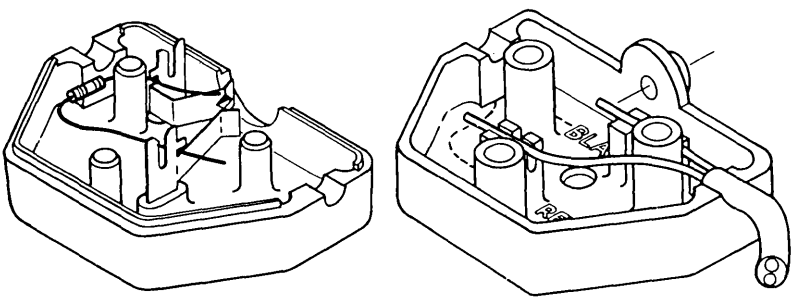

FIGURE 5: Installing Network Terminator

Splicing Network Segments

Expanding the network trunk cable can be accomplished by using a Tap Box to splice the two pairs of signal wires together. The following instructions, illustrated by Figure 6, describe how to create a network splice.

1. Remove approximately 1.5 inches of the insulation cover from the ends of the two network segments to be spliced, exposing the red and black signal wires.
2. On the back of the Tap Box are two plastic wire guides. Push the black signal wire from one segment onto the plastic wire guide labeled BLACK.
3. Push the black signal wire from the other segment onto the same plastic wire guide.
4. Push the red signal wire onto the plastic wire guide labeled RED.
5. Push the red signal wire from the other segment onto the same plastic wire guide.
6. Insuring that the trunk wire exits the Tap Box in the circular grooves provided, line up the top cover over the bottom and firmly squeeze the Tap Box halves together.

See the previous section titled "Network Terminators" for detailed instructions concerning network termination.

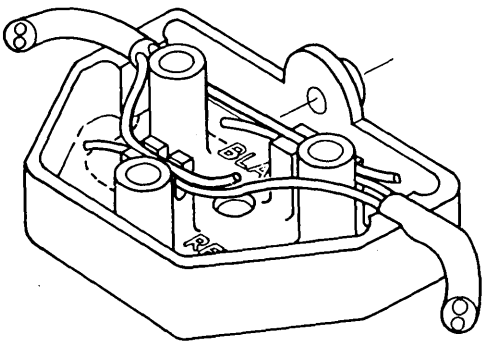

FIGURE 6: Splicing Network Segments

The Long-Drop Network Tap

In some cases, a simple network tap cannot be used because the network trunk cable is not within 15 feet of the network device. For these cases, a long-drop network tap is recommended. Figure 7 is a detailed wiring chart for a long-drop network tap using three Tap Boxes. The instructions which follow describe how to create a long-drop network tap.

1. Cut existing network trunk cable.
2. Cut a piece of cable twice as long as the distance from the network trunk to the desired new network tap. This cable will become an extension of the network segment and must not make the segment length exceed 1800 feet.
3. Using a network Tap Box, splice one end of the new trunk cable extension onto one end of the original trunk cable (see "Splicing Network Segments.")
4. Using a second network Tap Box, splice the other end of the trunk cable extension onto the other end of the original trunk cable.
5. If network taps are to be attached at this time, follow instructions for attaching the simple network tap.

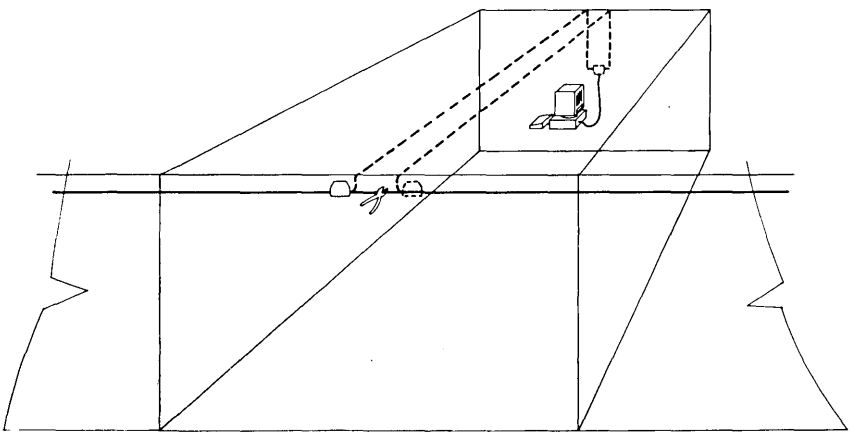

FIGURE 7: Installing Long-Drop Network Tap

Setting the Unique Device Address

Each network device must have a unique device address. The device address is set in a DIP switch on the OMNINET Transporter card or network server. The illustration in Figure 8 shows a typical DIP switch installation on a printed circuit card. The DIP switch contains eight microswitches labeled 1 through 8. Microswitches 1-6 are used to set the device address. Figure 9 displays the switch settings for all 64 possible device addresses. Normally, device addresses are assigned in numeric order starting at 0 and continuing toward 63; however, any set of unique addresses will suffice.

Switch number 7 is used to set a network bias. Because only one device on each network segment should have the bias switch set, switch number 7 is inoperable on all OMNINET Transporters and is functional only on the disk server. Switch 8 is disabled on all network devices.

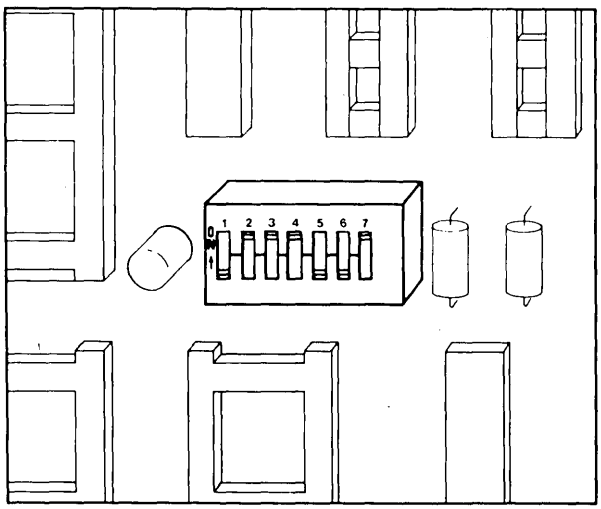

FIGURE 8: DIP Switch

Address	Switch Setting						Address	Switch Setting					
	1	2	3	4	5	6		1	2	3	4	5	6
0	↑	↑	↑	↑	↑	↑	32	↑	↑	↑	↑	↑	—
1	—	↑	↑	↑	↑	↑	33	—	↑	↑	↑	↑	—
2	↑	—	↑	↑	↑	↑	34	↑	—	↑	↑	↑	—
3	—	—	↑	↑	↑	↑	35	—	—	↑	↑	↑	—
4	↑	↑	—	↑	↑	↑	36	↑	↑	—	↑	↑	—
5	—	↑	—	↑	↑	↑	37	—	↑	—	↑	↑	—
6	↑	—	—	↑	↑	↑	38	↑	—	—	↑	↑	—
7	—	—	—	↑	↑	↑	39	—	—	—	↑	↑	—
8	↑	↑	↑	—	↑	↑	40	↑	↑	↑	—	↑	—
9	—	↑	↑	—	↑	↑	41	—	↑	↑	—	↑	—
10	↑	—	↑	—	↑	↑	42	↑	—	↑	—	↑	—
11	—	—	↑	—	↑	↑	43	—	—	↑	—	↑	—
12	↑	↑	—	—	↑	↑	44	↑	↑	—	—	↑	—
13	—	↑	—	—	↑	↑	45	—	↑	—	—	↑	—
14	↑	—	—	—	↑	↑	46	↑	—	—	—	↑	—
15	—	—	—	—	↑	↑	47	—	—	—	—	↑	—
16	↑	↑	↑	↑	—	↑	48	↑	↑	↑	↑	—	—
17	—	↑	↑	↑	—	↑	49	—	↑	↑	↑	—	—
18	↑	—	↑	↑	—	↑	50	↑	—	↑	↑	—	—
19	—	—	↑	↑	—	↑	51	—	—	↑	↑	—	—
20	↑	↑	—	↑	—	↑	52	↑	↑	—	↑	—	—
21	—	↑	—	↑	—	↑	53	—	↑	—	↑	—	—
22	↑	—	—	↑	—	↑	54	↑	—	—	↑	—	—
23	—	—	—	↑	—	↑	55	—	—	—	↑	—	—
24	↑	↑	↑	—	—	↑	56	↑	↑	↑	—	—	—
25	—	↑	↑	—	—	↑	57	—	↑	↑	—	—	—
26	↑	—	↑	—	—	↑	58	↑	—	↑	—	—	—
27	—	—	↑	—	—	↑	59	—	—	↑	—	—	—
28	↑	↑	—	—	—	↑	60	↑	↑	—	—	—	—
29	—	↑	—	—	—	↑	61	—	↑	—	—	—	—
30	↑	—	—	—	—	↑	62	↑	—	—	—	—	—
31	—	—	—	—	—	↑	63	—	—	—	—	—	—
	1	2	3	4	5	6		1	2	3	4	5	6
Address	Switch Setting						Address	Switch Setting					

↑ = on
— = off

FIGURE 9: Network Device Addresses