



HIGH LEVEL HARDWARE

ORION[†] SUPERMINICOMPUTER

Communications Controller

The ORION Communications Controller (OR-COM) provides access to the industry standard 10 Mbit/sec Ethernet local area network (LAN). The controller conforms to the IEEE 802.3-1985 standard (ISO/DIS 8802/3) and is designed to operate with any IEEE 802.3 Ethernet transceiver. The OR-COM subsystem also includes four RS-232C serial ports.

Features

- High performance access to IEEE 802.3 Ethernet LAN
- Supports remote login, file transfer, execution, user and system status, etc.
- Distributed file system using NFS (optional)
- Four RS-232C ports for X.25 access or general use
- Gateways may be implemented by installing more than one OR-COM

Software

Software support for OR-COM is provided by the ORION Timesharing System (OTS) Release 2, which is a direct port of UNIX[†] 4.2BSD. This includes TCP/IP protocols and the B-Net software for remote login, file transfer, file system backup, execution, user status, system status, and interactive dialogue with a remote user. File sharing in heterogeneous systems including non-UNIX systems, using normal UNIX commands and based on the Sun Network File System (NFS), can also be installed as an upgrade. Support for ISO higher level protocols is also planned, including the UK Joint Network Team "Pink Book" recommendations.

Hardware

The OR-COM Communications Controller consists of an Ethernet section and a control section occupying two ORION backplane slots in all. The Ethernet section contains a VLSI Ethernet chip set, direct memory access (DMA) hardware, buffering for the packet being transmitted and 32 Kbytes of fast static memory to hold up to 16 incoming back-to-back packets. The control section manages DMA activity and the lowest levels of protocol, allowing the UNIX device driver to be kept simple.

The control section also provides four extra RS-232C asynchronous serial ports with speeds selectable between 50 and 38,400 Baud and with support for both XON/XOFF and hardware handshake. These can be used in the normal way or as connections to an ORION X.25 adapter to give access to a wide area network.

More than one OR-COM can be installed, for example to implement a gateway, network bridge or file server.

Compatibility and LAN connection

The OR-COM provides a standard Access Unit Interface (AUI) in the form of a standard 15-pin transceiver cable socket at the rear of the ORION cabinet. A standard AUI cable (transceiver drop cable, length 5-50 m) is used to connect the ORION to any IEEE 802.3 Ethernet transceiver, and this in turn connects to the Ethernet cable via a cable piercing tap or an in-line connector.

For small installations a fan out unit may be chosen in place of a transceiver; typically this provides up to 8 AUI connections and 1 port for optional connection of an external transceiver. Using it a small LAN (maximum diameter 100 m) may be set up without transceivers or Ethernet cable. Alternatively it may be used as a transceiver multiplexor, removing the need to "snake" the Ethernet cable in areas where there is a high density of units to be networked (the minimum interval between taps is 2.5 m).

AUI cables in various lengths, transceivers and fan out units can be ordered from High Level Hardware; contact the Sales Office for further details.

Performance

A typical test of Ethernet performance is to use the B-Net *rcp*(1) remote copy program to transfer a large file. This measures the overall throughput of a single virtual circuit, including Ethernet hardware, protocol, software and disk speed. Between two otherwise idle ORIONs, a transfer rate of 35-40 Kbyte per second is achieved. This allows a 1 Mbyte file to be copied between machines in under 30 seconds. If four such transfers are initiated in parallel, four times the data is transferred but takes less than twice the time.

Terminal access over the network is practically indistinguishable from direct access to a local ORION. The OR-COM is supported by microcoded instructions for the TCP/IP checksum calculation and for byte swapping.

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