Introduction to Econet®
The Acorn Computer local area network

Now there is a simple and low-cost way to link up a series of microcomputers. It is the Econet system, created by Acorn Computers - the team that designed the BBC Microcomputer System.

Econet offers these special features:

O Sophisticated resource sharing.
O High speed data transfer.
O Simple four-wire cable interconnection.
O Single networks of up to 500 metres.
O Compatible with all Acorn computers.
O Ideal for teaching and business use.
O Bridge facility means flexibility on size or shape of network.

The Econet network system, at only a fraction of the cost of comparable networks, allows up to 254 computers to communicate with each other and to share resources such as printers or data filing systems. Econet has tremendous scope for a wide range of applications in business and education.

In business, Econet can be used to give staff immediate access to their own or shared files, providing up-to-date information throughout the company. The VIEW word processing system can be made available on each workstation, but only one printer is required, which cuts the overheads on office equipment.

In education, Econet allows fully interactive teaching and Computer Assisted Learning; special facilities give the teacher complete control of one or more target machines to monitor the pupils' progress. Pupils can have access to shared programs, and their own individual files. Computers can be linked within a single classroom, or throughout a school.

Econet is highly reliable. In the unlikely event of a failure of one station on the network, service to other stations on the network can be continued. The system has been in use for over two years, in over 4000 Econet installations.

How Econet works

The Econet system is a bus-type network with all stations connected to a single cable, and all stations have equal access. Efficient use of the network is ensured by features which prevent collisions during data transfer. A 'collision-arbitration' algorithm guarantees that few retries are necessary.

A typical Econet network consists of:

O Econet workstations.
O A file server station.
O A printer server station.
O Cable.
O Network terminators and clock box.

Econet workstations

A BBC Microcomputer with an Econet interface can be plugged into the network with the cable provided. Any of the other interfaces available for the BBC Microcomputer may be fitted without affecting the operation of the station on the Econet. So an Econet station may be fitted with its own local disc storage, Teletext receiver or Prestel adapter as required.

The Econet interface includes a plug-in ROM containing the Network Filing System (NFS) which controls network communications. This provides the user with the commands needed to control the storage of his file on the file server and the use of the printer server. The commands are easily issued via the keyboard.

File servers

A file server is a BBC Microcomputer dedicated to running file server software which provides shared access to disc storage. Any number of file servers can be used on one network.

There are three levels of file server, each offering different facilities to the network user.

Level 1 file server- the single directory file server
This will run on the BBC Microcomputer Model B fitted with Econet and disc interfaces and either a single or dual disc drive. File server software is provided on disc, with the options below:

	Stock code	Disc	Maximum files stored	File length	Total storage
Single disc drive	AES20	40 track	31	Up to 12K	100K
Dual disc drive	AES23	80 track	124	Up to 12K	800K

The level 1 file server provides a set of commands to perform functions related to the network. It can be set to control the maximum number of files per user, and the sections of the disc given to each user.

A section of the file server's disc is also made available to all users to contain a library of frequently used routines and programs.

Levels 2 and 3 - multiple directory file servers These offer all the features available on level 1, plus:

O Random access to data files.
O Hierarchical directory structures.
O Control of public and private access to files.
O Password protection at log on.
O Extended library facilities.
O System privilege commands to control network facilities.
O Unlimited number of files or directories up to a maximum disc storage.
O Additional facilities to assist in system management.
O Extended command set.

	Stock code	Maximum storage	Type of storage	Automatic time and date	Number of concurrent users
Level 2	AES21	800K	Dual floppy + 6502 Second Processor	No	Up to 40
Level 3	AND61 AND62	10Mb 30Mb	Winchester disc + 6502 Second Processor	Yes	Up to 60

In addition, level 3, the Winchester disc based system, operates at much higher speeds than levels 1 and 2.

The Winchester file server stock codes AND61 and AND62 comprise both the file server software and the Winchester disc.
The level 2 file server is available as software only as stock code AES21.

Printer server station

The printer server software is supplied in EPROM to be fitted in the BBC Microcomputer. With a printer attached, the server allows the other stations on the network to share the use of the printer. Files sent to the printer server will be printed immediately if the printer is free. If not, it indicates that it is busy, and that the sender should try later. The software is supplied as stock code AES22.

Cables

For short networks, a modular system of cables and connectors may be used. This is sufficient to connect a network of 10 stations including a file and printer server. This system is supplied under stock code AEH17

For long networks, Acorn can supply a higher specification cable, suitable for networks of up to 500 metres.

Clock and terminator socket boxes (AEH19)

Each Econet set includes socket boxes for wall installation and a socket box to act as a terminator at each end of the network. These terminators are required to prevent reflections on the line and to provide signal conditioning.

The clock box synchronises all data transfers, running the network at a constant 200K bits/second. The power requirement is very low and it may be left permanently connected.

Extra socket boxes are available in packs of five as stock code AEH21. Socket boxes use insulation displacement connectors to achieve quick and easy attachment to the network cable without breaking the cable and re-soldering. Socket boxes can also be inter-mixed with the modular cables and connectors available.

The Econet bridge (AEH20)

The Econet bridge has been designed to link networks together. A large number of Econets can be linked in this way, with no change to existing software on each Econet. The bridges work out their own routing.

The bridge is particularly suited to applications where individual networks are running within different departments, thus providing a link throughout the local site.

Note that level 1 file servers cannot be accessed across a bridge.

Manuals

Each BBC Microcomputer with Econet is provided with user manuals for levels 1, 2 and 3 file servers as well as a general Econet guide. File server management guides are available for levels 1, 2 and 3, and a copy of the relevant manual is supplied with each file server.

Econet service

Service can be obtained from a number of sources:

Dealers

Acorn has appointed many members of its dealer network to provide Econet support. Contact your local area distributor or your local Acorn dealer for details of support in your area.

Service centres

Schools, universities and colleges may find that their Education Authority computer advisors have appointed a service centre to provide support for Acorn products. These centres are supported with spare parts, test equipment and service information by Acorn . For further details, contact your local computing advisor or:

Acorn Computers	Sales Support Group
Units 8 & 9	Acorn Scientific Division
Cambridge Technopark	Fulbourn Road
645 Newmarket Road	Cherry Hinton
Cambridge CB5 8PD	Cambridge CB1 4JN
Telephone: 0223 214411	Telephone: 0223 245200

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