NextBASIC file-related commands and features (Updated 12 Feb 2024)

This document describes the changes in file-related commands and features between the version of +3e BASIC currently available from the +3e website (+3e v1.43) and the current version of NextBASIC (released as part of NextZXOS v2.09).

For reference, v1.43 commands are described here:
http://www.worldofspectrum.org/zxplus3e/commands.html

Additionally, all the file-related commands in +3 BASIC are available (unless otherwise stated). These are described in part 20 of the +3 manual:
http://www.worldofspectrum.org/ZXSpectrum128+3Manual/chapter8pt20.html

This should be read in conjunction with the other documents:

- NextBASIC new commands and features
- NextZXOS Editor features
- NextZXOS and esxDOS APIs

A list of updates made to this document is now provided at the end.

Automatic mappings and startup procedure

NextZXOS now supports any FAT16 and FAT32 partitions on the SD card or cards, instead of +3DOS partitions on an IDEDOS-formatted card.
All FAT partitions detected on the SD card(s) are automatically mapped to drives C: onwards on startup.

The RAMdisk is automatically mapped to drive M:. [This is a +3DOS drive and so does not support directories or long filenames etc]

Finally, any files in the **C:/NEXTZXOS** directory are mapped to the appropriate drive letters (if the drive letter in question has not already been mapped) if they are named as follows and are valid +3DOS partition images:

DRV-A.P3D
DRV-B.P3D
…
DRV-P.P3D
CPM-A.P3D
CPM-B.P3D
…
CPM-P.P3D
DRV-A.DSK
DRV-B.DSK
…
DRV-P.DSK

If both a DRV-A.P3D and CPM-A.P3D are present (for example), the DRV-A.P3D file is used in preference and CPM-A.P3D will not be automatically mapped (if both a DRV-A.P3D and DRV-A.DSK is present, there is no preference and whichever file appears first in the directory will be mapped).

The default drive (highlighted in the list of drives on the startup screen) is set to C: if available. If not, it is set to M:

Once all drives have been mapped appropriately, if there is a BASIC file named **C:/NEXTZXOS/AUTOEXEC.BAS** it will be automatically LOADed (and RUN if it was SAVEd using the SAVE...LINE option). This could contain additional preferences (such as editor colour settings) or just run some desired program.

Changing SD cards

The **REMOUNT** command can be entered when the user wishes to change the SD card. When the prompt “Remove/insert SD and press Y” is shown the SD card may be changed, and then the **Y** key should be pressed.

This command unmaps all existing drives and re-starts the initialisation and automatic mappings procedure described in the previous section (although it does not execute the AUTOEXEC.BAS program).

Partition management

NextZXOS usually uses FAT16 and FAT32 partitions, and these should be created on a PC. Therefore the following +3e commands have been removed:

FORMAT TO *unit,maxpart#[,cyls]*
MOVE *part$* **BIN**
MOVE *part$* **FOR** *name$*

The following command is still available but no longer supports the old "EXP" option:
CAT *[#stream]* **TAB**

It is still possible to create +3DOS-compatible data and swap partitions, using these dot commands, which replace the NEW DATA/EXP commands on the +3e (the main use for these is for use by CP/M and for copying data between FAT and +3DOS partitions whilst in NextBASIC):
.mkdata *filename size* creates a +3DOS data partition image
.mkswap *filename size* creates a swap partition image

The filename can be any valid filename, but in order to be automatically mounted should be named as below. (Additionally, +3DOS data images should have the .P3D type, and floppy disk images should have the .DSK type, so they can be selected and mounted with the *Browser*).

If the partitions are named appropriately (DRV-A.P3D to DRV-P.P3D, DRV-A.DSK to DRV-P.DSK, CPM-A.P3D to CPM-P.P3D) and located in the **C:/NEXTZXOS** directory then they will be automatically mapped at startup or when the CP/M loader is selected. If two such files are present with the same letter, on startup the DRV version will take precedence, but when the CP/M loader is selected, the CPM version will take precedence.

Swap partitions named SWP-0.P3S to SWP-9.P3S which are present in the **C:/NEXTZXOS** directory will be available for machine-coded application programs to use (via the IDEDOS API).

Manual partition mapping

The following commands are still available for manually mapping and unmapping partitions, but no longer support the old "ASN" option (permanence can be achieved by adding such commands into a **C:/NEXTZXOS/AUTOEXEC.BAS** file if required):
MOVE *drive$* **IN** *part$*
MOVE drive$ **OUT**

part$ can be:

- any FAT partition listed on units 5 or 6. These can be referred to by partition id, name or both. Examples which all map the same partition are:
  - **MOVE "e:" IN "5>1>MyFat32"**
  - **MOVE "e:" IN "5>1>"**
  - **MOVE "e:" IN "5>MyFat32"**
- any IDEDOS partition listed on units 0 or 1 (these will only appear if a card formatted by the +3e is inserted), eg:
  - **MOVE "f:" IN "0>Games"**
- "4>" for RAMdisk, eg:
  - **MOVE "m:" IN "4>"**
- any .P3D file, located anywhere on a FAT drive, eg:
  - **MOVE "e:" IN "myp3dos.p3d"**
- any unprotected .DSK (+3 disk image) file in a standard format, located anywhere on a FAT drive, eg:
  - **MOVE "A:" IN "C:/Plus3 Disks/TasCalc.dsk"**

There is no longer any limit to how many partitions can be mapped at one time; all 16 drives A-P can be mapped to partitions. However, a maximum of 8 drives can be mapped to drive images (**.P3D** or **.DSK** files) at any one time.

Filenames

On FAT partitions, filenames can be up to 255 chars in length and include any valid FAT32 LFN characters. Invalid characters are:

"
<
>
£
(c) – the copyright symbol
graphics characters and keyword tokens

In addition, ***** and **?** are wildcard characters whilst **:** and **/** and **** are path separators, and so cannot be part of a filename.

Wildcards

Wildcards can now be used in any command which expects to open/read a single file or directory, and will open/read the first matching file (this only works on FAT filesystems):

eg **LOAD "*.BAS"** loads the first BASIC program found

SPECTRUM "Gregory Lo*.z80" to load "Gregory Loses His Clock.z80"

cd "sna*" to change to the "Snapshots" directory

Wildcards can also be used in any part of the path provided to a file. In this case, the wildcard *always* matches just the first directory corresponding to that part of the path, even if the command being used can deal with multiple files.

eg **CAT "c:/g*/next/orb/o*.*"**

finds the first directory matching **g*** in the root directory of *c:* (usually *games*) and then lists all files matching **o*.*** in *c:/games/Next/Orb*.

File system options

A special 16-bit integer variable, **%FORMAT**, is provided to control various file-system-related aspects. This variable defaults to 0 when *NextZXOS* starts. Default behaviours can be changed by setting the appropriate bits in your *autoexec.bas* file.

eg **%FORMAT=BIN 10**

caused the TAP/TZX/SNA/Z80 loaders to store metadata in the filename by default, rather than the metadata cache.

The following behaviour is controlled by each bit in **%FORMAT**:

Bit	Behaviour
0	If set, suppresses automatic backup file (.BAK) creation
1	If set, loaders write metadata to filenames by defaults
2	If set, disables writes to the metadata cache (c:/nextzxos/metadata)

Other bits are reserved for future use and should be left as zeroes.

Additional commands for working with FAT partitions

esxDOS dot commands are now supported (must be in **C:/BIN**) and can be used in 48K BASIC mode selected from the NextZXOS menu, as well as in NextBASIC mode.

The following new commands are available:

CD *path$*
Change current drive and/or directory.
eg **CD "e:"**
CD "c:/snapshots"
CD "games"

MKDIR *path$*
Create new directory
eg **MKDIR "newdir"**
MKDIR "D:/olddir/newdir"

RMDIR *path$*
Remove directory (will only allow empty directories to be removed)
eg **RMDIR "newdir"**
RMDIR "D:/olddir/newdir"

PWD *[#n]*
Prints the current working directory to the screen (or optionally specified stream number).
eg **PWD**
(Displays, eg C:/snapshots/)
PWD #4
Outputs current working directory to stream 4.

DIR and **LS** have been added as aliases of the **CAT** keyword, and can be used instead in any **CAT** command (when entered into a BASIC program they will be shown as **CAT** since they share the same keyword token value).

Modified +3e BASIC commands

As noted earlier, “permanence” settings are no longer available (replaced with automatic mappings and, if necessary, use of the **C:/NEXTZXOS/AUTOEXEC.BAS** file). Therefore the following **+3e BASIC** commands no longer accept the “ASN” option:

LOAD *drive$*
SAVE *drive$*
VERIFY *drive$*
MERGE *drive$*
SPECTRUM INK *i*
SPECTRUM PAPER *p*
SPECTRUM BRIGHT *b*
SPECTRUM FLASH *f*
SPECTRUM ATTR *n*

Enhanced +3e BASIC commands

The following command will continue to work as described on the +3e website, and additionally supports ZX80 (.O) and ZX81 (.P) snapshots.

SPECTRUM *f$*

In order to run ZX80 and ZX81 snapshots, Paul Farrow's ZX80/ZX81 emulator ROMs must be present in **C:/MACHINES/NEXT/** as ZX80.ROM and ZX81.ROM.

The standard +3 BASIC CAT command now supports a "-" option to display short filenames instead of long filenames:

CAT*[-] [#n[,]][f$][EXP]*

eg

CAT-
CAT- "*.bas"
CAT- EXP
CAT- "*.z80" EXP
CAT- #4
CAT- #4,**"*.z80"**
CAT- #4,**"*.z80" EXP**

The expanded version of the **CAT** command (**CAT EXP**) now gives a more detailed listing than before, showing date/timestamps as well as exact filesizes and file attributes.

Extended commands

The standard **LOAD**, **SAVE** and **VERIFY** commands (which work with tape as well as SD/RAMdisk files) now also have the following new variants (all with **LOAD**, **SAVE** or **VERIFY**; only **LOAD** shown):

LOAD *f$* **BANK** *n*
load/save/verify 16K of data in memory bank *n*
LOAD *f$* **BANK** *n,offset,len*
load/save/verify *len* bytes of data starting at offset *offset* in bank *n*
LOAD *f$* **LAYER**
load/save/verify screen for the active layer (like **SCREEN$** but may use 6.75K, 12K or 48K of data depending upon active layer)

Unchanged +3e BASIC commands

The following commands will continue to work as described on the +3e website:

CAT *[#stream]* **ASN**
OPEN #*n*, *f$*
CLOSE #*n*
GOTO #*n*, *m*

The following 3 commands have had their syntax changed (**TO** is used instead of a comma), but otherwise continue to work as described on the +3e website:

RETURN #*n* **TO** *var*
DIM #*n* **TO** *var*
NEXT #*n* **TO** *var*

Miscellaneous additional +3e BASIC commands

COPY *f$* **TO** *#n*
This command works like the standard +3 **COPY** *f$* **TO SCREEN$** and **COPY** *f$* **TO LPRINT** commands, but any stream can be specified.

NOTE:
All three of these commands filter out any control codes from the file before sending them to the stream/screen/printer, except for end-of-line markers (which can be CR, LF or CRLF).

Deprecated +3 BASIC commands

The standard +3 BASIC sector-by-sector disk copy operation below is no longer supported (dangerous, and not useful without floppies anyway):
COPY "a:" TO "b:"

The additional +3 BASIC screendump commands below are no longer supported:
COPY EXP
COPY EXP INVERSE

The standard **COPY** screendump command is still supported (along with **LLIST** and **LPRINT**) and sends output to any installed driver named “P”. If no such driver has been installed, the ZX Printer / Alphacom 32 / Timex 2040 is supported by default.

These printer configuration commands are also removed, as the +3 printer interfaces are not provided. They would be better replaced by an external driver for any printer interfaces, and controlled with the new **DRIVER** command:
FORMAT LINE *n*
FORMAT LPRINT *f1*[*;f2*]

The following command is also removed. It is no longer necessary since it is now possible to load headerless files as **CODE** files.
COPY *f$* **TO SPECTRUM FORMAT**

As previously mentioned, the following commands have been removed (their functionality is replaced with the **.MKDATA** and **.MKSWAP** dot commands):
NEW DATA *part$,size*
NEW EXP *part$,size*

List of updates

Updated: 12 February 2024

Added details of **%FORMAT** bit 2, for disabling metadata cache writes.

Updated: 18 June 2022

Added details of new **%FORMAT** variable.

Updates: 13 February 2022

Noted that wildcards can now be used in any part of a path.

Updates: 30 January 2020

Updated NextZXOS version number referred to, for day zero release (v2.04).

Updates: 3 Dec 2019

Removed mention of RUN.BAS facility, no longer present.

Updates: 28 Nov 2019

Noted that the **COPY** command is now reinstated and supports the ZX Printer/Alphacom 32/Timex 2040 by default.

Updates: 4 Nov 2019

Fixed incorrect mentions of “extensions” in the text; these are properly referred to as “types”.

Updates: 16 Oct 2019

Explicitly noted the removal of **NEW DATA/NEW EXP** in the deprecated commands section.

Updates: 14 Aug 2019

Updated partition naming examples, following changes in NextZXOS v2.01C.

Updates: 8 Jul 2018

Removed the **.mkdsk** dot command; it's better to create **.P3D** files.

Removed the **MOVE d2$=d1$** command. It's not really needed since +3 software can now be run from **.DSK** images and don't need to run directly on a FAT drive.

Updated the descriptions of the auto-mapping procedure and manual mapping of drives.

Updates: 12 Feb 2018

Removed the **NEW DATA** and **NEW EXP** commands, replacing with **.mkdata**, **.mkswap** and **.mkdsk** dot commands.

Changed the syntax of the **NEXT #/RETURN #/DIM #** commands to use the **TO** keyword instead of the final comma.

Updates: 28 Jan 2018
Noted that the **FORMAT LINE** and **FORMAT LPRINT** commands are now also deprecated.

Updates: 17 Jan 2018
Added descriptions of **REMOUNT** and **LOAD/SAVE/VERIFY/MERGE** commands, moved here from the “new commands” document.

Moved the program-line related commands to the “new commands” document.

Added note about filtering of control codes on **COPY f$ TO SCREEN$/LPRINT/#n** commands.

Updates: 15 Jan 2018
Updated description of **LINE** command, and added new **ERASE** command.

Updates: 12 Dec 2017
Removed editor notes as they are superseded by the “editor changes” document.

Updated descriptions of the AUTOEXEC.BAS and RUN.BAS files: these are LOADed but will only be RUN if they were saved with SAVE...LINE.