MCDISK "Multiple Drives" Problem

1. Introduction

This paragraph explains the reason for the multiple drives that can be seen under Microsoft Windows operating systems. You can safely skip this if you are not interested in the background of this issue.

The MCDISK is a PC-Card (PCMCIA) Reader / Writer that is attached to the SCSI bus of the host system. This is an optimal solution for accessing mass storage devices (namely hard and FLASH disks), because all host operating systems supply native drivers for removable SCSI devices. Therefore, no special drivers are needed to access mass storage devices and the on-board tools and utilities can be used without any limitations.

The MCDISK was designed to be able to access not only mass storage devices, but all types of PCMCIA cards. To achieve this goal, the MCDISK had to offer a way to access the same card with different access modes using the standardized SCSI protocol. Fortunately, the SCSI specification allows every device to have eight sub-devices, so called Logical Units (LUNs). The way these LUNs are mapped to the different PCMCIA access modes is documented in the "MCDISK Technical Reference Manual", available from our home page at http://www.mpl.ch.

Every host operating system (or, more precise, the SCSI subsystem of the OS) is aware of the existence of these LUNS. To be able to find out which driver has to be connected to which SCSI ID/LUN, the SCSI subsystem queries all IDs and all LUNs to find out what exactly is connected to it. If the device does not respond or responds with a device type that is not supported by the SCSI drivers available to the OS, it will be ignored by the SCSI subsystem and can not be accessed therefore.

In the case of the MCDISK, it was decided to report the special LUNs that are not used for direct access devices as being "present, but not connected". This is according to the SCSI standard and has not caused any problems with any operating system until the Servicepack 3 for WindowsNT appeared. From this moment on, WindowsNT (and it's successors) insisted in installing drivers even for LUNs that were reported as "unconnected" to the OS. Because removing the LUNs that were not used for accessing mass storage devices would have removed the customer's ability to access linear FLASH or I/O devices, there was nothing that could be done beside informing Microsoft that their drivers violated the SCSI specification in this respect. Unfortunately, this has not resulted in any activity to solve this issue until today.

2. Windows NT 4.0

Microsoft Windows NT 4.0 prior to Service Pack 3 does not create drive letters for inaccessible LUNs on the MCDISK.

To get rid of the unusable drive letters in later versions of WindowsNT, please follow the outline below. You will have to be logged in as Administrator to be allowed to access the Registry!

1. Open the Registry (using REGEDIT32.EXE).
2. Move to "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services".
3. Identify the entry for your SCSI controller (Something like AHA154x").
4. Add the Key "Parameters" to the controllers key.
5. Add the key "Device0" (if you use the first installed SCSI controller, "Device1" for the second one etc.) to "Parameters".
6. Add the Variable "MaximumLogicalUnit" of type "REG_DWORD and Value 1.
7. Reboot your computer.

Note: For Dual-Slot MCDISKs, you will have to enable the "Dual-SCSI ID" feature of the MCDISK to be able to access the upper slot afterwards. Please refer to the MCDISK User Manual appropriate for your Model for instructions how to do this!

3. Windows XP

WindowsXP does insist on creating a drive letter for every Logical Unit (LUN) a SCSI device presents. It will, however, use LUN 0 to access all these drives (which is not very consequent, after all). How to get rid of the surplus drive letters is relatively easy, but on a dual slot MCDISK, access to the upper slot is not possible anymore.

Some additional entries in the registry can suppress this behavior and force WindowsXP to follow the SCSI standard. We have prepared a patch that adds these entries automatically for you if downloaded from the "Support->MCDISK->Downloads" area of our hom page and executed on your WindowsXP machine. Please make sure that you have administrative privileges on your system prior to install it!

For the technically interested, here are the registry entries:

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\ScsiPort\SpecialTargetList]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\ScsiPort\SpecialTargetList\
DiskMPL_____MC-DISK-E[0]____]
"SparseLun"=dword:00000001
"SetLunInCdb"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\ScsiPort\SpecialTargetList\
DiskMPL_____MC-DISK-E[1]____]
"SparseLun"=dword:00000001
"SetLunInCdb"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\ScsiPort\SpecialTargetList\
DiskMPL_____MC-DISK-G-1_____]
"SetLunInCdb"=dword:00000001
"SparseLun"=dword:00000001
```

Of course, these keys and values can be entered manually into the registry as well.

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Rev. A	Feb 2002	Created
Rev. B	Feb 2003	Added reference to XP Patch download

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