

Deploying Nusoft APs (Thin AP Mode) & LAC-100

Nusoft APs use the default configuration profile that is pre-configured on the LAC-100. Yet it requires both Nusoft APs and LAC-100 to connect to the same LAN switch. ([Figure 1-1](#))

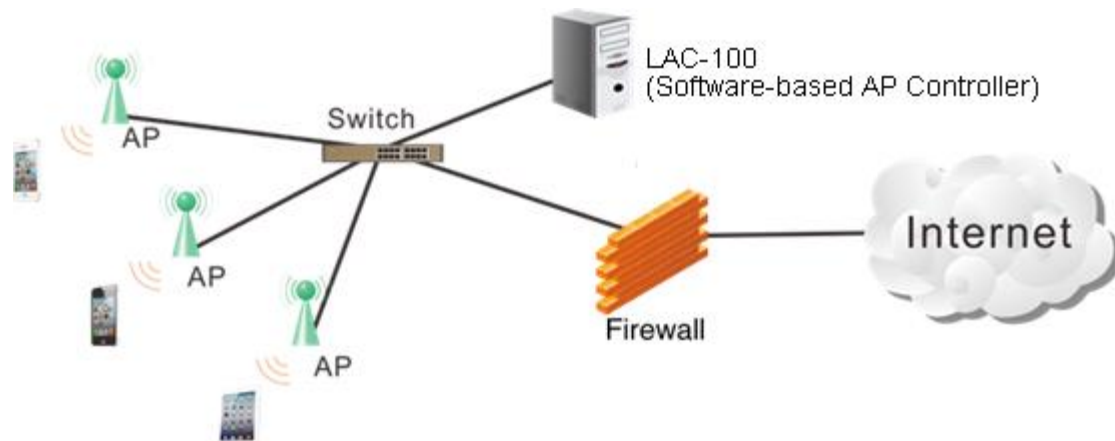


Figure 1-1 Deployment of Nusoft APs and LAC-100 on a Network

Making a Bootable USB Drive for LAC-100

Requirements:

1. A USB drive of 8GB or larger (Supported USB version: 2.0 or above)
2. A Windows PC (hereinafter referred to as “Admin PC”) for logging into the management interface of LAC-100. It can be any PC that is connected to the LAN switch.
3. A “HDD-less” PC (hereinafter referred to as “LAC-100”) that has 2GB of memory installed and is bootable from a USB drive.

Step 1. Download the LAC-100 image onto Admin PC. It is downloadable at:
<http://www.nusoft.com.tw/lac.html>

Step 2. Download the Windows version of “dd” from
<http://www.chrysocome.net/dd> and extract the compressed file.
 (Figure 1-2)

Downloads for dd family

Program	Version	Content	Format	Platform	Download
dd	0.6beta3	Source	.zip	Delphi	dd-0.6beta3.src.zip
dd	0.6beta3	Binary	.zip	Windows	dd-0.6beta3.zip
dd	0.6beta1	Source	.zip	Delphi	dd-0.6beta1.src.zip
dd	0.5	Binary	.zip	Windows	dd-0.5.zip
dd	0.4beta4	Binary	.zip	Windows	dd-0.4beta4.zip
dd	0.4beta4	Source	.zip	Delphi	dd-0.4beta4.src.zip
Installation Instructions					

Figure 1-2 Downloading the “dd for Windows”

Step 3. Move the downloaded files from Step 1 and 2 to the C:\ directory.
(Figure 1-3)

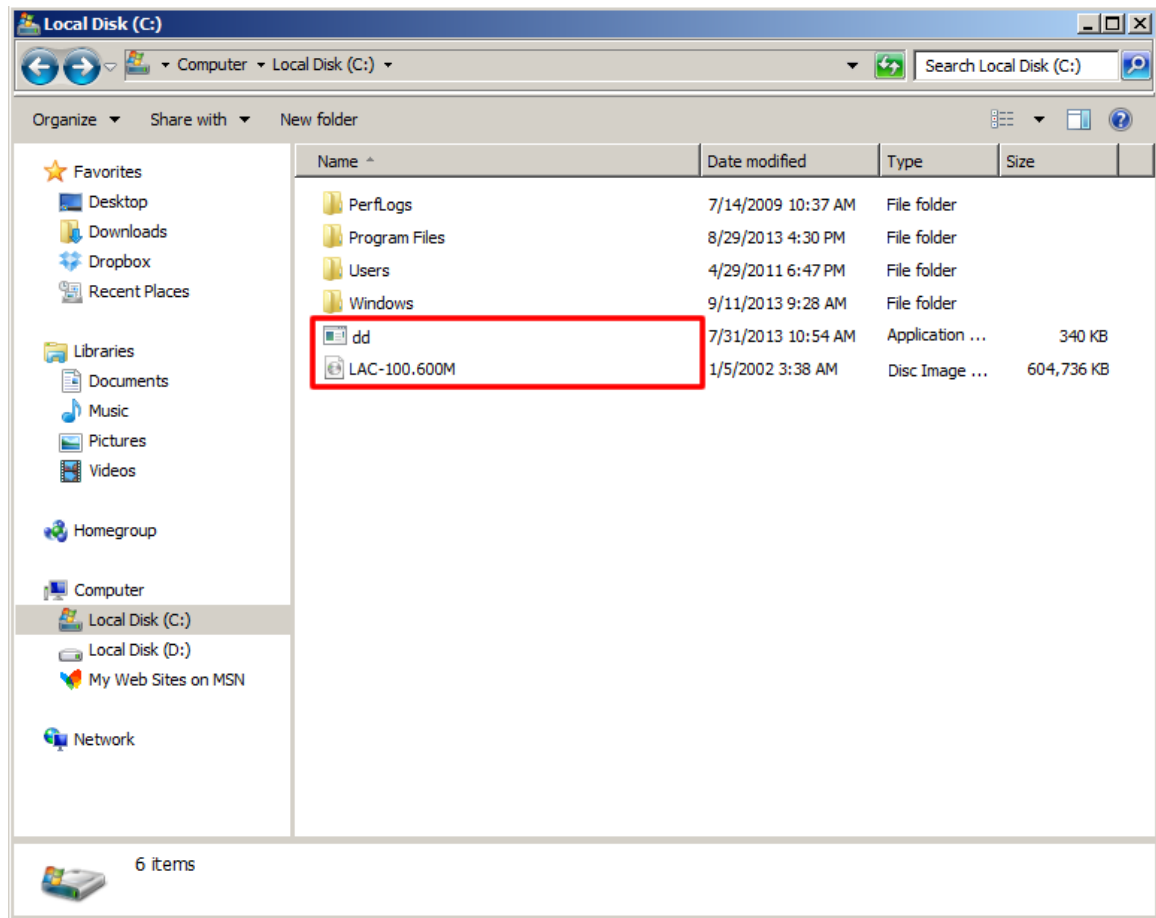


Figure 1-3 Moving the Downloaded Files to the C:\ Directory

Step 4. Launch **Command Prompt** (or simply “CMD”) by using the search box on the **Start** menu and then execute “cd \” to change to the C:\ directory. ([Figure 1-4, 1-5](#))

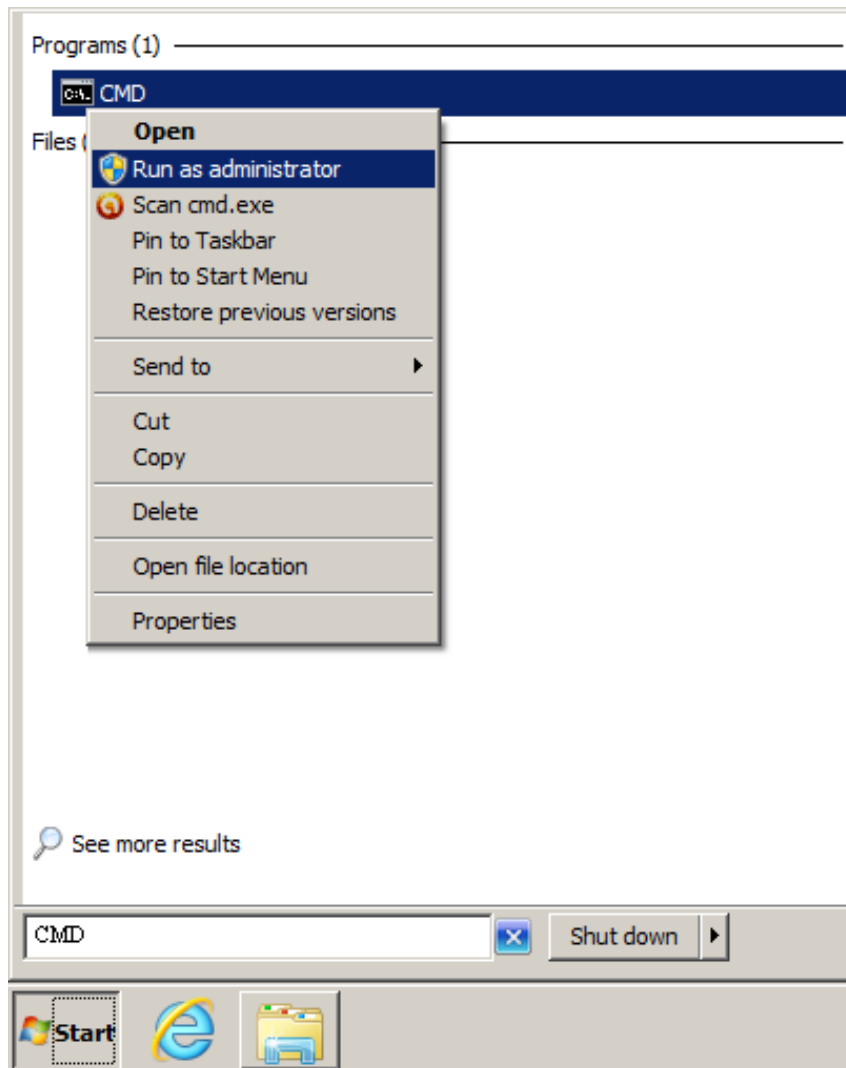


Figure 1-4 Launching Command Prompt from the Start Menu

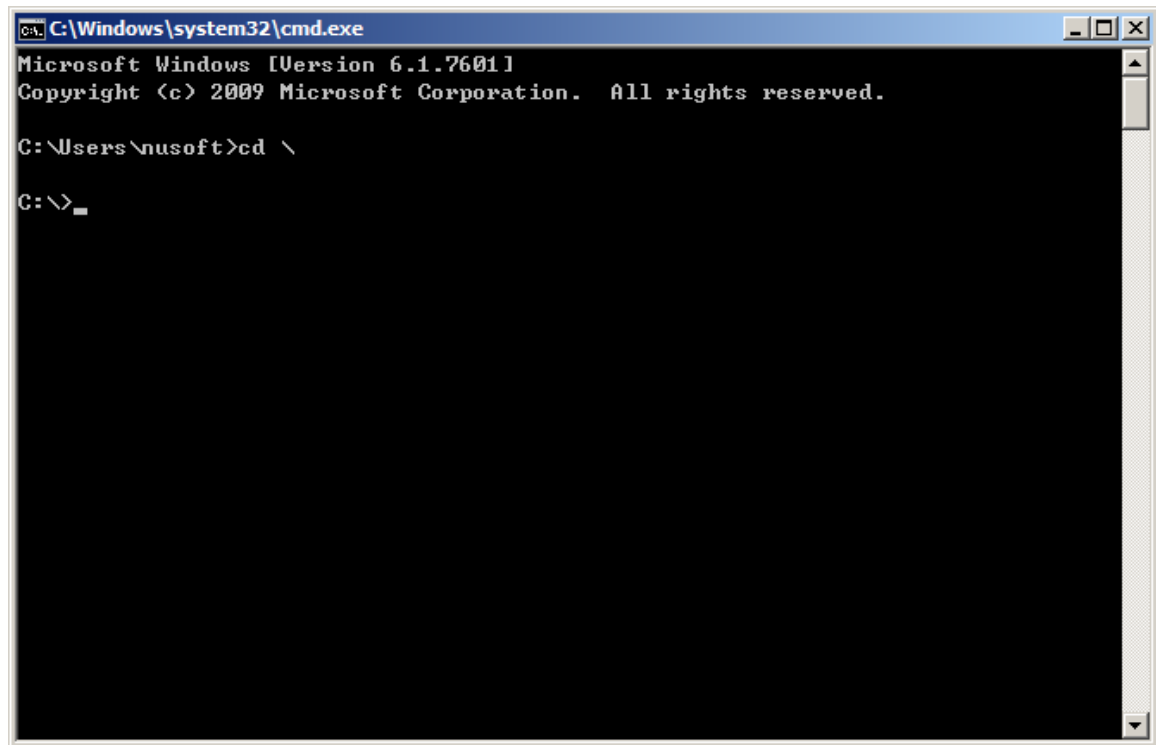


Figure 1-5 Changing to the C:\ Directory

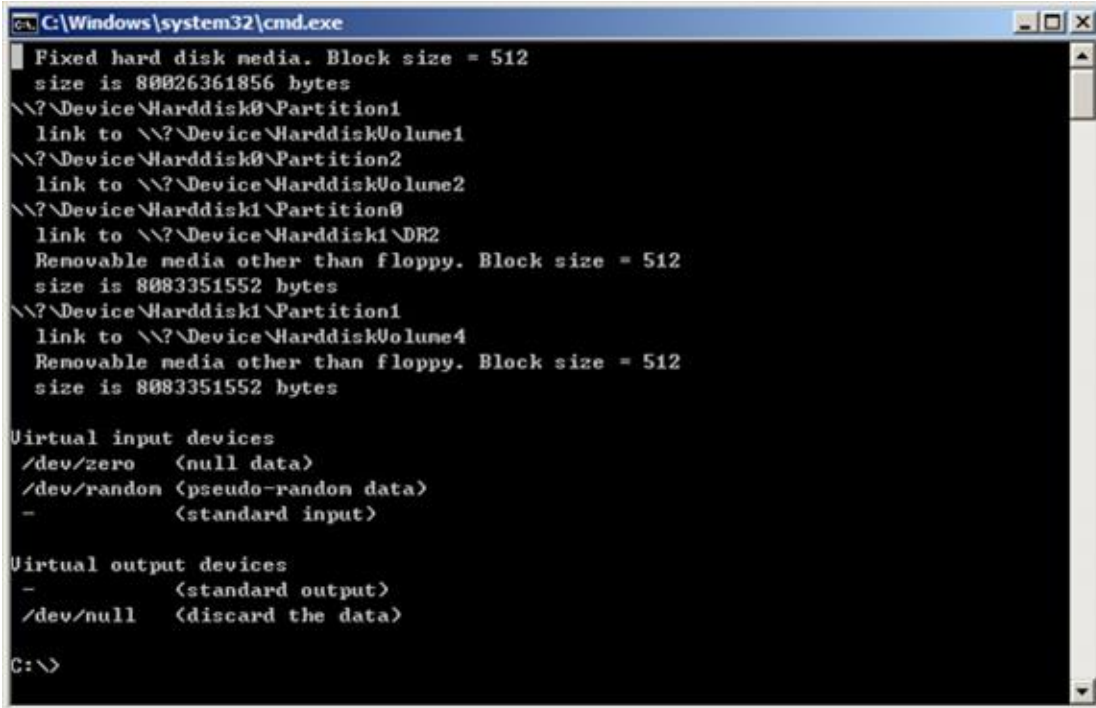


Important:

1. **Command Prompt** requires users (Windows Vista or later) to run it as an administrator.

Step 5. Plug the USB drive into a USB port on the Admin PC, and then type the “dd --list” command in the prompt line with a space in between the “dd” and “--list”. After that, all storage drives available will be listed.

(Figure 1-6)



```
C:\Windows\system32\cmd.exe
Fixed hard disk media. Block size = 512
size is 80026361856 bytes
\\?\Device\Harddisk0\Partition1
link to \\?\Device\HarddiskVolume1
\\?\Device\Harddisk0\Partition2
link to \\?\Device\HarddiskVolume2
\\?\Device\Harddisk1\Partition0
link to \\?\Device\Harddisk1\DR2
Removable media other than floppy. Block size = 512
size is 8083351552 bytes
\\?\Device\Harddisk1\Partition1
link to \\?\Device\HarddiskVolume4
Removable media other than floppy. Block size = 512
size is 8083351552 bytes

Virtual input devices
/dev/zero <null data>
/dev/random <pseudo-random data>
- <standard input>

Virtual output devices
- <standard output>
/dev/null <discard the data>

C:\>
```

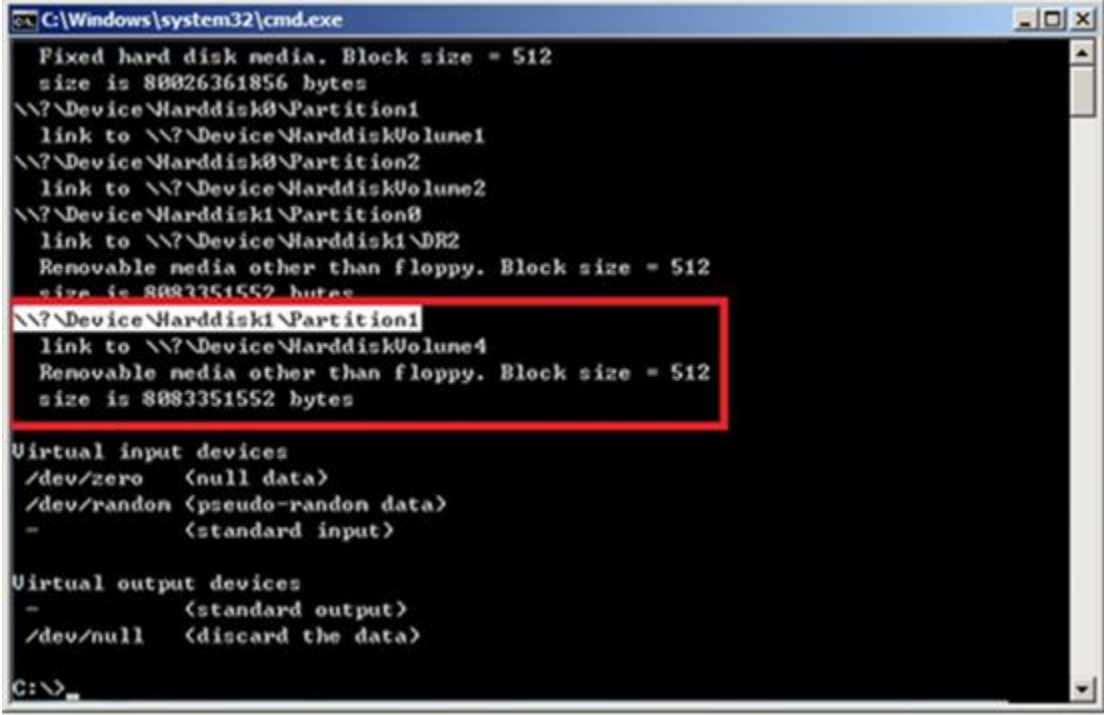
Figure 1-6 All Storage Drives on the Admin PC



Important:

1. To avoid confusion, it is suggested to remove other USB storage devices that are connected to the PC.
-

Step 6. Copy the path of the USB drive (highlighted in white). ([Figure 1-7](#))



```
C:\Windows\system32\cmd.exe

Fixed hard disk media. Block size = 512
size is 80026361856 bytes
\\?\Device\Harddisk0\Partition1
link to \\?\Device\HarddiskVolume1
\\?\Device\Harddisk0\Partition2
link to \\?\Device\HarddiskVolume2
\\?\Device\Harddisk1\Partition0
link to \\?\Device\Harddisk1\DR2
Removable media other than floppy. Block size = 512
size is 8003351552 bytes
\\?\Device\Harddisk1\Partition1
link to \\?\Device\HarddiskVolume4
Removable media other than floppy. Block size = 512
size is 8003351552 bytes

Virtual input devices
/dev/zero <null data>
/dev/random <pseudo-random data>
- <standard input>

Virtual output devices
- <standard output>
/dev/null <discard the data>

C:\>
```

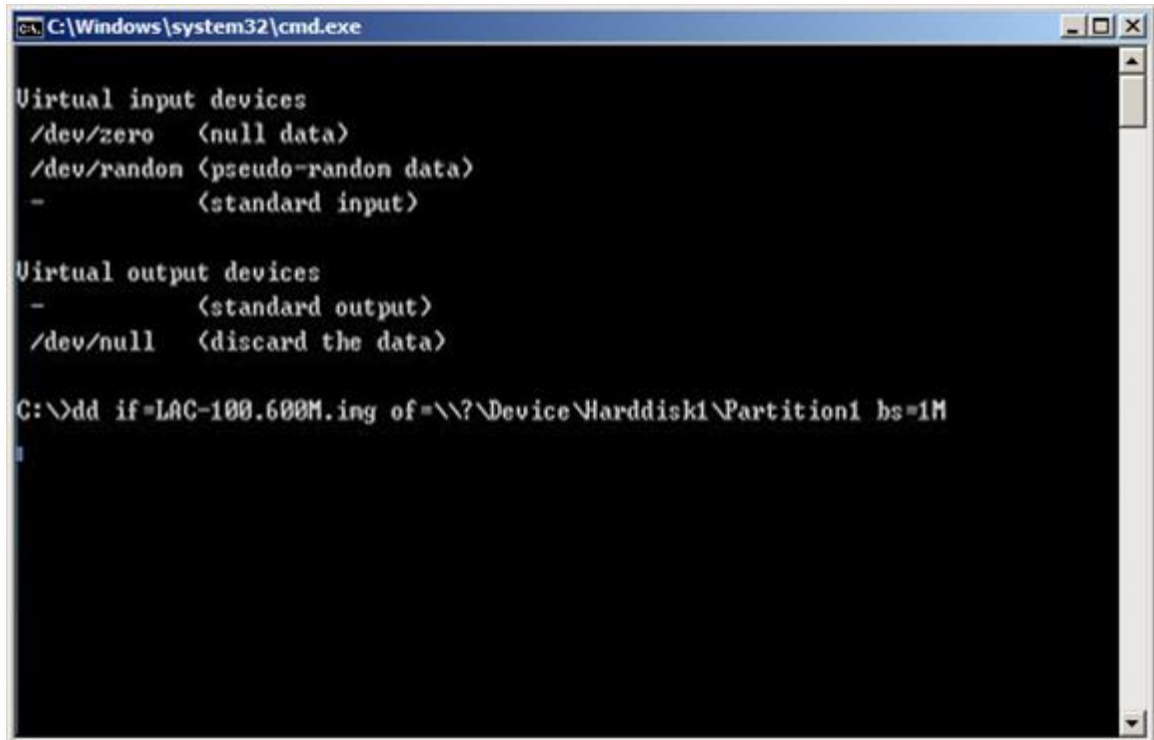
Figure 1-7 Copying the Path of the USB Drive



Note:

1. As per Figure 1-7, the capacity information of the USB drive is provided for identification (enclosed in red rectangle).

Step 7. Type the “dd if=LAC-100.600M.img of=\\?\Device\Harddisk1\Partition1 bs=1M” command in the prompt line. ([Figure 1-8](#))



```
C:\Windows\system32\cmd.exe

Virtual input devices
/dev/zero  <null data>
/dev/random <pseudo-random data>
-          <standard input>

Virtual output devices
-          <standard output>
/dev/null  <discard the data>

C:\>dd if=LAC-100.600M.img of=\\?\Device\Harddisk1\Partition1 bs=1M
```

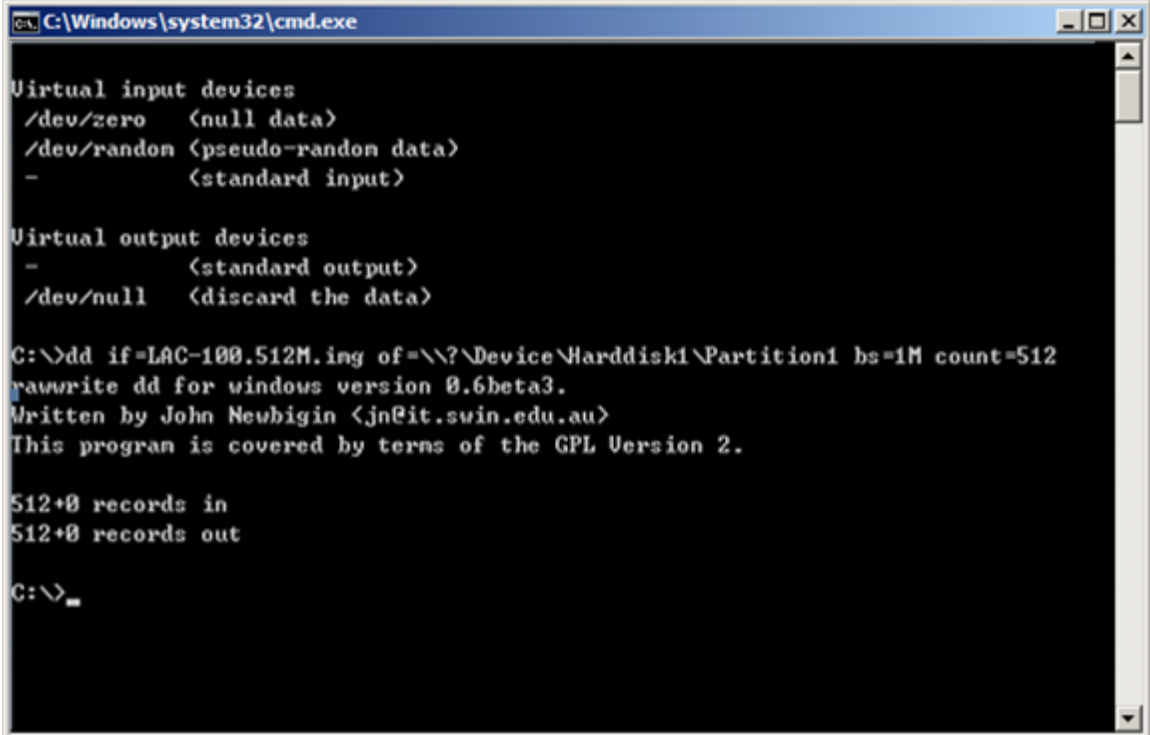
Figure 1-8 Typing the “dd” Command in the Prompt Line



Important:

1. The path “\\?\Device\Harddisk1\Partition1” varies with each PC. Please apply the info according to your case when typing the command parameter.
 2. All data on the USB drive will be gone. Prior to the command execution, perform a backup of the data (if any).
 3. In case the “dd” process fails, try to format the USB drive to “FAT”, “FAT16”, or “NTFS”.
-

Step 8. Press **Enter** and wait for files being copied onto the USB drive. After completion, remove the drive from Admin PC and then plug it into a USB port on the LAC-100. ([Figure 1-9](#))



```
C:\Windows\system32\cmd.exe

Virtual input devices
/dev/zero  <null data>
/dev/random <pseudo-random data>
-          <standard input>

Virtual output devices
-          <standard output>
/dev/null  <discard the data>

C:\>dd if=LAC-100.512M.img of=\\?\Device\Harddisk1\Partition1 bs=1M count=512
rawwrite dd for windows version 0.6beta3.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by terms of the GPL Version 2.

512+0 records in
512+0 records out

C:\>_
```

Figure 1-9 Files Successfully Copied

Loading LAC-100 from USB Drive

Step 1. Power on LAC-100 and then press **Delete** to enter the BIOS. Next, change the boot order to boot from the USB drive. ([Figure 1-10](#))

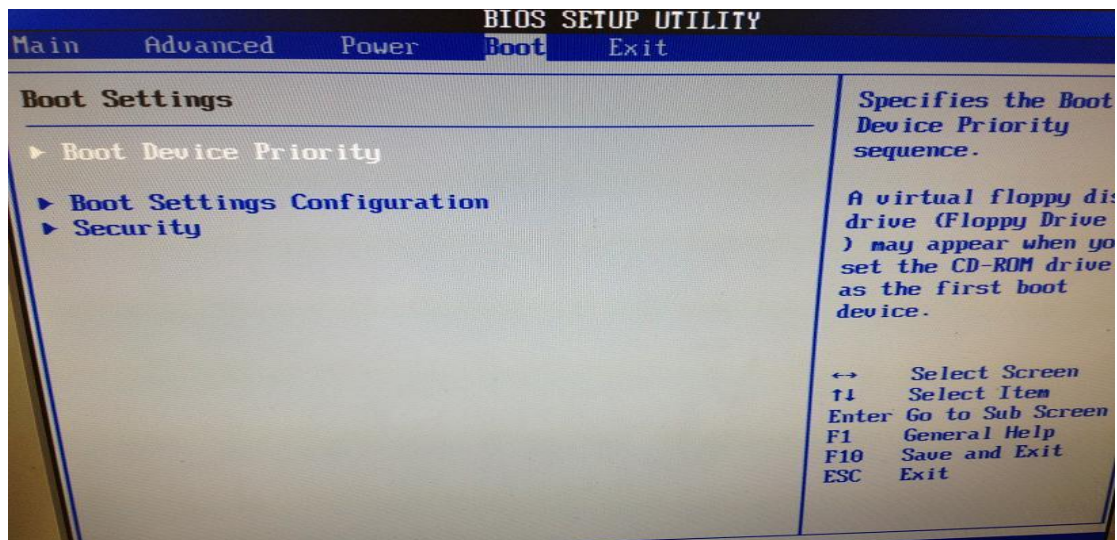


Figure 1-10 Entering the BIOS

Step 2. Change the first boot device to USB drive. ([Figure 1-11](#))

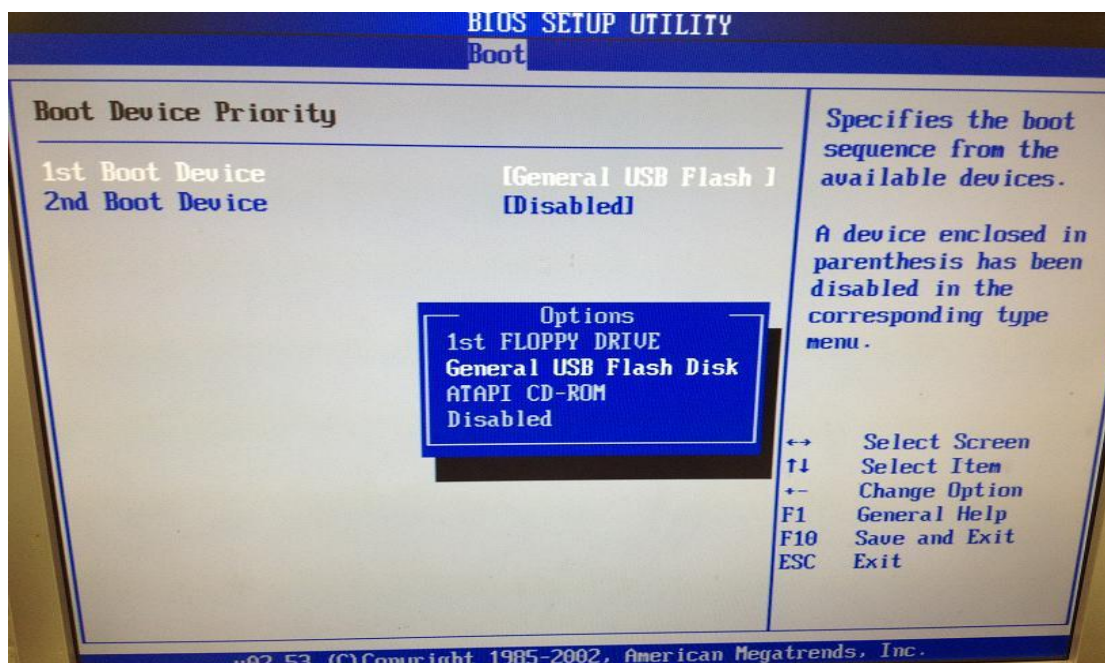


Figure 1-11 Boot Order Being Changed

Step 3. Save changes and exit BIOS. ([Figure 1-12](#))

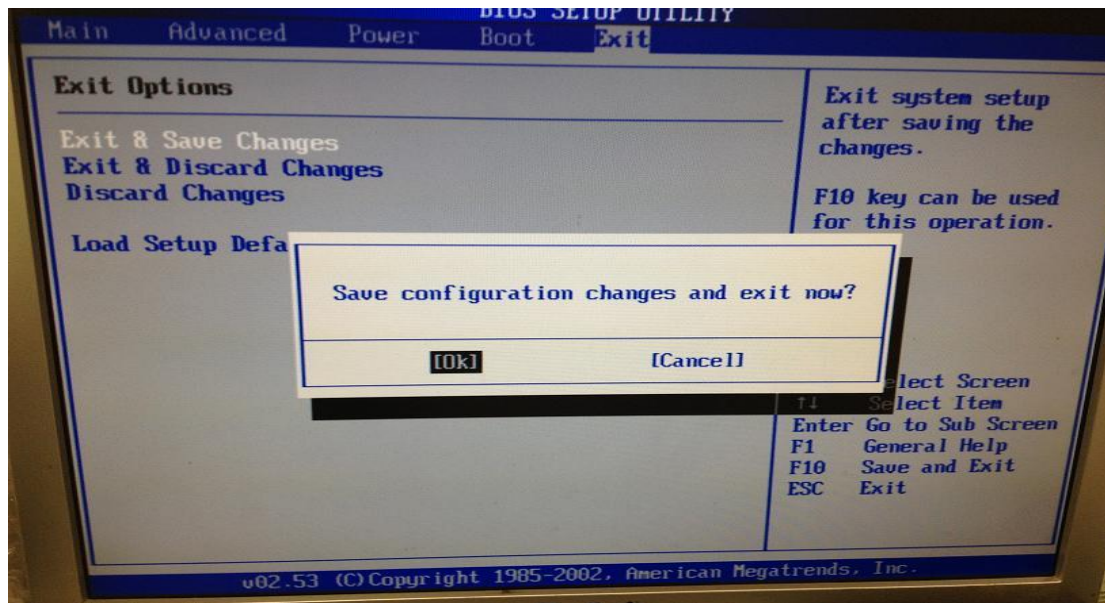


Figure 1-12 Saving Changes and Exiting BIOS



Important:

1. The BIOS layout varies with each PC. Please configure the boot order according to your BIOS.
 2. In case the USB drive is not available on the bootable device list, try to remove all the connected storage devices (especially hard drives) and then retry the boot order configuration.
-

Step 4. Booting from USB drive should take a few minutes. Once the LAC-100 is successfully booted, a message “INITL : Entering runlevel : 1” will be shown. ([Figure 1-13](#))

```

=> set_wf_blacklist():1072, use:0 sec
=> set_wf_extension():1081
=> set_wf_extension():1099, use:0 sec
=> set_wf_mime_script():1108
=> set_wf_mime_script():1126, use:0 sec
==> set_wf_category():1135
==> set_wf_category():1152, use:0 sec
==> set_wf_group():1161
==> set_wf_group():1179, use:0 sec
==> set_wf_report():1187
==> set_wf_report():1200, use:0 sec
==> set_idp():931
==> set_idp():956, use:0 sec
==> set_idp_report():964
==> set_idp_report():976, use:0 sec
==> set_waf():981
==> set_waf():1002, use:0 sec
==> set_waf_report():1010
==> set_waf_report():1022, use:0 sec
==> set_policy():1238
==> set_policy():1273, use:0 sec
==> set_report_setting():1281
==> set_report_setting():1303, use:0 sec
S ==> set_report_setting():1281
E ==> set_report_setting():1303, use:0 sec
S ==> set_radius_client():1311
E ==> set_radius_client():1328, use:0 sec
S ==> set_radius_user():1336
E ==> set_radius_user():1353, use:0 sec
S ==> set_radius_setting():1361
E ==> set_radius_setting():1378, use:0 sec
***** Initial System [ End ] *****
INIT: Entering runlevel: 1
  
```

Figure 1-13 LAC-100 Successfully Booted

Step 5. Connect the Ethernet ports of both Admin PC and LAC-100 with an RJ-45 cable. Next, run a browser on Admin PC to access the management interface at <http://192.168.1.1> (Credentials: admin / admin). (**Figure 1-14**)

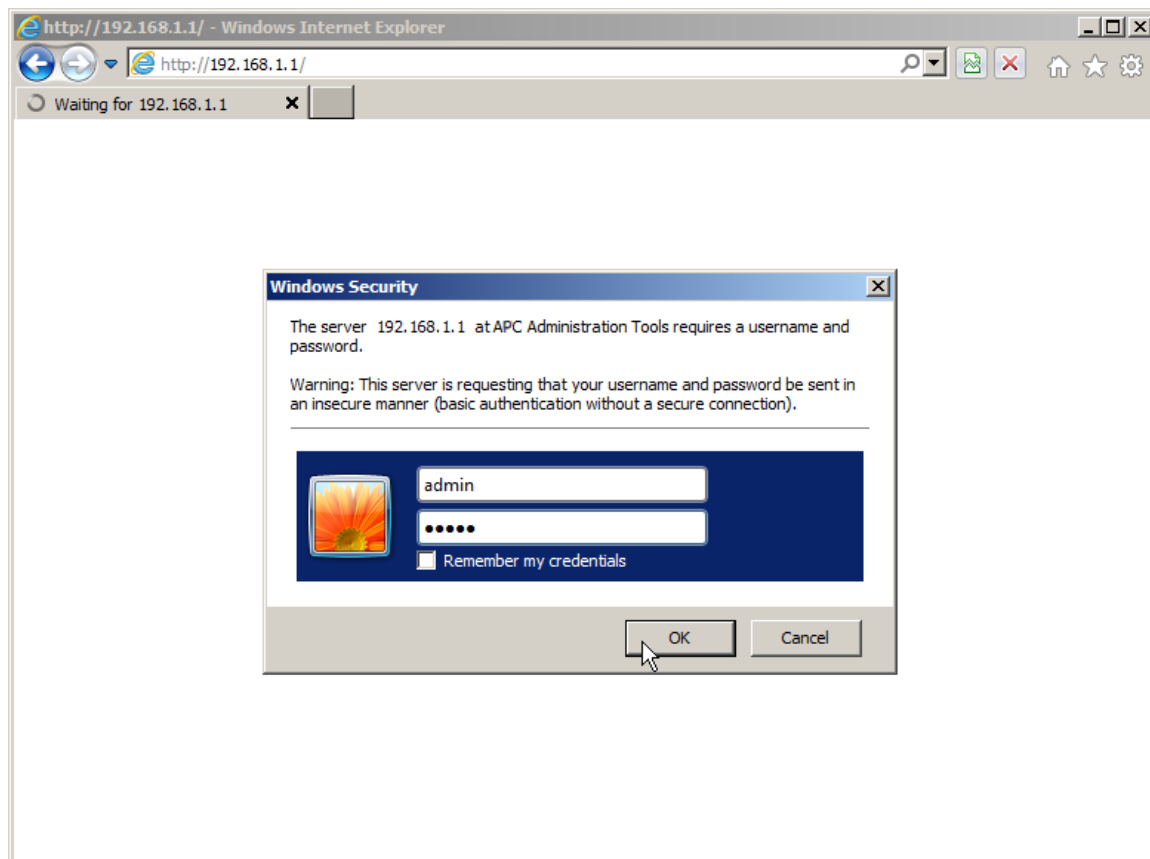


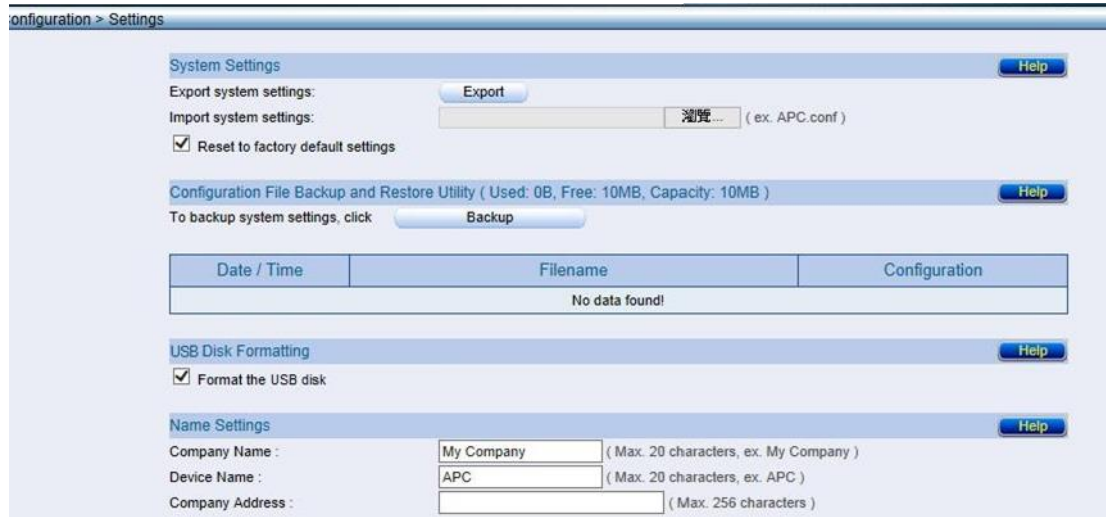
Figure 1-14 Logging into the Management Interface of LAC-100



Important:

1. In case a straight-through cable fails to connect the two PCs (the "Link" LED of the Ethernet port shall light "Green" once they are successfully connected), try to use a crossover cable instead.

Step 6. On the menu panel, click **System, Configuration**, and then **Settings**. After that, tick the boxes of “Reset to factory default settings” and “Format the USB disk” and then click **OK** at the bottom of the screen. A reboot will be performed after the two actions. ([Figure 1-15](#))



onfiguration > Settings

System Settings [Help](#)

Export system settings: [Export](#)

Import system settings: [浏览...](#) (ex: APC.conf)

☒ Reset to factory default settings

Configuration File Backup and Restore Utility (Used: 0B, Free: 10MB, Capacity: 10MB) [Help](#)

To backup system settings, click [Backup](#)

Date / Time	Filename	Configuration
No data found!		

USB Disk Formatting [Help](#)

☒ Format the USB disk

Name Settings [Help](#)

Company Name : (Max. 20 characters, ex. My Company)

Device Name : (Max. 20 characters, ex. APC)

Company Address : (Max. 256 characters)

Figure 1-15 Management Interface of LAC-100



Important:

1. The two actions from this step are mandatory and will take several minutes to complete.
Skipping the step will result in unexpected errors.
-

Step 7. On the menu panel, click **System, Configuration**, and then **Interface** to specify the interface addresses for access to LAC-100. Next, reconnect the Ethernet port of LAC-100 to the LAN switch. ([Figure 1-16](#))



Interface Addresses	
IP Address	172.19.123.250
Netmask	255.255.0.0
Default Gateway	172.19.1.254
Primary DNS Server	168.95.1.1
Secondary DNS Server	168.95.192.1

Access by / via : ☒ Ping / Traceroute ☒ HTTP ☒ HTTPS

OK Cancel

Figure 1-16 Interface Addresses of LAC-100

Deploying Nusoft APs (Thin AP Mode)

Step 1. Connect Nusoft APs to the LAN switch that LAC-100 is connected to. It enables Nusoft APs to use the default configuration profile that is pre-configured.

Step 2. Wireless users are now able to access the Internet by connecting to the default SSID “LAC-100”. ([Figure 1-17](#))



[Figure 1-17 Default SSID for Accessing the Internet](#)