

**Title: Adding Wake-On-LAN Access Service™ to KVM.net® II System.**

**No: IPA41-1**

**Date: Sunday, 26 April, 2009**

**SUMMARY:**

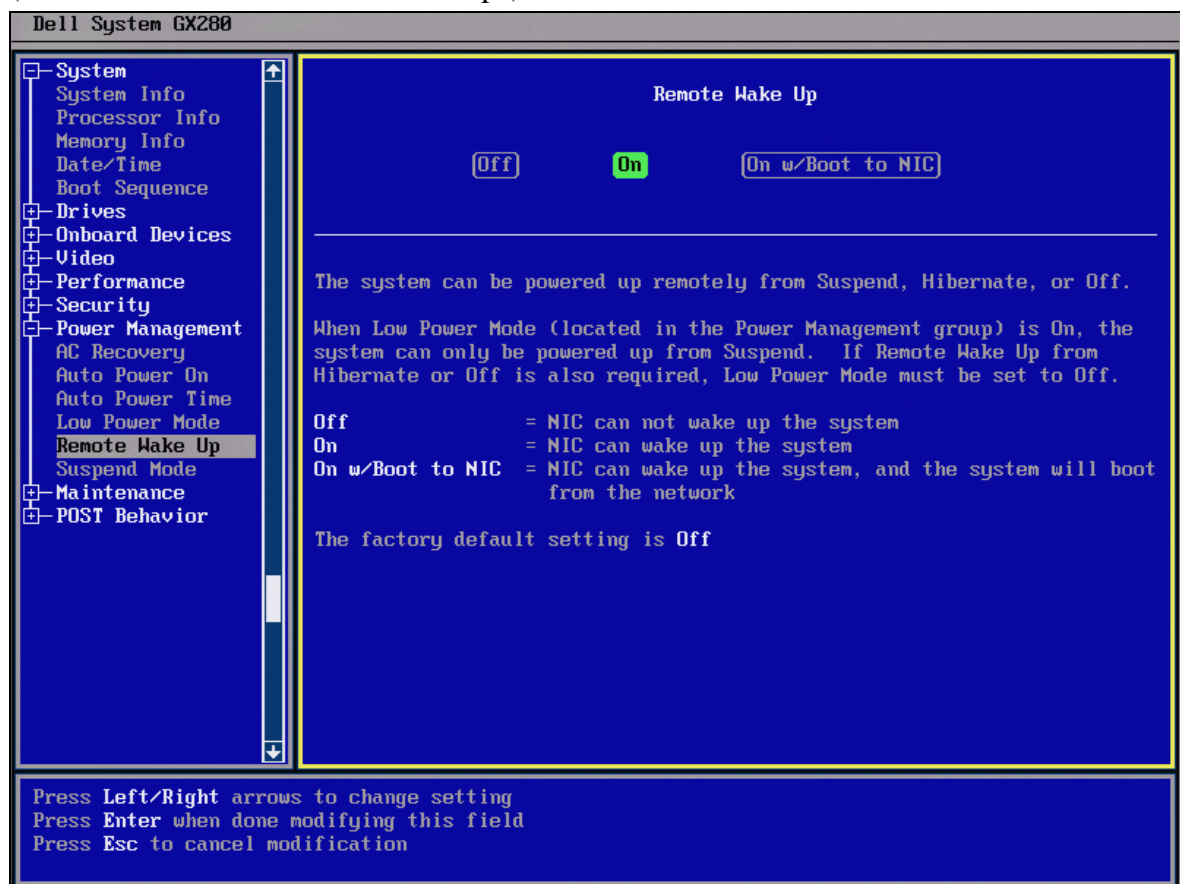
Wake-On-LAN (WoL) is an Ethernet computer networking standard that allows a computer or server to be turned on or woken up remotely by an especially composed network packet (commonly called a “Magic Packet”) sent from another computer on the network. A specially configured Access Service can enable the KVM.net II system to send a Wake-on-LAN packet to turn on or wake up the computer or server.

**MORE INFORMATION:**

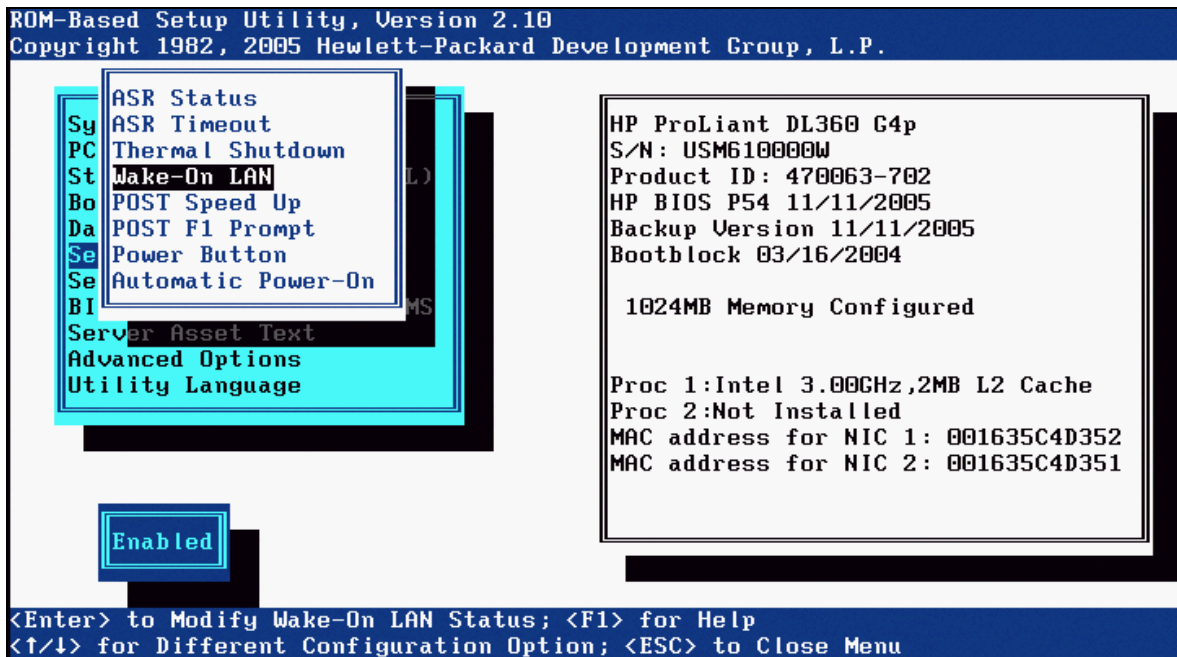
Creating a specially configured Access Service will enable the KVM.net II system to send a Wake-On-LAN packet to turn on or wake up the servers and computers.

**System requirements**

Wake-On-LAN (WoL) support is implemented on the motherboard of a server/computer and the network interface. If the network interface is a plug-in card rather than being integrated into the motherboard, the card may need to be connected to the motherboard by a cable. Motherboards with an embedded Ethernet controller and which support WoL do not need a cable. Enable the WoL support in the BIOS of the server/computer. In most BIOSes the support for WoL is located in the Power Management section of the BIOS (Sometimes called “Remote Wake Up”).



In some servers, the Wake-On-LAN settings could be located in Server Availability section.



For sending the WoL network packet, download a small Windows utility from one of the links below:

<http://support.minicom.com/KVMnet/Tools/mc-wol.exe>

<http://www.minicom.com/support/kvmnet/mc-wol.exe>

<http://www.matcode.com/mc-wol.exe>

Create a **WoL** folder in the **\Program Files\** folder and copy the **mc-wol.exe** file to this folder, in most computers this would be a **C:\Program Files\WoL\** folder.

Check and note the MAC addresses of the servers (targets) you want to turn on or wake up using the WoL service. You can use “**ipconfig /all**” command in the Windows operating systems or “**ifconfig**” command in Linux operating systems. Run these commands from the command line or from the terminal. Note the Physical Address or Ethernet HWaddr string.

### Creating the Access Service.

Create a new Access Service for the WoL service.

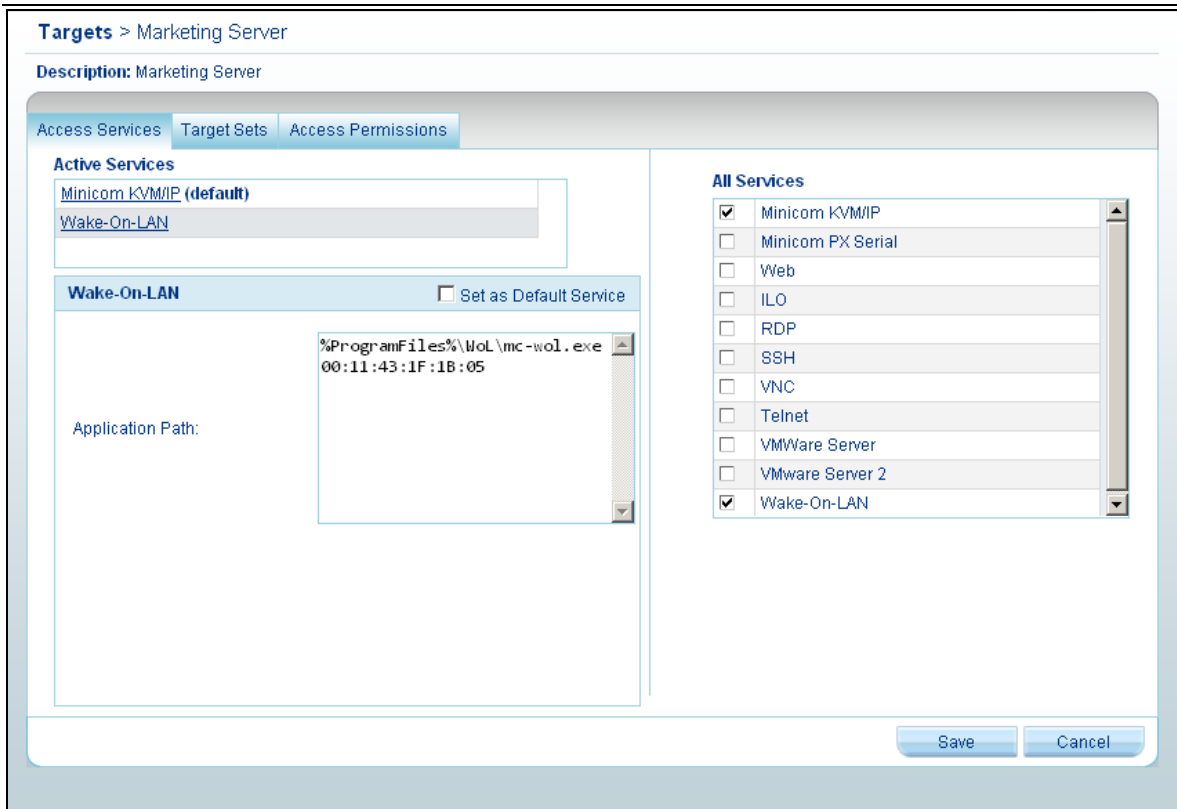
1. Click **New Service** button in **Settings > Access Services** page of the KVM.net II.
2. Give an explanatory name to the Access Service, e.g. Wake-On-LAN.
3. Provide description to the Access Service (optional).
4. Select the **Application Path** and type the following command in the corresponding field: **%ProgramFiles%\WoL\mc-wol.exe**.
5. Don't select any other checkboxes (Leave all checkboxes in not checked state).
6. Press **Save** button.

The screenshot shows the 'New Service' dialog box with the following configuration:

- Name:** Wake-On-LAN
- Description:** Wake On LAN Service
- URL:** (empty)
- Application Path:** %ProgramFiles%\WoL\mc-wol.exe
- IP:** (empty)
- Port:** (empty)
- Login Method:**
  - Prompt for Credentials
  - Use KVM.net Credentials
  - Use the Following Credentials

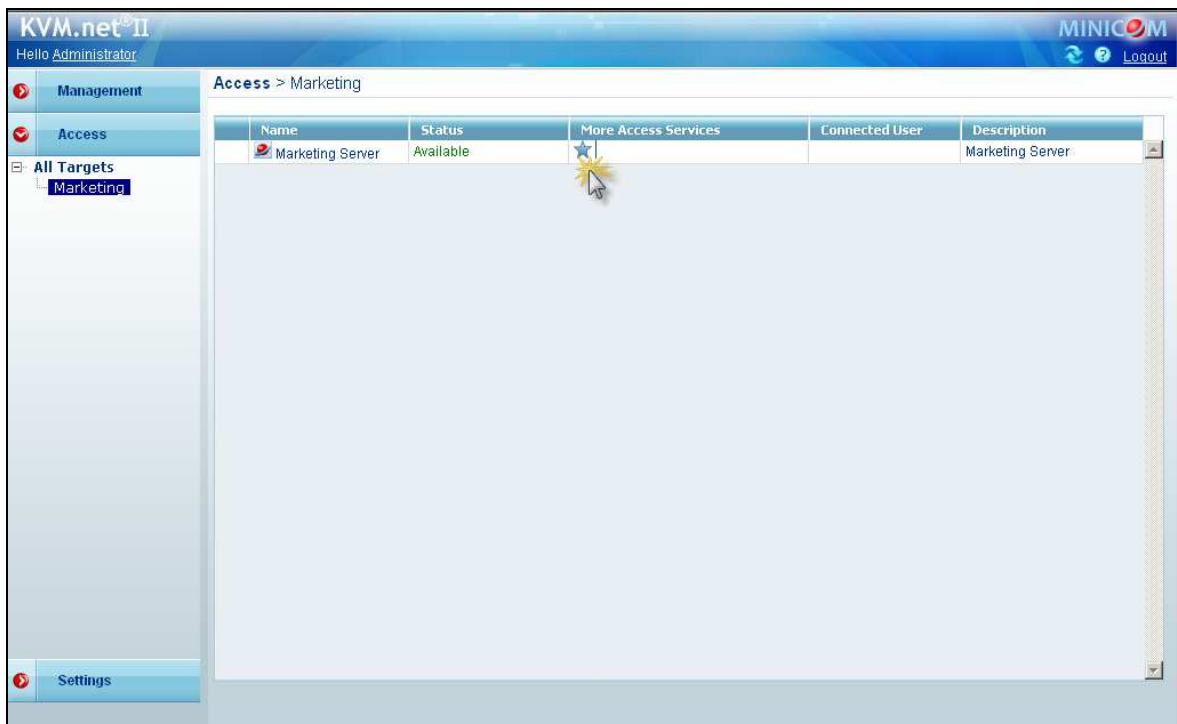
### Adding the WoL Access Service to existing target.

1. In the **Management, Targets** page click on existing target.
2. On the **All Services** list check the **Wake-On-LAN** service.
3. Click on the **Wake-On-LAN** service in **Active Services** section.
4. Configure the WoL parameters. In the end of the **%ProgramFiles%\WoL\mc-wol.exe** string add the target MAC address. Use colons for separators for the MAC address, i.e. 00:11:43:1F:1B:05.
5. Press **Save**.



**Turning on or waking up the Target by sending the WoL Magic Packet.**

To send the WoL packet to the target to turn it on or wake it up, click on the Blue star on the right of the Target name in the Access page.



## **COMMENTS:**

WoL technology can be very beneficial to your business but please remember that this technology relies on many factors to work properly. Because of this, you should be aware of the following points.

### **Hardware.**

Always check for the latest Network Card BIOS updates.

Make sure you enable the WoL in the motherboard BIOS and on the Network card. Check your manufacturer's web site or server manual for further details on how to do this.

### **Make sure you connect the network cable to the board.**

A handy hint is, if the machine is off and the light on your network switch is not on then the computer does not have the standby power for the network card enabled. Without this the computer cannot receive a WoL command.

### **Wake-On-LAN over the Internet or across the subnets.**

If you wish to use WoL over the Internet or across the subnets you will need to set up your destination firewall/router to allow "Subnet Directed Broadcasts". Most routers and firewalls disable this option by default.

You will then need to allow traffic through on your firewall/router on a specific port. The WoL network packet is typically sent as a UDP datagram to port 0, 7 or 9.

To enable the sending the WoL packet across the subnets, create the command in the following format:

**%ProgramFiles%\WoL\mc-wol.exe ethernet-address /a ip-address**

Where the **ethernet-address** is Ethernet MAC address of the network adapter of the target and **ip-address** is the Multicast IP address of the LAN where the target is located.

How to calculate the subnet-directed broadcast address

1. Convert machine address to binary e.g. 10.208.20.1 =  
00001010.11010000.00010100.00000001
2. Convert the Subnet Mask to Binary e.g. 255.255.240.0 =  
11111111.11111111.11110000.00000000
3. Invert the Binary Subnet Mask e.g. 11111111.11111111.11110000.00000000  
becomes 00000000.00000000.00001111.11111111
4. Or the machine address and the inverted subnet mask e.g.  
00001010.11010000.00010100.00000001 Or  
00000000.00000000.00001111.11111111 =  
00001010.11010000.00011111.11111111 = 10.208.31.255

Alternatively, you can download a free Network Subnet calculator from [http://www.solarwinds.com/products/freetools/free\\_subnet\\_calculator.aspx](http://www.solarwinds.com/products/freetools/free_subnet_calculator.aspx) or [http://www.wildpackets.com/support/downloads/free\\_utilities/ipsubnetcalc/overview](http://www.wildpackets.com/support/downloads/free_utilities/ipsubnetcalc/overview) and calculate the subnet-directed broadcast address.