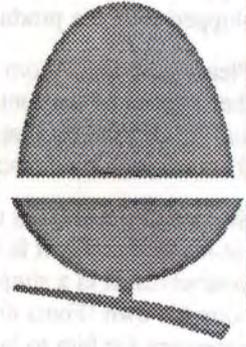


Developers' Newsletter No.19

August 1990



General news

○ Circulation of the Newsletter

Please would all recipients of the ISV Newsletter ensure that the contents are made known to all members of their staff as necessary. This will ensure that all Registered Developers are aware of news items that could influence product development.

○ ISV Discount Scheme

Due to changes in accounting arrangements, please make all cheques for products purchased through the ISV Discount Scheme payable now to Acorn Computers Ltd.

○ Answering machine

Please accept our apologies if you tried leaving a message on the answering machine but received no response. The equipment was faulty and was not recording the messages. (We had tested it when it was connected and, at that time, it appeared to operate.) The equipment has now been replaced so we trust all will be well.

To remind you, the number is: 0223 212011

○ Technical queries

While the ISV Department is happy to call on the expertise of the Technical Support Team in an attempt to solve problems experienced by developers, there are some things that we would ask you to do/consider before contacting us:

1. Check that the answer is not given in Acorn documentation. We assume that you have and use the RISC OS Programmer's Reference Manual and, if appropriate, the A3000 Technical Reference Manual and/or ANSI C Release 3 Manual or other relevant manual.

Time taken to respond to unnecessary enquiries affects the response time for those that cannot be answered from the documentation.

2. Please write down the details of the area in which you are experiencing difficulty and give as much additional information and as many code fragments as will serve to

illustrate the problem fully. It must be very frustrating to wait for a response while the Support Team try to guess, from insufficient data, what it is you are asking.

3. In dealing with developers' queries, we look for those who are using the standard, Acorn-defined, RISC OS environment. The ISV department is normally unable to help where you are attempting to develop in a non-standard way. Also, please note that information relating to the ARM chipset can be gained from the VLSI book on the subject. VLSI's UK sales office is at Milton Keynes (Tel: 0908 667595). We strongly suggest, however, that you do not program at this level.

○ Support for Arthur

We note that some Developers are providing support for both RISC OS and Arthur ROM sets, in some cases having to provide additional code or complexity to enable this. The penetration of RISC OS is now so high - estimated at greater than 90% of Archimedes computer owners - that we would suggest that support for Arthur is no longer a requirement.

○ Stolen software

It has been brought to our notice that various individuals, including some registered developers, have in their possession copies of Acorn software to which they have no right. This includes copies of development code relating to future versions of RISC OS.

Acorn will take appropriate steps to deal with any infringement of its copyright. You should also note that some of the items brought to our attention do not represent the final product specification and could cause great confusion if any content is relied upon.

If you have such software, please delete it entirely. We would be grateful for any information regarding other users of such software that you might know of or the sources from which it was provided. All information will be treated in confidence if required.

○ Bit-mapped fonts

Several times recently, we have started up a piece of third party software to discover that the bit-mapped fonts as

supplied on the RISC OS Applications Discs are being shipped with the product.

Please note that Acorn does not have an agreement with the supplier of the fonts which will allow us to sub-licence the bit-mapped fonts to you. If you supply them on your own discs you are breaking copyright.

Since every RISC OS user has a legitimate copy of the bit-mapped fonts, it is unnecessary for you to supply them yourselves. It is a simple matter to instruct the user to copy his own Fonts directory onto your disc if it is necessary for him to have the program and all associated resources on one disc. So long as he does not then distribute the disc, all will be in order.

Outline fonts and their associated binary distribution agreements were covered in Newsletter No. 15. Note that a binary distribution agreement for you to distribute the Outline Font Manager will cost you £250 plus VAT. Sublicences for the fonts will cost £300 per font per 1000 copies distributed, i.e. £300 plus VAT to distribute up to 1000 copies of, for example, Trinity Bold Italic.

Marketing news

○ Exhibitions

A list, for the remainder of 1990, of some of the major exhibitions at which Acorn intends to be present is given below. Please contact the appropriate Business Unit, at our Fulbourn Road office, for details.

● Added Value Business Unit

- | | |
|-----------------------------------|-----------------|
| Milcomp'90 | 25-27 September |
| Wembley Conference Centre, London | |
| Image Processing Show | 9-11 October |
| Wembley Exhibition Centre, London | |
| Open Systems | 7-9 November |
| Olympia 2, London | |

● Consumer Business Unit

- | | |
|---------------------------------------|---------------|
| Acorn User Show | 7-9 September |
| Royal Horticultural Hall, Westminster | |

Visit this one if you can. It is likely that important announcements will be made.

● Education Business Unit

- Tertiary sector
- | | |
|---|----------------|
| PCCC 90 (known as PC Cubed) | 5-7 September |
| Preston Polytechnic (Acorn at Exhibition on 6th only) | |
| British Academy of Management Annual Conference | 9-11 September |
| Glasgow Business School (Acorn exhibiting and sponsoring event) | |

Computers in Medical Education Conference

- | | |
|---|--|
| 16-18 September | |
| on board DANA ANGLIA sailing from Harwich - Esbjerg, Denmark (Acorn exhibiting) | |

- | | |
|--|---------------|
| AA Roadshow | 18-24 October |
| Visiting northern polytechnics from Teeside - Sheffield (new venue each day) | |

- | | |
|--|---------------|
| AA Roadshow | 8-14 November |
| New venue each day in South West from Gloucester - Plymouth. | |

- | | |
|--|----------------|
| AA Roadshow | 22-28 November |
| Visiting different Midlands polytechnics each day from Nottingham -Leicester | |

- | | |
|--|---------------|
| AA Roadshow | 6-12 December |
| Different venue each day from Scotland - Norfolk | |

Schools' events

- | | |
|---|-----------------|
| North West Roadshow | 24-27 September |
| Travelling from Salford - Cheshire (new venue each day) | |

- | | |
|------------------------------|---------------|
| DESTEC (Design & Technology) | 25-27 October |
| NEC, Birmingham (Exhibition) | |

- | | |
|----------------------|-------------|
| Resource Conference | 15 November |
| Doncaster Racecourse | |

- | | |
|--|----------------|
| Acorn Software Roadshow | 26-30 November |
| Different venue each day from Scotland - Norfolk | |

Hardware news

○ R260 - a new machine

The launch of the new UNIX workstation, R260, was announced at the UNIX User show. A leaflet is enclosed giving details. You will notice that, although it is a UNIX platform, this machine, which has 8MB as standard (expandable to 16MB), will also be fitted with RISC OS, as is R140. This means that R260 purchasers may wish to run your application in or attach your hardware to a computer which has more than the previous top limit of 4MB. Provided that your products are well-behaved and are designed taking account of Acorn's specifications, this should be a benefit to users.

This will not be new to conscientious developers, but things to watch out for are as follows:

Don't assume that application space is less than 4MB.

Don't assume that anything will be a given size e.g. area size or file size.

○ Multiscan monitors

Following enquiries from customers, Acorn and Taxan worked together to overcome difficulties encountered with the Taxan 770 and 775 multiscan monitors. If you or your customers have found that the picture is noticeably

off-centre in Mode 20 or that you miss the overscan feature that is not present on the 775, then the NewModes module from Acorn may help.

The NewModes module provides improved back and front porch timing so that pictures have better centring. Also, Mode 27 no longer suffers from side cramping on the Taxan monitors, allowing the use of Mode 27 for a larger display than Mode 20. Once loaded at Boot time, the user selects screen Modes as normal from the Desktop, but the revised display timings apply.

Technical news

○ Starting applications

Please will all developers note that using Shift-break as the prime way of starting up an application, although heavily used for Acorn's 8-bit machines, is not acceptable for Archimedes and A3000 systems. It is allowable, under RISC OS, as an additional alternative so long as this does not introduce conflict.

All applications (yes all!) must start from the Desktop. The user must be able to double-click on the application icon to start the application. This is the technique used for all the applications on the Applications discs 1 & 2, so the user only has to learn one approach.

Too many software packages do not recognise that users may have a hard disc and have this set as the default drive. Try Shift-breaking an application on such a machine! Even where Double clicking on a Desktop Icon appears to work, too many programs still use absolute path names assuming a floppy drive, rather than <Obey\$Dir> for example, causing the program to crash. The user should not be expected to reconfigure the machine to run an application.

Games houses, whose products, sadly, often have the above problems, should take particular note of these points as home users are probably among the least able to cope with the difficulties they may encounter.

○ Utilities available to developers

A list is attached of utilities, sources, documents and modules which are available to help developers. If you need any of these (or updates if you have earlier versions) please send an E format floppy and a note stating your requirements.

If you need to distribute any of the above (not all are appropriate for distribution) or any other Acorn software, you will require a binary distribution licence to do so. Please send a formal, written request if you need a licence.

Please note also the further information regarding the distribution of Acorn's system resources. This updates the information supplied on the !System document sent with

Newsletter No. 18.

Any updates to the list will be noted in future newsletters.

○ RISC OS Programmer's Reference Manual: IIC_Control

On page 824 of the RISC OS Programmer's Reference Manual, the IIC_Control documentation is incorrect.

Bit 0 of R0 (device address) has the action of read and write reversed. This could easily lead to the PCF8583 being overwritten by zeros in an attempt to read it, resulting in an apparently dead machine. A Delete-Power On will not recover the machine from such a state.

○ Protection

There have been several enquiries about software protection recently. Acorn does not protect its own software. Users need to be able to use hard discs and/or the network, so protection is inappropriate.

You should be aware also, that there are now bit-copiers available on the market which render software protection useless.

For future compatibility, you need to restrict the use of ADFS_Op to disk operations that industry standard floppy disk controller chips, other than the 1772, can handle. The 765 chip is one such device that may be used in the future. Although support for the ADFS_Op call itself is planned to continue, the access it gives to the underlying hardware may inevitably change.

Acorn will continue to consider the possibility of including serial numbers in the hardware or firmware but, currently, this option does not exist for developers. In the meantime, we are working on schemes to ensure that end-user purchasers of Acorn equipment are at least aware of the legal position.

○ Program routines to avoid with the ARM processor

We have uncovered the use of certain illegal code sequences with some software for Archimedes systems. Worse still, we now realise that one such sequence is actually included as an example in the Programmer's Reference Manual! Please read the attached note and change any software using offending sequences as soon as feasible. Thank you.

○ C Release 3.1

Those of you who have registered your usage of C Release 3.0 should have received a copy of the ISV Release C 3.1A during June or July. Further changes have been made following useful feedback from Developers on C 3.0 and 3.1A. C version 3.1B is now being distributed. In addition to fixing further bugs, it contains Clib 3.66.

This version of CLib is currently being audited and if all goes well, will be made available to end users and licensed for distribution by Developers upon request during the autumn.

We continue to find feedback from Developers using C very useful, and it has enabled us to fix bugs of which we were not aware. Please let us know of any problems. We would also like to hear from Developers using C compilers for other computer platforms. Let us know the strengths and weaknesses of our C compiler and where changes could be made to enhance your productivity.

○ Memory Management Application Note

An Application Note giving additional guidance to developers, including those using C, has been produced and is included with this Newsletter.

○ Conversion of Acorn Font file contents to Draw path

Some applications software makes assumptions on the current RISC OS outline font file format when converting fonts to Draw paths. Some aspects of this may change in the future, and a new SWI call has been introduced to manage this in future Font Managers. Applications writers should start using this SWI call, even though a "SWI not known" error will be returned at present. The application should continue with its present technique when the "SWI not known" error is reported, otherwise it should let the new SWI manage the reading of the format. Please request a copy of the SWI if you make use of font file conversions.

● Sprites and masks

The icons held by the window manager for the *iconsprites command use up memory in a permanent manner, so it pays to be as sparing with the size of the !Sprites file as possible. Acorn has noticed many defects in !Sprites files:

Superfluous masks. A mask is only needed if the object is not rectangular; only the application's own icon is likely to be irregularly shaped, all the file_ icons should be rectangular (34x17 mode 12 pixels; or 18x9 mode 12 pixels).

Recommended sprite sizes for icons

Mode	file_XXX	small_XXX
12	34 x 17	18 x 9
20	34 x 34	18 x 18
23	34 x 34	18 x 18

Superfluous palettes. Icons are displayed by the window manager using the standard desktop palette for the mode. They therefore need no palette at all.

Superfluous icons. Some applications have copies of standard icons or icons which are never referenced. This can be very wasteful! A copy of an icon in the ROM will move it to the RAM set, thus using up the space. And icons that are never used...

There are additional rules that should be followed in designing icons:

If you only have to do black and white pixels, design in mode 4 or mode 0. This saves memory.

Try very hard indeed not to put text in the icons and try harder to avoid English language puns (e.g. a picture of an Ark for filetype arc) - these don't translate particularly well!

The application icon should be an irregularly shaped "tool" (if rectangular it has no black outline). File icons must be rectangular with equal width black outline borders. Ideally a file icon should have something reminiscent of the tool and of the document produced.

There is another problem, which is copies of opton, optoff, radioon, radiooff in application's own icon files. Acorn appreciate that the current state of the development tools (FormEd particularly, although it is hoped that this will be addressed in the future) makes it hard to use the copies in the system, but please try to do so since it will save memory and assist global changes to the look of the applications.

● Use of filetypes

Please remember to make a formal request in good time for filetype allocation. We are finding some people requesting filetypes without really good need. The primary reason that we included the filetype mechanism in RISC OS was so that when objects on the desktop were double clicked on i.e. RUN that they are able to launch their application. The purpose of filetypes is NOT intended simply to enable different files to have different icons.

Requests for several filetypes which all launch the same application will not usually be granted, although each request for filetypes is considered on its own merits. Please design your applications and their associated data structures so that a single file can contain different things e.g. a document, an encoding, a set of macros, a script, a sample, a sequence, a configuration, a data space, etc. perhaps using a simple and easily extensible STRUCTURE, an example;

```
Type_End * 0
Type_Document * 1
Type_Image * 2
Type_Script * 3
Word Type
Word Length
Bytes Data-of-the-above-type
Word Type
Word Length
Bytes Data-of-the-next-type
Word Type_End
```

This would mean that a single filetype could be allocated for your application and double clicking on it would launch the application which then does something like the following;

```
SYS "XOS_Find", &CF, MyFileName$ TO Handle%
test for error
REPEAT
  CurrentType%=FNReadWord( Handle% )
  CASE CurrentType% OF
    WHEN Type_Document: PROCReadDoc( FNReadWord, Handle% )
    WHEN Type_Image: PROCReadImage( FNReadWord, Handle% )
    WHEN Type_Script: PROCReadScript( FNReadWord, Handle% )
    WHEN Type_End: REM Do nothing, no data follows
    OTHERWISE PROCIgnoreUnknownData((FNReadWord,Handle% )
  ENDCASE
UNTIL CurrentType%=Type_End
CLOSE#Handle
start program with loaded data
```

Distributed software should never use filetypes from the User Area.

A form is enclosed which you should complete and return to us when making a filetype allocation request.

If you decide to discontinue development of an unreleased product for which you have requested filetypes, please return any unused filetypes to us.

● Error blocks

Error blocks are allocated, on request, on a one-per-company basis. Only when all of your allocated block are used, should you request another allocation.

● Effective use of SpriteOp 52 (put sprite scaled)

Many programs use put sprite scaled as their sole method of displaying a sprite on the screen, surrounding it by appropriate calls of ColourTrans for a pixel translation table in order to be screen mode independent. All well and good, but this can result in a slower display of the information than necessary, since SpriteOp 52 does not detect a pixel translation table that does nothing. Thus the application program must do it. The following BASIC code provides a pixel translation table pointer which will be fast whenever possible:

```
FOR I% = 0 TO 255 : PixTrans%?I% = I% : NEXT
SYS "ColourTrans_SelectTable",mode,sourcepal,destpal,PixTrans%
xPixTrans%=-1
FOR I% = 0 TO 255 : IF PixTrans%?I% <> I%xPixTrans%=PixTrans%
NEXT
Then use xPixTrans% in every call to SpriteOp 52:
SYS "Os_SpriteOp",52,block,sprite,x,y,action,scale,xPixTrans%
```

This results in much quicker display of sprites where the sprite has the same palette as the current screen mode.

International news

Internationally, Acorn is continuing its development of new geographical markets; appropriate software is, of course, critical.

○ Canada

Following Grant Eligible Microcomputers (GEM) approval by the Province of Ontario, Acorn has already started selling into schools in Ontario. We plan to expand business rapidly with the help of Olivetti who act as our importer.

Please contact Dorothy Netherwood, our Manager of schools business based in Ontario, if you have any suitable software packages (Tel: 0101 46 940 2245; Fax: 0101 416 475 0257.

Our next target in Canada will be the French-speaking Province of Quebec where French versions of software packages will be mandatory. We should see this as real opportunity, however.

○ West Germany

Acorn is busy preparing for the introduction of nationalised hardware into the West German market. Final preparations are under way with regional Distributors who will recruit dealers in their areas.

We are targeting the buoyant "home enthusiast" end of the market (more than 700,000 units will be sold into this sector in 1990!) and have planned a carefully controlled strategy to reach end-users.

A number of ISVs have already translated selected products into German and will accompany, and benefit from, Acorn's entry into the West German market.

For further information please contact Richard Sumner at Acorn Computers Ltd., Fulbourn Rd.

○ New International Markets

Research is currently under way into new European markets for Acorn.

Discussions are taking place in France, a market which presents attractive opportunities for Acorn. Nationalised French software is key in this market.

Spain is developing at a tremendous rate and Acorn is researching ways of exploiting the potential in this relatively untapped market.

Acorn product is also selling into Italy and Holland.

For further information please contact Helen Perks at Acorn, Fulbourn Rd.

○ Australasia

Acorn is pleased to inform you that it now owns 92% of the shares of the company previously known as Barsons Australasia. Acorn Australia and Acorn New Zealand will operate as part of Acorn and should be considered as such. For many UK developers, there is a new market opening up in Australasia and for those in Australia, the UK should offer interesting opportunities.

○ Enclosures

Utilities available to Developers sheet
Memory Management Application Note
R200 Series leaflet
Important Rules for ARM Code Writers
Filetype request form

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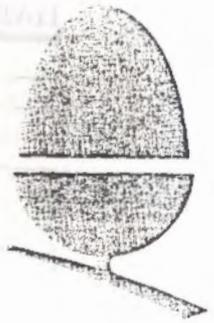
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ACORN R200 SERIES

Bringing the power of UNIX to your desktop



Acorn introduces the R200 Series of workstations. Building on the success of the R140 personal workstation (with which there is full binary compatibility), the R200 Series offers higher performance and expandability at a very competitive price, together with the availability of a wide range of software products.

Acorn's R200 Series and R140 together provide a spectrum of products, from low-cost discless workstations through to powerful workstations and mini file-server configurations. From a single terminal to a complete network, Acorn UNIX systems develop with your needs, via RAM and SCSI expansion and improved monitors.

POWERFUL UNIX SOLUTIONS

Acorn's UNIX range gives you a world of software solutions, including applications from internationally-known software houses through to small specialists. The following are examples of applications running under RISC iX, Acorn's implementation of UNIX:

- **Imaging solutions** Professional image processing software such as Gemsoft 36 make the R200 Series particularly relevant to high-tech areas like defence and satellite imaging, as well as to research and teaching laboratories.
- **Data visualisation** Powerful software like UNIRAS and Acuity can turn complex numerical, financial and statistical data into charts, graphs, maps and 3D models.
- **Artificial intelligence** An R200 Series workstation with expanded RAM is the ideal platform for memory-hungry AI applications: Delphi Common LISP and Edinburgh Prolog are available for RISC iX.
- **Database solutions** Some of the best-known UNIX database software, such as Informix and Uniplex, are available under RISC iX.

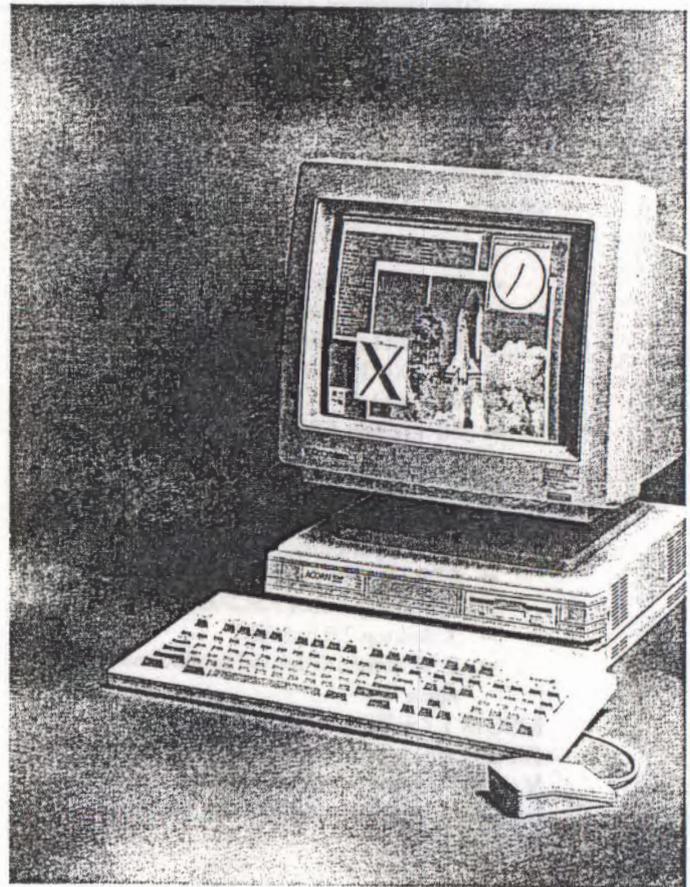
The RISC iX applications catalogue has full details of the extensive range of standard UNIX software available.

THE R200 SERIES

The new R200 Series models are:

- R225 - a high-performance discless workstation.
- R260 - a powerful workstation with internal 100Mb hard disc.

Both models offer outstanding price/performance, are fully expandable and have the added advantage of a small footprint - ideal desktop machines.



Acorn 

HARDWARE

	R140	R225	R260
CPU	ARM2	ARM3	ARM3
Main memory	4Mbytes	4Mbytes	8Mbytes
Expandable to	8Mbytes	16Mbytes	16Mbytes
Embedded cache		yes	yes
Floating point	Expansion card option (WE32206)	new ARM-FPA available 1991	new ARM-FPA available 1991
Internal hard disc (formatted)	47Mbytes		100Mbytes
Floppy disc (formatted)	720Kbytes		720Kbytes

Interfaces

Serial	yes	yes	yes
Parallel	standard	standard	standard
Ethernet (10base5)	option	standard	standard
Cheapernet (10base2)	option	standard	standard
SCSI Controller	option	option	standard
ST506 controller	standard	option	option
3.5mm jack for stereo sound	yes	yes	yes
Free expansion slots	4	2	2

Display support

Multi-scan (640x480), with 16 colours	yes	yes	yes
VGA (640x480), with 16 colours		yes	yes
VGA (640x480), with 256 colours		yes	yes
SVGA (800x600), with 16 colours		yes	yes
High-resolution (1152x900) monochrome	yes	yes	yes

SOFTWARE

The R260 is supplied with the following software:

- RISCix 1.2
- X Window System version 11, release 4 compatible server
- MIT X11 release 4 clients
- Xlib, Xt (Intrinsics), Xaw (Athena widget library)
- NFS release 4.0
- TCP/IP support
- C (ANSI X3.159-89, BSI 90/60809 IST/5:115, ISO/IEC DIS 9899) with pcc compatibility
- FORTRAN 77 with extensions
- ISO compatible PASCAL
- X.desktop 2.0 from IXI
- OSF Motif 1.0 derived toolkit and *mwm*

RISC iX 1.2 will be validated against X/Open (XPG3) and is compatible with both System V and BSD environments. RISC iX 1.2 is fully backward-compatible with earlier versions (1.01 to 1.15).

Every effort has been made to ensure that the information in this leaflet is true and correct at the time of printing. However, the products it describes are subject to continuous development and improvement and Acorn Computers Limited reserves the right to change the specifications at any time. Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of any information or particulars in this leaflet.

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X.desktop is a trademark of IXI Limited.
X Window System is a trademark of the Massachusetts Institute of Technology.
X/Open is a trademark of X/Open
Motif is a trademark of Open Software Foundation

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OPTIONS

There is a wide range of expansion options. SCSI peripherals include:

- External hard disc and streaming tape (DC-600)
- Rewritable optical disc (Sony and Ricoh)
- Exabyte 8mm cartridge tape for backup

and other expansion cards include:

- Frame grabbers
- 4-port serial cards
- Econet network interface