



The 1E WakeUp Evaluation Guide

Achieve 100% Patch Management and Software Distribution Success

The 1E WakeUp Evaluation Guide

Version 5.2 document revision 1

© 1E LTD 2008

All rights reserved. No part of this document or of the software (“the software”) to which it relates shall be reproduced, adapted, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without permission from 1E Ltd. It is the responsibility of the user to use the software in accordance with this document and 1E Ltd shall not be responsible if the user fails to do so. Although every precaution has been taken in the preparation of this document, 1E Ltd and the authors assume no responsibility for errors or omissions, nor shall they be liable for damages resulting from any information in it.

Trade marks

1E is a trade mark of 1E Ltd registered in the UK, with registration applied for in the US and EU. The 1E device is a trade mark of 1E Ltd with registration applied for in the UK, US, EU and Australia. AGILITY FRAMEWORK is a trade mark of 1E. NIGHTWATCHMAN is a trade mark of 1E Ltd registered in the US, with registration applied for in the EU and Australia. 1E WAKEUP is a trade mark of 1E Ltd. MICROSOFT, WINDOWS NT, WINDOWS 2000, WINDOWS XP are all trademarks of Microsoft Corporation in the United States and other countries.

Magic Packet is a trademark of Advanced Micro Devices, Inc.

Intel® and Intel® vPro™ are trademarks of Intel® Corporation.

Contents

Section 1	Introduction	1
1.1	Who is this guide for?	1
1.2	Lab Configuration	1
Section 2	Enabling Wake-on-LAN on the Clients	2
2.1	How to check if Wake-On-LAN is working correctly	2
	Magic Test and RecvFrom	2
Section 3	Installing Agility Framework Reporting	3
3.1	Installing the Web Service and Reporting Engine.....	3
3.2	Installing the 1E WakeUp Product Pack.....	3
Section 4	Installing 1E WakeUp	4
4.1	1E WakeUp Multi-Agent Mode	4
	Encrypted communications	4
4.2	Installing the 1E WakeUp Master Service	4
4.3	Installing the 1E WakeUp Agent.....	4
Section 5	Testing 1E WakeUp	5
5.1	Wake up a PC or Collection from the <i>SMS Admin Console</i>	5
	Shut down the Client PCs	5
	1E WakeUp with Policy Refresh.....	5
5.2	Waking Up with Advertisements	5
	Shut down the Client PCs	5
	Advertise a Program	5
5.3	Viewing Reports	5
5.4	Running, Monitoring and Fixing Client Health	6
	Shut down the Client PCs	6
	1E WakeUp with Client Health	6
	Client Health Fixes.....	6
Section 6	Troubleshooting	7
6.1	The target PC does not wake up	7
	The magic test.....	7
	MAC address resolution	8
	The receive from test.....	8
6.2	Magic test and recvfrom tests work but PC will still not wake up	9
	Windows XP SP2 firewall settings.....	9
6.3	The problem is still not resolved	10
Section 7	1E WakeUp Evaluation Checklist	11
	Configure your evaluation environment	11
	Enable Wake-On-LAN on the clients.....	11
	Install AgilityFramework onto the evaluation environment.....	11
	Install 1E WakeUp onto the evaluation environment.....	11
	Run the test scenarios	11

Section 1 Introduction

Achieve 100% Patch Management and Software Distribution Success

1E WakeUp powers up PCs using Wake-On-LAN technology, it integrates this ability seamlessly into Microsoft's Systems Management Server (SMS) and Systems Center Configuration Management (SCCM). Administrators using this combination of 1E WakeUp and SMS 2003 or ConfigMgr 2007 can now ensure that PCs are automatically powered on for software, and critical patch installation and routine management.

1E WakeUp is not only an invaluable tool for critical patch management; it also performs an essential function in power management, helping to reduce the total power usage of the PC population. When you are using 1E WakeUp PCs can be powered off when not in use because 1E WakeUp will enable them to be there when needed.

1.1 Who is this guide for?

This lab evaluation guide is aimed at administrators who want to try out 1E WakeUp in a controlled lab environment. It discusses installation of 1E WakeUp, and then runs through some example use cases. The following sections provide details on how to configure, run and debug your evaluation environment. For your convenience *Section 7 - 1E WakeUp Evaluation Checklist*, at the end of this document, is a tear-off checklist for setting up, installing and running the evaluation.

1.2 Lab Configuration

This guide will assume that you have a lab configured with an SMS environment as follows:

- A domain controller with Windows or 2003 Active Directory.
- If centralised reporting and Client Health functionality is required, an additional PC with the .NET Framework 2.0 preinstalled and IIS 5 or 6 with ASP.NET 2.0 enabled.
- A Windows 2003 server with SMS 2003, Service Pack 1. At the time of writing this document SCCM 2007 is still in a beta phase. 1E WakeUp 5 works with SCCM 2007 but the integration with the SCCM Admin Console is available as a separate download.
- Some client PCs, with Windows XP. For the purposes of this guide, the client PCs should be in a different subnet from the servers, but all the clients should be on the same subnet. You'll need at least two client PCs to work through this evaluation guide.
- The client PCs should have wake-on-LAN enabled, and should be configured to boot to local hard disk when woken from the network.
- The Hardware Inventory Client Agent must be enabled on the clients and the systems should be SMS Clients (Hardware Inventory should be up-to-date and accurate).
- The Advertised Programs Client Agent must be enabled on the clients.

Section 2 Enabling Wake-on-LAN on the Clients

Most modern PCs, particularly those with integrated network cards can be easily configured for Wake-on-LAN operation.

For information on how to configure your clients for Wake-on-LAN operation, please refer to the manufacturer's documentation for your BIOS and for your network card.

2.1 How to check if Wake-On-LAN is working correctly

A quick way to tell if a system is Wake-on-LAN ready is to shut down the system and then to look at the LED's on the network adapter. If the link light is still on, then the PC is likely to be Wake-On-LAN enabled.

Magic Test and RecvFrom

1E WakeUp comes with two convenient and easy-to-use utilities, called *MagicTest* and *RecvFrom*, which can be used to check whether Wake-on-LAN is working correctly. For more information on these tools, see *Heading 6.1 - The target PC does not wake up* in the troubleshooting section of this guide.

Section 3 Installing Agility Framework Reporting

This section describes how to install the Agility Framework Reporting and Web service components for the purposes of the evaluation scenarios. If you do not wish to evaluate centralised reporting or Client Health, you can skip this section.

3.1 Installing the Web Service and Reporting Engine

1. On your IIS server, run the *AgilityFramework.msi* installer package and go through the wizard.
2. If you wish to install the database on another PC, you can select the *Custom* configuration option and select a SQL Server instance on another PC. Otherwise, select *Typical* which will install all components required for 1E WakeUp status and Client Health reporting.

For more details on installing the Agility Framework please refer to *The AgilityFramework Installation Guide* provided with the software.

3.2 Installing the 1E WakeUp Product Pack

After installing the Agility Framework components, the 1E WakeUp Agility Framework Product Pack should be installed on the IIS server. The Product Pack adds the reports and configures the Agility Framework web service to service status reporting and Client Health requests.

Run the *SMSWakeUp.ProductPack.msi* installer package and follow the instructions in the installation wizard.

Section 4 Installing 1E WakeUp

This section describes how to install 1E WakeUp for the purposes of the evaluation scenarios.

4.1 1E WakeUp Multi-Agent Mode

In this evaluation guide, we'll install 1E WakeUp in Multi-Agent mode. This is the most flexible way to install and use 1E WakeUp, as it works on networks that do not allow directed broadcasts. This mode also provides the most functionality, including: Policy Refresh, for improved responsiveness when pushing out software packages and patches; Last Man Standing, for ensuring that at least one PC per subnet remains available to receive wake up signals; Client Health reporting, for ensuring the integrity of the SMS Clients throughout a network.

Encrypted communications

1E WakeUp allows for encrypted communications between the 1E WakeUp Master and the 1E WakeUp Agents. In this example scenario, we will turn this on. For more information about the different installation models of 1E WakeUp, please consult the *The 1E WakeUp Installation Guide*.

4.2 Installing the 1E WakeUp Master Service

The 1E WakeUp Master Service periodically scans the SMS database for pending Advertisements. If it finds any, it wakes up the relevant client PCs and (in Multi-Agent mode) triggers a Policy Refresh.

The master service must be installed on all your SMS/SCCM Primary servers.

1. On your SMS/SCCM server, run the SMSWakeUp50.msi installer package and go through the wizard.
2. 1E WakeUp comes with a diagnostic wizard, so you'll want to choose the *Complete* option to ensure that it is installed.
3. Choose *Scenario C: Multi-Agent*, and choose *Encryption Full*.
4. On the *Configure Reporting* page, enter the IIS server that currently hosts the Agility Framework web service as your reporting server and enable *Create Client Health Collections* in SMS.

For more details on installing the 1E WakeUp Master please refer to *The 1E WakeUp Installation Guide* provided with the software.

4.3 Installing the 1E WakeUp Agent

1E WakeUp uses a master/agent model to implement the Policy Refresh and Client Health functionalities; you will need to install the 1E WakeUp Agent on *all* of your workstations.

1. In the *SMS Admin Console*, use *Create Package from Definition* to import the *SMSWUAgent50.msi* package into SMS.
2. Modify the installation program entries to include *ENCRYPTIONLEVEL=2*, *CLIENTHEALTH=ON* and *REPORTINGSERVER=<IIS Server>*. The program command line should look like this:

```
msiexec.exe /q ALLUSERS=2 /I "SMSWUAgent50.MSI" ENCRYPTIONLEVEL=2  
CLIENTHEALTH=ON REPORTINGSERVER=<IIS Server>
```

where *<IIS Server>* is a placeholder in this command-line example for the IIS server where you installed the Agility Framework.

3. Advertise this program to the client workstations, making it mandatory, and wait for SMS to push it out.

Section 5 Testing 1E WakeUp

This section describes how to run two 1E WakeUp tests, waking up a single Resource or a Collection explicitly from the *SMS Admin Console* and waking up PCs on the back of an Advertisement.

5.1 Wake up a PC or Collection from the *SMS Admin Console*.

This test shows how 1E WakeUp can wake up a PC or Collection using the *All Tasks/SMSWakeUp with Policy Refresh* option on the right-click context menu.

Shut down the Client PCs

In Multi-Agent mode, as long as one of the PCs on the subnet is turned on, 1E WakeUp will be able to wake up all the client PCs on the subnet.

1. Leave one of the client PCs on; shut down all of the others.

1E WakeUp with Policy Refresh

1. In the *SMS Admin Console*, right-click on a Resource or a Collection, and from the *All Tasks* menu, select the *SMSWakeUp with Policy Refresh* option.
2. After a brief delay, this will cause the nominated Resource or Collection to wake up, and to perform a Policy Refresh.
 - a. If the PC does not wake up, take a look at *Section 6 - Troubleshooting, below*.
 - b. If the system is on, you can then check the `%system32%\ccm\logs\PolicyEvaluator.log` to confirm that a refresh of SMS Policy has taken place.

5.2 Waking Up with Advertisements

This test shows how 1E WakeUp will awaken shutdown PCs in response to an Advertisement.

Shut down the Client PCs

1. As in the previous section, leave one of the client PCs on and shut down all of the others.

Advertise a Program

In this example, we'll assume that you want to distribute Adobe Acrobat Reader 7.0 to the client PCs, but you can use pretty much any package.

1. Create a Mandatory Advertisement for the *Per-machine unattended installation* program, giving it an assignment time 5 minutes into the future.
2. Wait for 5 minutes. It is not recommended that you go for a coffee at this point, or you will miss the PCs waking up.
3. The nominated PCs will wake up and perform a Policy Refresh.
4. Adobe Acrobat will be installed on the relevant client PCs. You can confirm this by checking the desktop for the correct shortcut.

If any PC does not wake up, take a look at *Section 6 - Troubleshooting, below*.

5.3 Viewing Reports

Log on to the Agility Framework reporting server with the following URL:

```
http://<IIS Server>/AFConsole
```

where *<IIS Server>* is a placeholder in this URL example for the IIS server where you installed the Agility Framework.

From here you can view the various reports under the categories *Manual Wakeups* and *Wakeup Successes* to confirm that accurate statistics are shown. You can drill down into the reports under *Wakeup Successes* to identify the actual PCs that were woken up or failed to wakeup.

5.4 Running, Monitoring and Fixing Client Health

This test shows how to request a Client Health check for all PCs using the *All Tasks/SMSWakeUp with Client Health* option.

Note: the 1E WakeUp Agent runs a periodic Client Health check on the PC every 8 hours and sends up any differences. Requesting a Client Health test from the SMS Admin Console simply forces all clients to perform the sequence of tests and post the results on to the Agility Framework server immediately.

Shut down the Client PCs

In Multi-Agent mode, as long as one of the PCs on the subnet is turned on, 1E WakeUp will continue to be able to wake up your client PCs.

1. Leave two of the client PCs on; shut down all of the others.
2. On one of the PCs, stop the SMS Client service (SMSAgentHost service) from the Services Console and on the other stop the Remote Registry service.

1E WakeUp with Client Health

1. In the *SMS Admin Console*, right-click on a Resource or a Collection, and from the *All Tasks* menu, select the *SMSWakeUp with Client Health* option.
2. After a brief delay, this will cause the nominated Resource or Collection to wake up, and perform a Client Health check. If the PC does not wake up, take a look at *Section 6 - Troubleshooting*, below.
3. Log on to the Agility Framework reporting server with the following URL:

```
http://<IIS Server>/AFConsole
```

where *<IIS Server>* is a placeholder in this URL example for the IIS server where you installed the Agility Framework.

4. View the *Failure Description Summaries* report under the category *Client Health*. Confirm that the two PCs with the defects have been reported.
5. In the *SMS Admin Console*, right click on the *SMSWakeUp Client Health* Collection and run the *Update Collection membership* option. The sub-Collections *SMS Agent not started* and *Remote Registry not started* should now contain the two PCs with the respective defects.

Client Health Fixes

1. In the *SMS Admin Console*, right-click on the sub-Collection *SMS Agent not started* and, from the *All Tasks* menu, select the *SMSWakeUp with Client Health Fix* option. Similarly, right-click on the sub-Collection *Remote Registry not started* and from the *All Tasks* menu, select the *SMSWakeUp with Client Health Fix* option.
2. After a brief delay, this will cause the nominated PCs in the Collections to wake up if shut down, and to perform a Client Health fix.
3. After another brief delay, perform a Client Health test as detailed in the previous section.

4. Log on to the Agility Framework reporting server with the following URL:

```
http://<IIS Server>/AFConsole
```

where *<IIS Server>* is a placeholder in this URL example for the IIS server where you installed the Agility Framework.

5. View the *Failure Description Summaries* report under the category *Client Health*. Confirm that the two PCs with the original defects do not appear in your report.
6. In the *SMS Admin Console*, right click on the *SMSWakeUp Client Health* Collection and perform a manual *Update Collection membership*. The sub-Collections *SMS Agent not started* and *Remote Registry not started* should no longer contain the original two PCs.
7. Log onto the PCs and confirm that the *Remote Registry* and *SMS Agent Host* services are running.

Section 6 Troubleshooting

When troubleshooting problems with 1E WakeUp you should first check that the system meets the requirements set out in *Section 1.2 - Lab Configuration*. If these requirements are met you should then follow through the troubleshooting steps described below.

6.1 The target PC does not wake up

This section describes how to use two utilities from 1E for testing the wakeup capabilities for networks and particular PCs. These tools are called *MagicTest* and *RecvFrom*. *MagicTest* is used to simulate the server or agent component that is sending a Magic Packet out to a potential system when powered off and *RecvFrom* is a client utility that allows an administrator to see verbose output when a packet is received.

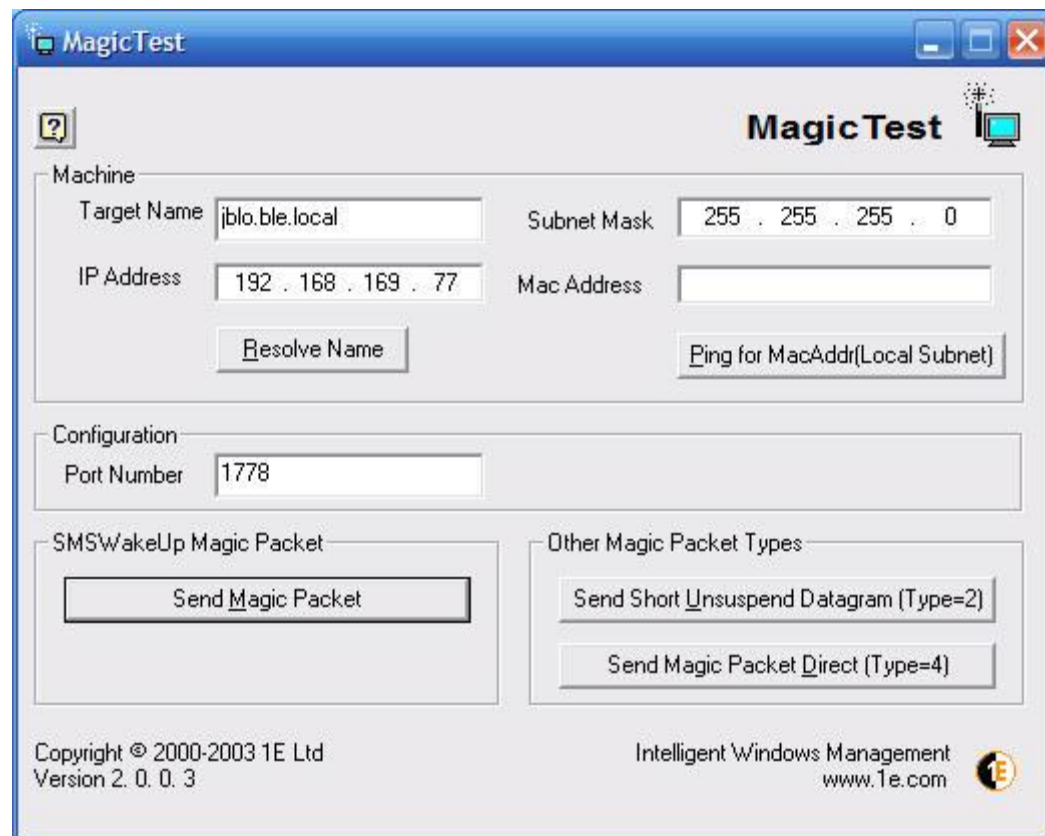
The magic test

The 1E *magictst.exe* utility, as seen below, lets you send a magic packet to a single PC to test the functioning of Wake-On-LAN hardware. It can be launched by selecting the *Start menu/Programs/SMSWakeUp50/Magic Test* item. This item will only have been installed if you chose the *Complete* option during the 1E WakeUp installation.

For this test you need two PCs, a sender and a target. The sender and target PCs should both be on the same subnet. Follow the steps below to carry out the test.

1. Make sure both systems are powered on.
2. On the sender system, start the Magic Test utility – *magictst.exe*.
3. In the *Target Name* field, fill out the name of the target system.
4. Click on the *Resolve Name* button. This will automatically complete the *IP Address* and *Subnet Mask* fields. If you know the IP information already you can fill in the fields manually.
5. Once the IP Address information is complete – click on the *Ping for MAC Address* button. This will complete the MAC Address field.
6. If all of the above fields have been completed, you now have enough information to perform the test.
7. Shutdown the target system.
8. On the sender system, click on the *Send Magic Packet* button. This should now send a magic packet to the target system, causing it to boot.

Figure 1 - The magic test utility



MAC address resolution

The MAC Address can be resolved providing your router is currently aware of it. The resolution uses the DOS utility "ARP", which can only resolve the MAC address if the MAC info is currently in the router ARP cache. This means that for the resolution to work the target PC would need to have been rebooted recently as the router ARP cache is normally cleared out frequently.

For testing purposes the MAC address can be entered manually. The resolution issue with Magic Test will not affect 1E WakeUp as 1E WakeUp retrieves the MAC address information directly from SMS.

The receive from test

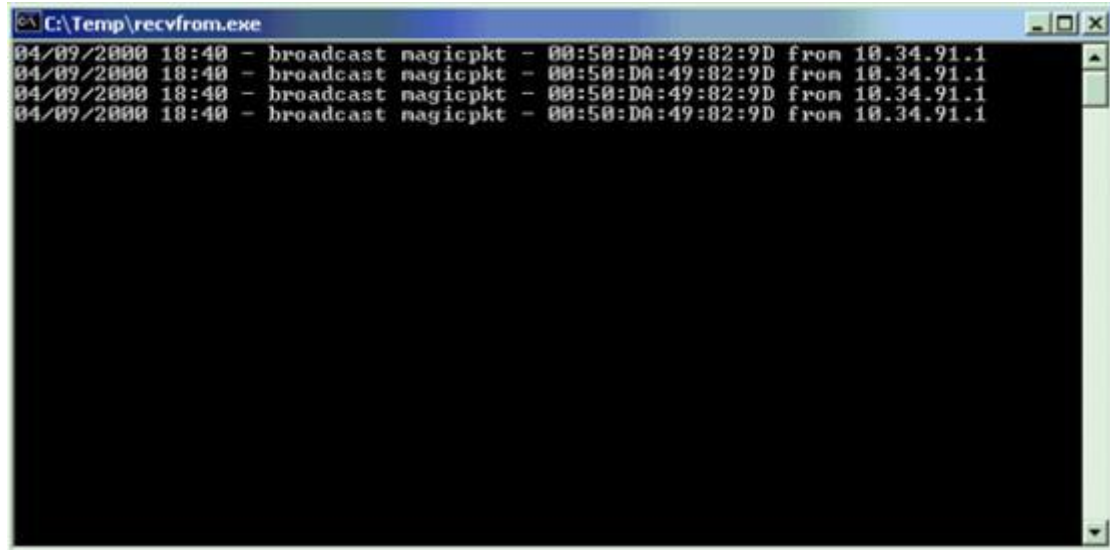
This test uses the magic test and the *recvfrom.exe* tool. The *recvfrom.exe* tool is used to listen out for magic packets. It can be executed on the target PC on the remote subnet and will log all magic packets that are received at the subnet.

Follow the steps below to carry out the test.

1. Make sure both systems are powered on.
2. On the target PC run the *recvfrom.exe* tool.
3. On the sender system, start the Magic Test utility – *magictst.exe*.
4. In the *Target Name* field, fill out the name of the target system.
5. Click on the *Resolve Name* button. This will automatically complete the *IP Address* and *Subnet Mask* fields. If you know the IP information already you can fill in the fields manually.
6. Once the IP Address information is complete – click on the *Ping for MAC Address* button. This will complete the MAC Address field.
7. If all of the above fields have been completed, you now have enough information to perform the test.

8. On the sender system, click on the *Send Magic Packet* button. This should now send a magic packet to the target system.
9. You should now see the magic packets arriving at the target PC, as shown in *Figure 2* figure below.

Figure 2 - The output from recvfrom.exe



6.2 Magic test and recvfrom tests work but PC will still not wake up

If your client PCs are running Windows XP Service Pack 2, you will need to open port 1776 in the firewall, to allow connections between the 1E WakeUp Master and Agent services.

Windows XP SP2 firewall settings

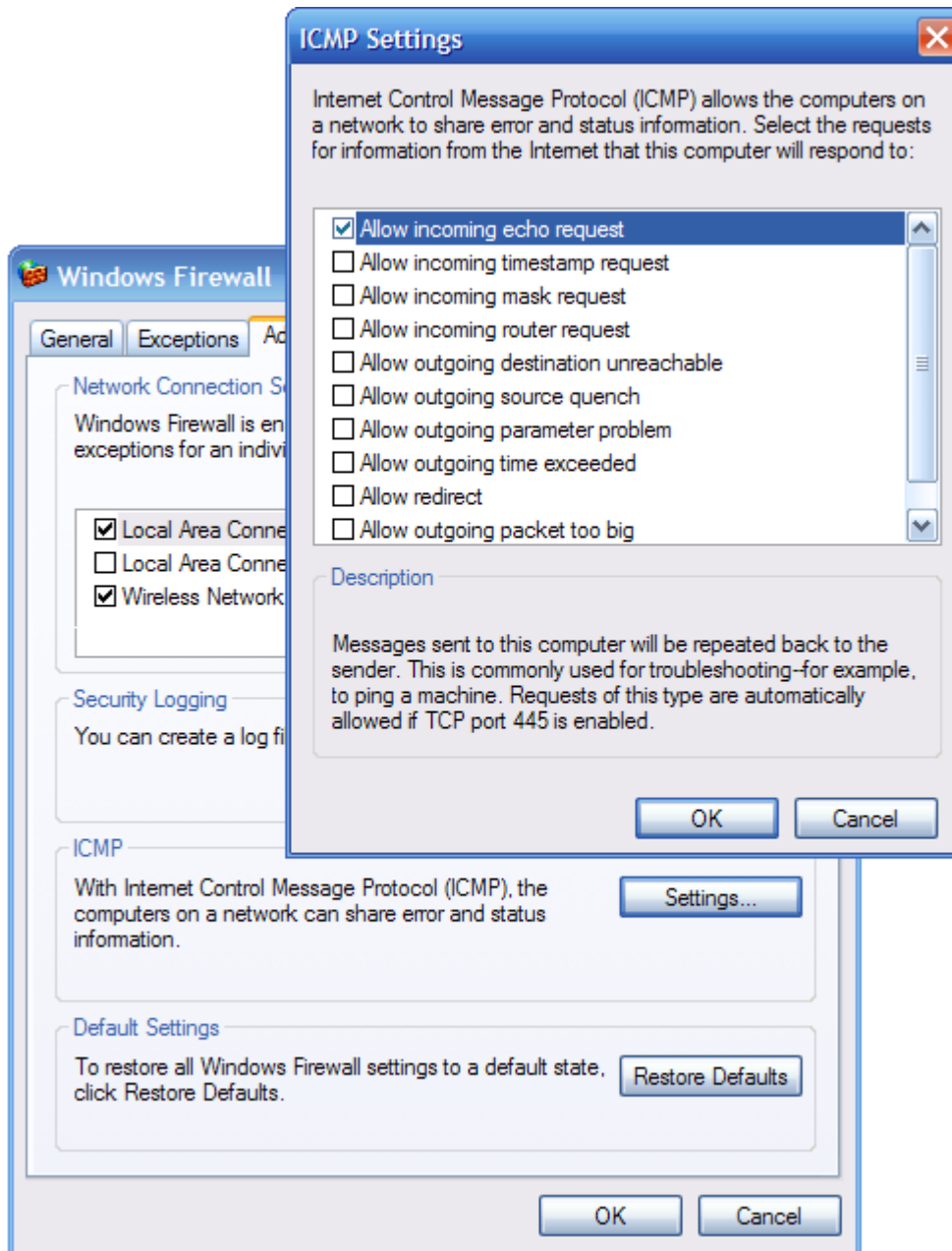
1E WakeUp uses TCP and UDP ports 1776, by default, to communicate with the agent services when installed in one of the agent models. Windows XP Service Pack 2 restricts port access, so the port must be re-opened prior to using the 1E WakeUp agent. The following command-line opens the necessary ports for access:

```
> netsh firewall set portopening tcp 1776 SMSWakeupTCP
> netsh firewall set portopening udp 1776 SMSWakeupUDP
```

Note: If you have changed the default port you will also need to change the port listed in the command-line above.

This command-line should be run on every PC where the 1E WakeUp Agent service is installed, a convenient way to do this would be to create an SMS Package and Program with the above command line and advertise to all the 1E WakeUp Agent PCs.

You will also need to check that the ICMP echo request settings are enabled. To do this you go to the *Windows Firewall Control Panel* item, switch to the *Advanced* tab and click on the *Settings...* button in the *ICMP* section. In the *ICMP Settings* dialog you need to make sure that the first item *Allow incoming echo request* is checked, as shown in *Figure 3*.

Figure 3 - The Windows Firewall ICMP Settings dialog

6.3 The problem is still not resolved

Please check the 1E WakeUp FAQ, which can be found in the Support section of the 1E website, <http://www.1e.com/Support/support.aspx>. This FAQ contains some solution to commonly encountered problems. If you still cannot find a solution please contact the technical support department at 1E using the following address:

support@1e.com

Section 7 1E WakeUp Evaluation Checklist

This page provides a tear-off checklist for running the 1E WakeUp evaluation.

Configure your evaluation environment

Configure your lab with an SMS environment as follows:

- A domain controller with Windows or 2003 Active Directory.
- A Windows 2003 server with SMS 2003, Service Pack 1.
- Some client PCs, with Windows XP. For the purposes of this guide, the client PCs should be in a different subnet from the servers. You will need at least two client PCs to work through this evaluation guide.
- The client PCs should have wake-on-LAN enabled, and should be configured to boot to local hard disk when woken from the network.
- The Hardware Inventory Client Agent must be enabled on the clients, and they should have up-to-date Hardware Inventory in the SMS database.
- The Advertised Programs Client Agent must be enabled on the clients.

Enable Wake-On-LAN on the clients

- Ensure that Wake-On-LAN is enabled and working on each client PC.

Install AgilityFramework onto the evaluation environment

- Install the Agility Framework Reporting components on the IIS Server - use the Typical installation option.
- Install the 1E WakeUp Agility Framework Product Pack on the IIS Server.

Install 1E WakeUp onto the evaluation environment

- Install the 1E WakeUp Master on all the SMS Primary Servers - use the Complete installation option, with full encryption and in Multi-Agent mode.
- Create an SMS package using the SMSWUAgent50.msi.
- Modify the installation program entries to include ENCRYPTIONLEVEL=2 flag.
- Turn on reporting and specify the Agility Framework server.
- Ensure that "Create Client Health Collections" is enabled.
- Advertise the program as mandatory to all the client workstations.
- Wait for the program to be delivered and installed on all the client PCs.

Run the test scenarios

Wake Up a PC or Collection from the SMS Admin Console

- Shut down all but one of the client PCs.
- Run the *All Tasks/SMSWakeUp with Policy Refresh* option from the right-click context menu for a single Client or Collection of Client PCs.
- After a brief delay check that the nominated PC or Collection has woken up and performed a Policy Refresh.

Wake Up following an Advertisement

- Shut down all but one of the client PCs.
- Create a mandatory Advertisement for the *Per-machine unattended installation* program, giving it an assignment time 5 minutes into the future.
- Wait for 5 minute assignment time to expire.

- Check that the PC or Collection the Advertisement was aimed at has woken up and performed a Policy Refresh.
- Check that the program specified in the mandatory Advertisement has been installed or run on the relevant client PCs.

Viewing Reports

- Confirm that you can access the reporting server at *http://<AgilityFramework Server>/AFConsole*
- Check the various reports and confirm that the reporting is accurate as per your previous tests.

Running and Monitoring Client Health

- Shut down all but two of the client PCs.
- Modify the state of the PCs in order to report on the listed defects.
- Run the *All Tasks/SMSWakeUp with Client Health* option from the right-click context menu for a single Client or Collection of Client PCs.
- After a brief delay, check that the two PCs are listed in the *Failure Description Summaries* report.
- Execute an *Update Collection Membership* on the *SMSWakeUp Client Health Collection* and confirm that the correct sub-Collections are populated with the problem PCs.
- Right-Click on the Client Health sub-Collections and run the *All Tasks/SMSWakeUp with Client Health Fix* option from the right-click context menu for the Collection of Client PCs. This option is only enabled for Collections where a fix can be initiated on the client.
- After a brief delay, check that the two PCs are no longer listed in the *Failure Description Summaries* report.
- Execute an *Update Collection Membership* on the *SMSWakeUp Client Health Collection* and confirm that the sub Collections do not contain PCs.
- Log onto the PCs and confirm that the problems have been fixed.