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Introduction

The first release of Basic-2C was a compiler that operated on the Wang PC under MS-DOS only. Program changes had to be made on a Wang 2200 minicomputer and recompiled for use with Basic-2C. From today's perspective it sounds limited and primitive, yet Basic-2C for the Wang PC was an immediate success that helped breathe new life into the Basic-2 community.

Now, five years, 30,000 installations and multiple language ports later, Niakwa is pleased to bring you Basic-2C Release III. Release III features over 60 instruction set enhancements, expanded user partitions size, the ability to make external calls to the native environment and enhanced support of color and graphics.

External calls

The external call facility alone catapults Basic-2C and the developers who use it into the forefront of the computer industry by providing access to the latest software technology. Using the external call gateway, popular languages such as "C" and Pascal may be used to streamline Basic-2C applications while powerful third party utilities such as graphics packages, access methods and data bases may be used to enhance Basic-2C applications. Basic-2C Release III provides you with unparalleled access to today's advanced hardware and software technology.

Expanded user partition size

Release III removes all program limitations on the user's partition size. The only space limitations will be those determined by the operating system and hardware in use.

Instruction set enhancements

The 60 plus instruction set enhancements incorporated into Release III range from instructions originally introduced in Wang's 3.1 version of Basic-2 to entirely new features such as keyboard logging which allows developers to create demonstration versions of their application software.

Expanded color/graphics support

With Release III the popular color/graphics support first introduced in revision 2.01.20 for IBM single user PC's under MS-DOS is now available under both Novell and SuperDOS.

Once established, advances in hardware and software technology will never obsolete Basic-2C applications because they are fully object binary compatible and source code compatible on over 100 computer platforms under seven major operating systems. Basic-2C users will never need to rewrite programs, rekey data files or retrain personnel.

The Release III instruction set enhancements and the endless options available with external calls are the latest building blocks in the evolution of the total Basic-2C development environment. Basic-2C is a fully interpretive language with incremental compilation capabilities. Basic-2C offers a complete suite of programmer productivity aids such as superior debugging capabilities; a

sophisticated line number oriented editor and the ability to make program changes on the fly. These tools allow Basic-2C developers to create robust applications that will set the pace in their respective vertical markets.

This newsletter will discuss Release III in detail - its features, its performance and how to configure systems when using it.

Release III will be available May 15th, 1989, for MS-DOS, Novell and SuperDOS and in the third quarter of 1989 for SCO Xenix V, Altos Xenix 3, Altos System V, Wang APC Xenix 3 and Wang APC Xenix V. Release III delivery dates will be announced for Bull, DEC and NEC when they are available.

From May 15th to May 31st please specify whether you prefer 2.01 RTP's or 3.0 RTP's. After May 31st we will automatically ship Release III RTP's unless 2.01 is specifically requested.

Release III - Product Brief

The purpose of this section is to provide you with detailed information about the language enhancements discussed above. Refer to the Release III Basic-2C Technical Reference Guide for complete technical documentation of all new features.

The enhancements for Release III are grouped into four categories, each of which is discussed in greater detail below:

- I. External call capability
- II. Expanded user partition size
- III. Instruction set enhancements
- IV. Expanded color and graphics

I. External Call Capability

Of all the enhancements in Release III, this is clearly the most significant. External call capability provides you, the software developer, with the capability to access subroutines and modules written in languages other than Basic-2C from within your Basic-2C program. In addition, you will be able to incorporate third party library routines for functions such as access methods, graphics capabilities, communications capabilities, mathematical functions and other routines that fully utilize co-processors. Basic-2C Release III also provides new floating point formats to \$PACK/\$UNPACK. These new formats will allow for simple conversion between Basic-2C internal numeric format and various floating point formats which may be required.

Languages Supported:

- A. MS-DOS/Novell
 - Microsoft "C"
 - Microsoft Pascal
 - Microsoft Macro Assembler
- B. SuperDOS
 - Metaware High "C"
 - Metaware Professional Pascal
 - Microsoft Macro Assembler (cross compiled from MS-DOS)

Basic-2C Interface:

Basic-2C programs will be able to 'call' the external subroutines by use of standard GOSUB' statements. When an external routine is present, GOSUB' will transfer control to the external routine and pass the address, type, and length of all parameters specified by the GOSUB'. The subroutine may then make direct modification to the memory areas associated with the Basic-2C variable addresses. Upon return to Basic-2C, the modified values will simply be present in the variables.

This technique allows for very simple modifications to existing Basic-2C programs to utilize external subroutines. Once the external routine is developed and linked into RTP, the programmer may use existing logic by simply removing the Basic-2C DEFFN's which have been replaced by the external DEFFN's. Alternatively, to add entirely new functions, the programmer may simply add new GOSUB's to the application. Note that the range of GOSUB' numbers will be expanded beyond '255.

Creation and Linking of External Subroutines:

Complete documentation and example subroutines for each language supported on each operating system will be provided with the product.

Expertise Required:

Although our intention is to make the interface between Basic-2C and external subroutines as simple as possible,

proper use of this capability will require programming expertise in the language(s) used for developing the external routines.

II. Expanded User Partition Size

The size of the user partition will now be limited only by the physical or logical memory made available by the host operating system. In addition, no distinction will be made between memory used for program text and memory used for variables.

Partition Size:

- A. MS-DOS/Novell - up to 400K on a 640K system, depending on the actual configuration used.
- B. SuperDOS - up to the maximum task size, 999K under Protected Mode, 64K under Real Mode.

The practical size of the user partition on shared logic machines may be limited by the amount of memory physically available.

How This Will Work:

Allocation of space within the user partition will be entirely dynamic. As programs are loaded and variables are defined, memory is allocated as required unless the actual machine limit as described above is exceeded. As programs and variables are cleared, memory is made available for other functions. This operates transparently to the application.

Existing SPACE, SPACEP, and SPACEV functions will always report 64K available. If 64K is not available, the actual memory available will be reported.

Two new SPACE functions will be added:

SPACEF will return the total remaining memory available in bytes.

SPACEW will return the total size of the user partition in bytes.

Note that the maximum size of an individual variable or array will still be 64K.

III. Instruction Set Enhancements

Over 60 instruction set enhancements will be incorporated into Release III. These range from relatively minor enhancements to new language features like INPUT SCREEN/PRINT SCREEN and keyboard logging. Here are some of the highlights:

A. Wang Basic-2 3.1 Instructions

The following instructions introduced by Wang in the 3.1 release of Basic-2 will be supported.

1. **DATA LOAD BM/DATA SAVE BM** - will allow direct access read/writes of partial sectors or multiple sectors.
2. **DO/ENDDO** groups - will allow multiple statements to be executed as the result of conditional statements **IF**, **ELSE**, and **ERROR**. As an extension over the Wang implementation, nested **DO** groups will be supported.
3. **RESAVE** - will perform the equivalent of **SCRATCH** and **SAVE**.
4. **RENAME** - will allow Basic-2C files to be renamed in a single statement.
5. Use of **LS** and **END** parameters on **MOVE** (Form 1) will be supported.
6. **ERR\$** - will return a text format description of the specified error code.
7. Expanded device table - up to 256 file number slots may be defined. Rules for definition and access to file number slots will be identical with the Wang 3.1 implementation.
8. **LISTDCT(W)** - (W) option specifies that the listing will display file names only.
9. **SELECT** function - Wang syntax introduced in 3.1 now supported along with original Basic-2C syntax. In addition, the **SELECT** function will optionally return the width of **PRINT**, **LIST** and **CO** functions.

B. Syntactical Compatibility With Wang Basic-2

The following statements will be syntactically supported but will perform no operation or will produce an error if actually executed.

1. (W) option for **SAVE**, **DA**, and **RESAVE**
2. **\$DISCONNECT**
3. **SELECT TC**
4. **SELECT TERMINAL**
5. **SELECT ON/OFF (ALERT, GOSUB)**
6. **SELECT DRIVER**
7. **SELECT ON CLEAR**

C. Input Screen/Print Screen

A greatly enhanced version of the Wang Basic-2 **INPUT SCREEN** statement will be implemented. **INPUT SCREEN** allows the current contents of the screen to be read into a specified variable. In addition to **INPUT SCREEN**, **PRINT SCREEN** will be implemented. **PRINT SCREEN** will write the contents of a specified variable to the screen where the variable conforms to the format produced by **INPUT SCREEN**.

Some of the significant enhancements over the Wang implementation are:

1. Screen statements will be supported on all terminals supported by Basic-2C.
2. Specification of a limited screen area to **INPUT** or **PRINT** will be supported. This feature makes **INPUT SCREEN/PRINT SCREEN** ideal for pop-up type applications. Note, a smaller variable may be specified when partial **INPUT** or **PRINT SCREEN** is performed.
3. For color monitors, color attributes may be optionally **INPUT** or **PRINTed**.
4. Other important screen information including cursor position, cursor status, current attribute selection, attribute status, and character set selection are returned by **INPUT SCREEN** and automatically used by **PRINT SCREEN**.

D. Device Equivalence Table (DET) Enhancements:

1. The number of entries in the DET will be set by a RunTime start-up option. Up to 255 entries may be defined. This is expanded from the current limit of 16.
2. A **\$MACHINE** byte will be used to maintain the number of entries set at start-up time.
3. A second **\$MACHINE** byte will be used to maintain the number of entries currently used.
4. A new statement, **\$DET**, will allow examination of the DET in physical order. This will allow programs to determine what device addresses are defined.

E. Keyboard Logging

This new feature will allow for automatic logging of keyboard input to a specified ASCII file. A new statement, **SELECT LOG**, is used to assign a Basic-2C device address as the log device where the device address used has been defined as an ASCII file by the **\$DEVICE** statement. Once the **LOG** device has been defined, keyboard logging may be turned on or off under program control (via **\$OPTIONS**) or may be turned on or off by the operator (via the **Diag** screen of the Help Processor). Keyboard logging output is stored in the format utilized by **\$DEMO**. This feature allows for generation of **\$DEMO** script files based on actual operator keystrokes.

F. Other Enhancements

1. **\$PACK/\$UNPACK** will support floating point formats for:
 Wang 2200 internal numeric format
 Basic-2C internal numeric format
 4 or 8 byte IEEE Binary Real, H-L format
 4 or 8 byte IEEE Binary Real, L-H format
 4 or 8 byte DEC VAX floating point format

2. Support for background partitions under SuperDOS will be present. Note - the implementation of background partitions is not 100% compatible with the Wang 2200. However, most applications that utilize background partitions should work with little or no modification. Refer to the Basic-2C Supplement for SuperDOS for further details.
3. A new **\$MACHINE** byte will be used to maintain the on/off status of **\$DEMO** keyboard redirection.
4. New **\$OPTIONS** bytes will be available to suppress the Native Operating System and kill Basic-2C options of the Help Processor.
5. An alpha-variable may be specified as the device-address in all statements where a device-address is required. For example:

```
0010 A$ = "215"
0020 $OPEN <A$>
```

6. **NEXT CLEAR** will terminate the current **FOR/NEXT** loop leaving the value of the index variable unchanged.
7. **UNSCRATCH** will change the status of a file from scratched to not scratched.
8. **DELETE** will remove the specified file name from the diskimage index.
9. **SET DATA** and **SET PROGRAM** statements will allow the file type to be changed from program to data or from data to program.
10. **LIMITS INDEX** will return the number of index sectors, end catalog, and current end of the specified disk address into numeric variables.
11. Access to 3-1/2" 'raw' format diskettes will be supported, both 720K and 1.44 MB formats. Note, some restrictions may apply on some operating systems. Refer to the Basic-2C Supplements for details.

12. The file name, type and status will be maintained in the file trailer sector.
13. \$OSERR will return the native operating system error code or message generated in conjunction with a Basic-2C error code.
14. \$PROGRAM will return the names of the first program plus the names of the last 5 programs loaded since the most recent CLEAR or LOAD RUN statement.
15. A new \$DEVICE clause will allow error control for print or keyboard output directed to an ASCII text file to be enabled under program control.
16. New \$DEVICE clauses will allow the primary and secondary extent size of files to be specified. This will work for both disk class and print class devices (when print class output is directed to an ASCII file) on operating systems where extent size must be defined at file creation time.
17. LIST DT will be enhanced to display debug status information including current TRACE status and current STEP status.
18. LIST #, LIST ', LIST T, and LIST V will be enhanced to allow specification of a line number range to be accessed for the specified list operation.
19. \$REV will return the complete RTP revision number.
20. READ DC will search the index of the specified diskimage returning all file names matching a specified alpha-mask.
21. PRINT TO will direct print output to a specified variable much like PRINTUSING TO.
22. MAT SEARCH will be enhanced to allow a numeric array to be specified as the receiver variable and to optionally return element numbers (based on the specified STEP value) instead of byte addresses.
23. DEFFN'/GOSUB' will be enhanced:
 - A. Greater than 255 unique DEFFN' numbers will be supported.
 - B. Greater than 16 parameters will be supported.
 - C. A P37 error (undefined marked subroutine) will now be a recoverable error.
 - D. Mismatched parameter types will now result in a recoverable error.
24. Program Editor Enhancements:
 - A. Multi-command buffering
Multiple immediate mode commands or program lines will be retained in the command buffer and will be accessible from the keyboard.
 - B. TAB support
Multiple tab stops may be defined. TAB and BACKTAB keys may be used to move from one tab stop to the next.
25. Under Novell, ID# may be established by use of the Basic-2C ID environment variable.
26. SELECT LISTLINE may be used to specify the page length for listings directed to a printer.
27. Use of color control sequences is now supported with EGA color monitors in graphics (/G) mode.
28. Multi-sector disk operations under SuperDOS have been significantly speeded up. Operations such as COPY, MOVE, and VERIFY will now operate much faster when accessing diskimage files on the hard disk or on diskette - they will be equivalent in performance to the SuperDOS COPY/F utility. Note - performance for access to 'raw' diskettes is not affected by this enhancement.

G. 'No Return' Upgrades

For IBM MS-DOS and Novell, a special 'upgrade only' RunTime Package will be available. This 'upgrade only' RunTime Package will contain special installation programs which will tie the new RTP to the security fingerprint of an existing 2.01.20 RTP, thus eliminating the need for the 2.01.20 RTP to be returned.

For 'No Return' upgrades, the #GOLDKEY value of the original 2.01.20 RunTime is retained.

IV. Expanded Color/Graphics Support

With Release III the popular color/graphics support first introduced in revision 2.01.20 for IBM single user PC's under MS-DOS is now available under both Novell and SuperDOS.

Novell

Color support is now available under Novell networking. The implementation of color support under Novell is identical to support under single user MS-DOS. For any node on the Novell network that has a CGA or EGA controller/color monitor, Basic-2C applications may now fully utilize color control sequences to access up to 16 colors. Refer to Chapter two of the Release III Programmers Guide and the Basic-2C Supplement for Novell for complete details.

The /G start-up option is also now fully supported under Novell. The /G option provides 'true' box graphics capability and downloadable fonts for full 2200 character set compatibility on any node with an EGA or Hercules controller/monitor. Implementation of the /G option under Novell is fully compatible with the implementation under single user MS-DOS. Refer to the Basic-2C Supplement for Novell for complete details.

SuperDOS

Color support is now available under SuperDOS when using the Computer Concepts PC2200 terminal emulation program with an IBM PC with a CGA or EGA color

monitor. Use of color control sequences as described in Chapter two of the Release III Programmers Guide are fully supported in this environment.

In addition, the Computer Concepts PC2200 package fully supports 'true' box graphics and the 2200 character set on EGA and Hercules controllers/monitors. In the latest version of PC2200, 'true' box graphics and the full 2200 character set are also supported on CGA controllers (a feature not present in Basic-2C on MS-DOS or Novell).

The PC2200 package also provides a file transfer feature that works very well with Basic-2C files.

Connecting a PC running PC2200 under SuperDOS is very easy. The SuperDOS port should be configured as though a Wang 2x36DE/DW terminal were attached (including automatic execution of W2336INI). Standard Wang 2x36 terminal cables may be used (with a gender changer at each end).

For further information on PC2200 contact:

Computer Concepts Corporation
8375 Melrose Drive
Lenexa, KS 66214
(800) 255-6350 outside Kansas
(913) 541-0900 in Kansas

Compatibility Considerations

Compatibility with prior Basic-2C revisions

Basic-2C Release III is fully upward compatible with prior releases of Basic-2C. Programs that operated with previous releases will require no modification.

As long as none of the new statements or features of Release III are utilized, programs that are developed with Release III will be downward compatible to previous releases of Basic-2C. Of course, if new statements or features are used, programs will not be executable on previous releases of Basic-2C.

Compatibility with Wang 2200 Basic-2

Release III of Basic-2C contains many enhancements designed to improve upward compatibility from Wang 2200 Basic-2 revision 3.1. See New Features sections for details.

Release III also contains many features that are not supported by Wang Basic-2. Use of these statements or features will result in programs that are not executable on a Wang 2200/CS.

Performance

Due to the nature of some of the enhancements in this release, some performance loss is unavoidable. In our testing of typical applications, we found overall performance loss to be minimal (about 10%). However, there are some specific performance areas worth noting:

Some CPU operations, particularly arithmetic calculations, may run 10-20% slower under MS-DOS or SuperDOS Real Mode and from 20-30% slower under SuperDOS Protected Mode. This is due to support for larger partition sizes.

Screen output routines may run somewhat slower on PC monitors (due to changes made to support INPUT SCREEN/PRINT SCREEN).

Program resolution time is slower. Typically this will not significantly affect performance since resolution time is usually a small part of overall load time. However, applications which perform many individual small overlays into a large program may be affected.

Utilization of Release III features may substantially improve application performance in other areas. In particular:

Larger partition sizes will allow programs to reduce the number of overlays. This can significantly improve performance.

Use of external subroutines can dramatically improve the performance of calculation intensive routines.

Use of DATA LOAD/SAVE BM can significantly improve disk performance. One beta site reported performance improvements of up to 300%.

One final note on performance for our SuperDOS users, preliminary benchmark results indicate that SuperDOS 5.0 and SuperDOS 5.0 with RAM Disk will yield nice performance improvements over SuperDOS 4.0.

Memory Utilization

There are several factors that affect the memory utilization of Basic-2C applications under Release III.

- * The memory required by the RunTime itself has increased. Refer to the Configuration Requirements section below for details.
- * Due to support for dynamic partition sizes introduced in Release III, the overhead associated with p-code programs has become larger. The actual amount of the difference will generally be about 10% but may vary widely from one program to another. In general, for programs with large numbers of variables, the factors which determine the amount of the increase are:

With revision 3.0, the minimum internal memory allocation unit is sixteen bytes, versus two bytes in previous releases. This means, for example, that a variable that occupied five bytes would have required six bytes of memory in prior releases but now requires sixteen bytes.

The overhead associated with each variable has increased.

An additional table is constructed by the RunTime. This table is referred to as the handle table and is used by RTP to keep track of segment locations for variables and line numbers. The size of this table is dynamic and will vary depending upon the number of variables and line numbers used. Note, this size difference is an issue only in configurations where available memory is limited by the amount of physical memory present or by task size limitations imposed by the host operating system.

Refer to Chapter three of the Basic-2C Release III Programmers Guide for further details on memory requirements for application p-code.

- * Use of several new Release III features will require extra memory:

Use of external calls requires that memory requirements of the external routines be included in all memory calculations. Note, the memory required for the external routine must be allocated and resident to each task that requires it.

Use of the /D option to specify greater than 16 DET entries will require 64 bytes for each DET entry defined above 16 under MS-DOS, Novell, and SuperDOS. In addition, open file tables at the operating system level may need to be expanded.

Use of internal device table file handle slots above 16 will require an additional 24 bytes of memory per slot.

Refer to the Basic-2C Release III Technical Reference Guide for details on these new features.

Configuration Requirements

Configuration requirements for Basic-2C Release III for MS-DOS, SuperDOS, and Novell are identical to configuration requirements for previous releases except for memory requirements.

IBM MS-DOS and Novell

Memory Requirements

The following chart shows how to calculate memory requirements for your application under IBM MS-DOS or Novell:

| | Interpretive RunTime | Non-Interpretive RunTime |
|---|----------------------|--------------------------|
| Base Program | 198K | 128K |
| Maximum User Partition (See Memory Requirements section for details) | _____ | _____ |
| Memory required for external routines | _____ | _____ |
| INVOKE MS-DOS Programs | _____ | _____ |
| /D Overhead | _____ | _____ |
| Total | _____ | _____ |

The blank lines above indicate the amount of memory required is application dependent.

Note that the minimum partition size generated will be 30K. If there is insufficient memory to generate a 30K user partition, the RunTime program will not execute.

Be sure to allow 60-70K for MS-DOS itself. In addition, please be sure to allow for any additional memory required by other device drivers or terminate and stay resident programs utilized.

A minimum of 348K physical memory is recommended. Operation of RTP only on a machine with 256K may be possible but would likely result in a very small user partition and may not execute at all depending upon the exact configuration used.

MS-DOS version required

If the /D option is used by the application to access more than 15 files at one time, MS-DOS version 3.3 or higher must be used. The maximum open file limit on earlier versions of MS-DOS is 20. Note that RTP itself uses 5 of these open file handles.

If the application does not need to access more than 15 files at one time, the minimum MS-DOS version required is still 2.0 (unchanged from previous releases).

Wang MS-DOS

Memory Requirements

The following chart shows how to calculate memory requirements for your application under Wang MS-DOS:

| | Interpretive RunTime | Non-Interpretive RunTime |
|---|----------------------|--------------------------|
| Base Program | 198K | 128K |
| Maximum User Partition (See Memory Requirements section for details) | _____ | _____ |
| Memory required for external routines | _____ | _____ |
| INVOKE MS-DOS Programs | _____ | _____ |
| /D Overhead | _____ | _____ |
| Graphics Storage | 32K | 32K |
| Total | _____ | _____ |

The blank lines above indicate the amount of memory required is application dependent.

Be sure to allow 60-70K for MS-DOS itself. In addition, please be sure to allow for any additional memory required by other device drivers or terminate and stay resident programs utilized.

A minimum of 348K physical memory is recommended. Operation of RTP only on a machine with 256K may be possible but would likely result in a very small user partition and may not execute at all depending upon the exact configuration used.

SuperDOS

Memory Requirements

The following chart shows how to calculate memory requirements for your application under both Real Mode and Protected Mode SuperDOS:

The requirements for the share task are:

| | RTISHARE | RTPSHARE |
|------------------------------|----------|----------|
| Base | 180K | 118K |
| Overflow areas (Per User) | 25K | 25K |
| Minimum Share Task Size | 230K | 168K |

RTP overhead in each user task is now 34K (previously 28.5K). Thus, for a 64K user task, a 55K user partition will be generated if an overflow area is available and a 30K partition will be generated if no overflow area is available.

The revised partition size requirements of the application p-code as described in the Memory Utilization section above must be considered.

If external subroutines are utilized, they must be loaded into each user task that requires them. Thus memory requirements for external calls must be added to each user task that will be using them.

If the /D option is utilized, the extra memory required must be allocated to each task using /D.

If use of larger partitions is desired, the user task space must be increased accordingly.

The user task size requirements described above apply both to tasks used as foreground tasks and tasks used as background tasks.

Since allocation of the user partition is now entirely dynamic, it may be possible to REDUCE the task size of tasks that formerly required the /S option. For example, assume that the total partition size requirement for an application is 80K. The user task size may now be set to 81K (assuming that an overflow area from the share task is available). Previously it had to be set to 128K so that the /S option could be utilized.

New Packaging and Ordering

With the introduction of Release III, Niakwa has revamped the packaging of Basic-2C. Listed below is a brief description of the product changes and highlights of the Release III upgrade program.

You will receive the Release III upgrade forms and instructions in the near future.

Technical Reference Guide

The Basic-2C Technical Reference Guide (TRG) replaces the current Language Reference Guide. Consisting of two binders contained in handsome cases, the TRG describes the Basic-2C programming language and other hardware independent features of Basic-2C. The Technical Reference Guide is essential for programmers who wish to use any of the new Release III enhancements.

A Technical Reference Guide is a required purchase when ordering any Release III upgrade RTP's. The TRG and associated Supplement(s) contain important instructions needed to install the special upgrade RTP, as well as documentation of all the new enhancements we've added to Basic-2C.

No Return RTP

Niakwa has instituted a 'no return' upgrade for all IBM MS-DOS and Novell 2.01 RTP's. The 'no return' upgrade RTP simplifies the upgrade process, which dramatically reduces the time needed to upgrade your end-users.

Each upgrade RTP will be labeled "Release III Upgrade" in order to distinguish it from the new Release III RTP. The upgrade RTP will consist of two diskettes (due to size requirements) and will only execute when used in conjunction with the appropriate Release 2.01 RTP.

There are some specific configuration requirements for this product. In cases where the end-user's configuration is not adequate for the 'no return' upgrade, a standard upgrade must be used.

The specific requirements are:

A revision 2.01.20 RunTime must be installed on the user's hard disk.

A hard disk is required. The 'no return' upgrade can not be applied to a floppy only system.

As promised, there will be no Gold Key to return. In fact, the user must retain both the Release 2.01 RTP diskette as well as the upgrade RTP diskette for back-up purposes.

When ordering your upgrade RTP, please match the type, size and number of users exactly. A user limit upgrade can not be performed via the 'no return' method. For example: IBM 5-1/4" (1 user), Novell 3-1/2" (4 user), Novell 5-1/4" (8 user), etc. Please note that each upgrade RTP can only be installed once on the operating system and for the number of users specified.

End-user instructions on the use of the upgrade RTP are presented in a special user guide that is enclosed with each upgrade RTP. Detailed documentation of this feature is contained in the Release III IBM MS-DOS and Novell Supplements.

2.01 RTP's Available For A Limited Time

As was discussed earlier in this newsletter, Release III may affect the CPU memory requirements or performance of some applications. So that you will have time to adjust to these potential inconveniences, Niakwa will offer Basic-2C distributors the opportunity to purchase Release 2.01 RTP's through **December 31, 1989** on a special order basis.

Only current Basic-2C licensees will be allowed to 'SPECIAL ORDER' Release 2.01 RTP's.

Niakwa will automatically ship Release III RTP's for all orders placed after May 31st, 1989, unless Release 2.01 is specifically requested.

Early Bird Discount

To encourage Basic-2C developers to begin working with the Release III enhancements and to upgrade their installed base of Basic-2C RTP's, we are offering a substantial discount (details to follow under separate cover) on all upgrade RTP's ordered before **March 1, 1990**. This nine month timeframe should give you enough

time to develop, test and then sell your upgraded applications to your users.

The discount is applied on a per order basis and requires no minimum. This offer applies **only** to RTP upgrades, **not** development packages or Technical Reference Guides.

Release III - Questions and Answers

Q. What is the Basic-2C Technical Reference Guide? How does it differ from my existing Basic-2C Language Reference Guide and Supplement?

A. The Basic-2C Technical Reference Guide physically consists of two binders. One binder contains the Basic-2C Programmer's and Operations manuals. The second binder contains the Basic-2C Statements manual. The Technical Reference Guide replaces the Language Reference Guide and describes the Basic-2C programming language and other hardware independent features of Basic-2C.

The revised supplements describe the installation and operation of Basic-2C on specific machines, and document all machine specific features.

You will receive one Technical Reference Guide and one Basic-2C Supplement with your first Development Package upgrade purchase.

Q. Can I order a Release III upgrade RTP without first ordering a Technical Reference Guide?

A. No. The Technical Reference Guide and associated supplement(s) contain instructions needed to install the special upgrade RTP.

Q. Why are you offering a "nine month" early bird discount? It seems like a long time for special incentives.

A. The powerful external call feature of Release III will allow developers to create and/or redesign routines within their applications; a process that takes time.

New routines must be designed, developed and tested before they can be sold to your end-users and the Basic-2C RTP upgraded.

By offering the Early Bird Discount for nine months, all Basic-2C developers will have the opportunity to participate in substantial upgrade savings if they make their Release III development plans now.

Q. Why is Niakwa going to sell both Release III and Release 2.01 RunTime Packages?

A. Although Release III offers each and every Basic-2C user powerful new development tools, there is a small price to pay for these improvements in performance and memory overhead.

Some functions in Release III are slightly slower than in Release 2.01. However, most of our Beta test sites reported no difference in the overall speed of their applications.

Secondly, with the increased capabilities of Release III, additional memory could be required. For the majority of MS-DOS, Novell and SuperDOS applications, the memory difference is insignificant and the system configurations will not change. However if the memory requirements do change, today's memory is inexpensive compared to a few years ago.

Since performance and memory considerations may be an issue with some of our customers, we are offering 2.01 RTP's for a limited time so that they may adjust to these possible inconveniences.

Q. How long and to whom will you sell Release 2.01 RTP's?

- A. Release 2.01 RTP's (not development packages or Language Reference Guides) will be offered for six months (until December 31, 1989) to any existing Basic-2C licensees that are currently licensed for the product in which they need the Release 2.01 RTP's.

In addition, as stated in the Niakwa Software License Agreement and Warranty, Release 2.01 RTP's will continue to be supported, through December 31, 1991, for replacement if the original RTP becomes damaged.

Q. How do I order a new Release III RTP?

- A. The same way you have always ordered new RTP's. Release III RTP's will automatically be shipped for all new IBM MS-DOS, Novell, SuperDOS and Wang MS-DOS RTP orders placed after May 31st, 1989, unless Release 2.01 is specifically requested on the order form.

Please remember, Release 2.01 will be treated as a SPECIAL ORDER item.

Q. Do I have to return my old RTP again?

- A. Not if you are on Release 2.01 for an IBM MS-DOS or Novell RTP! A special upgrade RTP will be sent that can be loaded onto your existing installed Basic-2C RTP.

If you are using a release 2.00.04 RTP, the "old" Gold Key must be returned to Niakwa as required in previous upgrades.

Q. Why didn't you have a "No Return Upgrade Policy" for Release 2.00.04 RTP's?

- A. The "No Return" Upgrade Policy is a new concept that was initiated with Release 2.01.20 and requires this version (or higher) to implement the new upgrade RTP. All future versions of IBM and Novell will incorporate this new feature.

Q. Is the "No Return" Upgrade Policy available for my SuperDOS RTP's?

- A. Yes, but not with an Upgrade RTP. Because Basic-2C uses the SuperDOS security method it isn't necessary to have a SuperDOS Upgrade RTP. You can simply install a new SuperDOS RTP and discard the old RTP diskette.

Q. Niakwa has made numerous improvements to the Basic-2C language over the past few years. What's the status of my users' older versions?

- A. Here's a handy reference table to guide you through the availability of upgrades for previous releases:

RELEASE III UPGRADES AVAILABLE

| <u>Product Type Revision #</u> | <u>Upgrade Availability</u> |
|---|---------------------------------|
| Wang MS-DOS 1.02 | Not available |
| Wang MS-DOS 1.03 | Not available |
| Wang MS-DOS 2.00 | Available |
| Wang MS-DOS 2.01 | Available |
| IBM MS-DOS 1.03 | Not available |
| IBM MS-DOS 2.00 | Available |
| IBM MS-DOS 2.01 | Available |
| Novell 2.00 | Available |
| Novell 2.01 | Available |
| SuperDOS 2.01.08 | Available |
| SuperDOS 2.01.13 | Available |
| SuperDOS 2.01.17 | Available |
| IBM MS-DOS and Novell 2.01 RTP's without a hard disk available on the system. | Available |
| 1.02 Development Package | Not available |
| 1.03 Development Package | Not available |
| 2.00 Development Package | Available |
| 2.01 Development Package | Available |

Q. What happens if I format my hard disk after the Upgrade RTP is installed?

- A. Don't worry. The original 2.01.20 Gold Key can still be used to pass security for Release III until we can send you a replacement. This process will be described in more detail in the Release III IBM and Novell Supplements.

Just notify us in writing with the end user's name, the type, size, version, and number of users of the RTP and a brief explanation of what happened.



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