

How To: support WakeOnLAN via G/On

Support for turning on remote PCs via G/On using WOL

Introduction

This document describes a configuration of G/On enabling a user to turn on a remote PC on the inside network via G/On using Wake-On-LAN technology.

Please note that this document assumes a basic understanding of G/On Admin strings and application enablement!

Benefits

The simplest and hence very powerful configuration of G/On enables a remote user to connect directly to the PC already provisioned inside the LAN of the organization to which the user belongs. This removes a range of considerations on rights, applications and other setups that have already been taken care of when setting up the workplace computer. G/On provide a simple remote access solution via RDP to the workplace PC from anywhere on the Internet.

However the discussions on “*Green IT*” and general pressure on savings on resource usage (i.e. power to computers) means that many organizations are trying to turn off computer resources when they are not in use. This means that many desktop computers are turned off when the user leaves the workplace. When connecting remotely to such a machine a technology known as “Wake-On-LAN” enables remote power up of computers.

The advantages of combining Wake-On-LAN technology with G/On:

- Green IT compliance
- Cost savings in terms of power savings

How To guide

Introduction to Wake-On-LAN

A brief and good introduction to Wake-On-LAN technology can be found at:

http://en.wikipedia.org/wiki/Wake_on_lan

A brief quote from above document:

The general process of waking a computer up remotely over a network connection can be explained this way:

The target computer is shut down (Sleeping, Hibernating or Soft Off, i.e. ACPI state G1 or G2), with power reserved for the network card. The network card listens for a specific packet, called the "Magic Packet." The Magic Packet is broadcast on the broadcast address for that particular subnet (or an entire LAN, though this requires special hardware and/or configuration). When the listening computer receives this packet, the network card checks the packet for the correct information. If the Magic Packet is valid, the network card turns on the computer to full power and boots the operating system.

The magic packet is sent on the data link or OSI-2 layer and broadcast to all NICs (within the network of the broadcast address). Therefore, it does not matter whether the remote host has a fixed or dynamic IP-address (OSI-3 layer).

So the G/On server (or client) must be configured to submit the "magical packet" to the LAN or computer that needs to be turned on (the target computer). To enable this a set of special hardware requirements must be supported on the computers to support WoL.

Again quoting from above document:

Wake on LAN (WoL) support is implemented on the motherboard of a computer. Most modern motherboards with an embedded Ethernet¹ controller support WoL without the need for an external cable. Older motherboards must have a WAKEUP-LINK header onboard and connected to the network card via a special 3-pin cable; however, systems supporting the PCI 2.2 standard coupled with a PCI 2.2 compliant network adapter typically do not require a WoL cable as the required standby power is relayed through the PCI bus.

PCI version 2.2 has PME (Power Management Events). What this means is that PCI cards can send and receive PME via the PCI socket directly, without the need for a WOL cable [1].

...

Wake on LAN must be enabled in the Power Management section of the motherboard's BIOS. It may also be necessary to configure the computer to reserve power for the network card when the system is shutdown.

In addition, in order to get WoL to work it is sometimes required to enable this feature on the card. This can be done in Microsoft Windows from the properties of the network card in the device manager, on the "Power Management" tab. Check "Allow this device to bring the computer out of standby" and then "Only allow management stations to bring the computer out of standby" to make sure it does not wake up on all network activity.

¹ WakeOnLAN is typically only supported on wired Ethernet connections, not WiFi! However, Intel have developed a special WakeOnLAN technology (called WoWLAN) enabling WakeOnLAN via WiFi. Please refer to: www.intel.com/network/connectivity/resources/doc_library/tech_brief/wowlan_tech_brief.pdf. Note that this solution have not been tested by Giritech.

Setting up G/On to support Wake-On-LAN

This section provides a step-by-step approach to setting up G/On to support WoL. It uses a set of tools that can be downloaded from Giritech support in the form of a .zip package called "Gawol".

It has been an overall objective to design a very simple solution with as little impact on existing G/On RDP installations and with as little enduser involvement as possible. A range of more complex features can be added to this basic solution as needed – please contact Giritech support for inspiration.

Note: before commencing with the configuration please make sure the target computer(s) support WoL (see above) and download the Gawol package from Giritech Support!

There are 5 steps in setting up WoL via G/On:

1. Find the MAC and IP address of the target computer(s)
2. Setup G/On to send the "magical package" to the computer
3. Wait for the target computer to boot
4. Launch GTSC to establish a RDP connection to the target computer when it is operational
5. Setting up the correct menus in G/On

In details the step comprises the following actions:

1. Find the MAC and IP addresses of the target computer (the computer to be booted remotely).

Enter the MAC addresses in the "Address1" user field and the IP addresses or DNS names of the target computer in the "Office_PC" user field in G/On Admin for each user's target computer.

Note: The target computer(s) must have WakeOnLAN enabled and the local area network must allow UDP broadcast connections from the G/On server towards the target computer(s).

2. Setup G/On to send the "magic packet" to the target computer.

The tool "Gawol.exe" from the Gawol package connects via UDP to the local broadcast of the network and sends the magic packet three times with a few seconds delay. Three (3) times is the standard way of operation because some older network cards need more than one packet to react.

Please note that you have to know the local broadcast address of the network where the target computer is connected, e.g 192.168.45.255 or similar. This is needed to enable correct local routing of the broadcast package to the target computer.

The wake up string for the G/On Application tab should be:

```
8;%Local_Broadcast,mustedit,noblink%;7;7;udp;;;%GONPATH,noEdit%WO
L\Gawol.exe;%USER_Address1,noEdit% 127.0.0.2;True;False
```

Note: remember to distribute the Gawol tool to all clients using GUpdate in the usual way (see G/On Admin guide for details on GUpdate). A subdirectory called \WOL is assumed in the above mentioned string!

3. Wait for the target computer to wakeup.

After issuing the WakeOnLAN package from Gawol, the user will have to wait a few minutes before the target computer is ready to accept RDP connections. If users are trained to set their computer in "Standby" instead of "Shut down" the waiting time is minimized.

4. Launching GTSC (RDP connection to target computer)

This is done using the normal GTSC string, typically already implemented in the installation. The G/On Admin string required to launch GTSC to the target computer ("Office_PC") is given here:

```
8;%USER_Office_PC,noEdit%;3389;3389;tcp;GTSC;
GTSC;;%GONPATH,noEdit%\gtsc.exe;/server:127.0.0.2
/serverport:%PORT,noEdit% /username:%USERNAME,noedit%
/encpassword:%ENCPASSWORD,noedit% /domain:%Domain,mustedit%
%Fullscreen,forceselect[Off|/fullscreen,default]%
/width:%Width,forceselect[90|100,default|1024|1280|1600]%
/height:%Height,forceselect[90|100,default|768|1024|1200]%
/title:%ApplicationTitle,mustedit,noblank%
/Startprogram:%App_to_Start,mustedit%
/AdvSettings\RedirectDrives=%RedirectDrives,forceselect[True,default|False]%,RedirectPrinters=%RedirectPrinters,forceselect[True,default|False]%;True;False
```

5. How to put the function into the G/On menu

We recommend developing 2 menu actions and optionally *autolaunch* the WakeUp call when the user logs on to G/On. This means the WOL request will always be sent to the target computer and thus the user will only have to wait a minimum amount of time before being able to launch GTSC. You could still put the menu item into the users menu if needed.

- > 1. Wake up my computer
- > 2. Connect to my computer

If the target computer is *already* running you loose a few seconds for the Autolaunch of G/On but it will still function correctly afterwards.

If the target computer is hibernating or powered off, it is automatically awakened and booted as required.

More information

For more information on how to configure G/On to support WOL please contact your Giritech partner or Giritech Support at support@giritech.com