

MultiPing version 2

Product Manual

MultiPing

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Part



Welcome

1 Welcome



Thanks for using MultiPing! MultiPing is an application built for monitoring one or more TCP/IP targets, while providing detailed historical information about the collection period. MultiPing's time graphs^[12] make a great way to quickly evaluate the uptime and quality of a connection to a target.

MultiPing has a number of valuable features for someone who wants to monitor their network connectivity, including:

- Monitors the performance of one or more targets^[8] over time, allowing you to compare the performance of these targets at any period of time.
- Allows you to scroll forward or backwards in time^[12] to look at performance at any period during the collection session.
- Saves lists of targets^[16] to monitor for easy setup of future monitoring sessions.
- The powerful "Timeline graphs^[12]" can be shown for any of your monitored targets, with any time-scale you need to see the whole picture.
- Any/all timeline graphs can be floated^[15] anywhere on your screen, and configured to stay on top, transparent, and a number of other options to make the graphs look just like you want them to.
- Configurable ping interval so you configure MultiPing to capture data at the rate that makes sense for your connection, and for the conditions you're looking for.
- Packet loss is graphed and easily visible.
- Will auto-start pinging on load, monitoring the destinations you were previously monitoring when you last closed MultiPing, or alternatively it can load a setup of your choice.
- Configurable^[21] Good / Warning / Bad periods to easily identify which targets are in trouble.
- Flexible, configurable alert system^[26] to monitor one or more targets based on the conditions you set. You can be notified by playing a sound, sending an email (which can also email your pager to fire a pager alert), changing the tray icon, or launching an executable to allow you to customize your own alert events. You can even do all of those within the setup of one alert.
- Proven multi-threaded engine for maximum performance over long periods.
- Flexible workspaces^[16], with the ability to save and reload at any time.
- Can minimize to your system tray.
- More ... (what feature list would be complete without the ubiquitous "more" feature?).

Part



Support / Help

2 Support / Help

Visit the MultiPing home page at <http://www.multiping.com> anytime!

We offer a number of online resources to ensure your success with MultiPing. Licensed users get priority, but we happily offer as much help as we can give to people evaluating MultiPing.

Check the online resources

Since the help file you are currently reading is relatively static (i.e.: there is no way for us to update this without you downloading a new version), your first stop should be on our support site at <http://www.multiping.com/support.html>. This site has links to online resources and other active content.

Get the latest version

If you're having problems with something that you think is a bug in MultiPing, you can visit our web site to get the latest version.

Send us an email

You are always welcome to send an email to support@multiping.com. We have a number of systems in place to make sure we get your email, but again, please check our web site before sending us an email since we may have resources there that answer your question (ie: FAQs, knowledge base, etc.).

Part



Licensing

3 Licensing

MultiPing is developed under the trialware (or shareware) concept. You're probably familiar with this. You can try out the software for a limited time (30 days) after which you need to pay for it.

MultiPing is completely full-featured for the first 30 days of trial mode, after which it disables one or more features (including Alerts, and possibly other features).

A license key will immediately convert the trial version of MultiPing to a fully licensed version. All distribution is done electronically for fast and easy access.

The easiest way to order is by visiting our web site at <http://www.multiping.com/order.html>. This site has all pricing and ordering instructions. Volume discounts are available.

If you have specific questions, or are unable to reach our web site for any reason, please feel free to contact us at sales@multiping.com.

Thanks for trying MultiPing! We appreciate getting the opportunity to serve your networking needs!

Part



Getting Started

4 Getting Started

4.1 Things to do with MultiPing

MultiPing has a number of things it can help you with. Here is a list of a few of them:

- **Monitor key servers or routers.**

Want to see the status of any of your important servers at a glance? Need to know if they're responding, or responding *quickly*? MultiPing can help you with this.

- **Pick the best server.**

If you're a gamer or stock trader, latency is important for your ability to make decisions. Set up a list of possible servers that you *might* use, and then examine this list when you need to connect to or change servers. MultiPing can sort your list of servers by latency, name, packet loss, and more.

- **See why performance is bad.**

Sometimes you may be getting poor performance from a server, and you don't know if it's a network problem or a server problem. Use MultiPing to continuously monitor one or more servers, and then look at the ping performance to that server when you start to experience problems. Is it a latency problem, a packet loss problem, or some other problem? MultiPing can help you isolate that problem, and it captures history so you can look at the past few hours for problems that may have occurred during that time period.

- **Get alerted when a server goes down.**

MultiPing can be configured to alert when a server's latency or packet loss doesn't fall within acceptable parameters. In the event of a failure, MultiPing can play a sound, change the tray icon, launch an executable, or email you.

- **Keep an eye on a server.**

MultiPing lets you float a graph on top of everything, transparent if you like, so you have constant access to status.

- **Keep your connection alive.**

Sometimes you need regular network activity to keep your connection alive. MultiPing can do that for you, and gives you the bonus of collecting latency and packet loss data while doing so.

- **Monitor your VoIP server(s).**

If you normally use a VoIP phone, you might sometimes hear blips, feedback and garbled sounds. If you're not sure if it's your phone or the other party, fire up MultiPing and have it monitor your VoIP server. A quick glance can tell you if there's a network problem or not.

- **More!**

There are definitely a lot of other uses for MultiPing. If you're using MultiPing in ways we've not talked about here (but think should be included), please drop us an email!

4.2 Pinging a Target

When you first start MultiPing, it's a "blank canvas" of targets. You probably have a target in mind that you want to ping. Just type that target into the "Enter New Target:" field and hit Enter (or click the "Add to ping list" button). This will (with the default settings) automatically look up the IP address for the name you entered, start pinging that target, and also automatically show a timeline graph for that target.

As you add new targets, the addresses you entered are also added to the history list for easy access in the future. If a target is already in history, double-clicking it will start pinging that target. Right-clicking a target in history will bring up a menu to allow you to delete from history, or to alphabetically sort the history list. This only manipulates the history list, not the current list of pinging

targets.

If you enter an IP Address, MultiPing will resolve that IP address into a name using your DNS server. If that name isn't meaningful for you, it might be useful to label the IP address yourself. Do this by entering the label you'd like to use after the IP address In this format:

```
192.168.10.133 My Server Name
```

This will keep that association in history, and also show this name throughout MultiPing rather than the automatically reverse-resolved name.

Renaming a target

Lots of people enter targets in MultiPing as IP addresses. Often these IP addresses don't resolve to a meaningful name. If that's the case, you have a couple of options for changing the name to make more sense.

- "Alias" the IP address by entering the IP address followed by a space, then the alias you want to use. Example:

```
192.168.10.133 My Server Name
```

In this case, "My Server Name" will be used throughout MultiPing.

- You can rename a target at any time just by right-clicking on the target in the upper graph and selecting "Rename selected target". This will let you enter an "override" name.

Part



Operation

5 Operation

5.1 Targets Graph

PL%	IP	DNSName	Avg	Cur	Graph
	147.135.1.5	www.broadvoice.com	104	104	0
	216.239.113.101	www.downloads.com	75	75	*
	66.102.7.104	www.google.com	70	70	*
	209.227.167.170	www.lingo.com	131	129	*
[A]	209.68.40.81	www.multiping.com	110	118	*
[A]	216.92.150.222	www.nessoft.com	109	110	*
	209.128.93.234	www.plimus.com	72	71	*
	216.115.22.200	www.vonage.com	119	119	*

The "Targets" graph is a list of all the targets that are currently being pinged. This can be sorted by clicking the column header that you want to sort by, and can be manipulated in a variety of ways by right-clicking on the grid.

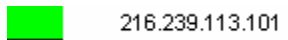
There are a number of columns that can be displayed on the Targets Grid. A number of these are optionally displayed, and they can be shown / hidden by right-clicking on the grid and using the "Customize View" menu option. The colors displayed and indicators are customizable [21].

Note: all statistic columns use the "Samples to include" setting to know how many samples to examine.

Status Column

The Status column is always displayed as the left-most column in the grid. This is used to show if an alert is applied to this target, and also if there is a time-graph visible in the main screen.

When a time graph is visible for a target, the status column has a thick black bar. Double-clicking on that will turn the time graph on and off.



When an alert is associated with a target, a bracketed A will appear.



When an alert is "alerting" for a target, an exclamation point will appear on that target.



Floating your mouse over the exclamation point will show more details about that alert.



Err Column

The "Err" Column shows the number of lost packets. This is an exact numeric count, is not an error

code, but just an error count.

PL%

The PL% column is the percentage of lost packets. This is the Err (above) number, divided by the number of samples collected. This normally matches the "Samples to include" number after enough samples have been collected.

IP

This is the IP Address for this target. Every target has an IP Address, and each IP Address can only exist in the list once.

DNSName

This is the best name that MultiPing can determine for this target. If you entered the target in name form, rather than IP Address form, then that name will be displayed. If you entered an IP Address, then this is the reverse resolved name. If you entered the target in the form: "192.168.10.23 My Server Name", then "My Server Name" will be displayed here. You can use this mechanism to use your own names for the targets.

Avg

This is the true average latency for this target. Total the latencies, divide by the count and you'll have what is displayed here. A lost packet does not contribute to this average, however.

Min

The lowest latency in the period.

Max

The highest latency in the period.

Cur

The most recent sample collected. This might be "ERR" if the most recent sample was a lost packet. If you're looking at data in the past, this is the most recent sample in the period under inspection.

Graph

This is a great column of the grid. This shows a Min/Max line (unless it's hidden), a blue current "X" (most current sample), and a red "average" line. Packet loss is also displayed here as a light red bar.

5.2 Time Graphs

The timeline (history) graphing feature of MultiPing is one of the more powerful and unique aspects of the program.

Timeline graphs allow you to see performance over time, and to compare performance of multiple targets for a period, including latency and packet loss.

By default, MultiPing will automatically add a time graph for every manually entered target. If you load from a file, these targets are not added automatically (as there could be a significant number of targets that would interfere with the user interface). If you want to show or hide any specific graph, you can do so by double-clicking the target in the upper graph, or by right-clicking the target in either the upper graph, or the floating graph (if it's already visible and you want to hide it).

Focusing and zooming

Once pinging, each sample will be recorded on the timeline graph. The amount of data displayed on the graph can be changed by right-clicking on the timeline graph and then selecting the amount of time you want displayed. This scale affects ALL timeline graphs that are docked in MultiPing, and is

saved when you shut down Ping Plotter. Any floating graphs use their own independent time period.

If there is more data collected than you can show on the timeline graph with your selected scale, click on the graph and while holding down your mouse button, then drag the graph. This will allow you to move back in history and examine the samples.

If you find a time period that looks "interesting", you can double click on the timeline graph at that point. The upper graph (the trace graph) will move to that time period (this only applies to the timegraphs that are docked in the MultiPing window – Floating graphs do not change the focus). This allows you to troubleshoot where the connection problem may have occurred. Keep in mind that the upper graph always focuses in on the number of samples in "Samples to include". If you have that set to ALL, then the upper graph can't zoom in on any piece of the graph.

It may be that you see a problem period in the 48 hour graph. Double-click on that period, and the upper graph will focus on that period. You can then change your timeline graph scale, and the lower graphs will try to stay focused on the time period you selected. This makes it easy to see details about a specific period.

When you're done zooming the graph, right-click on it and select "Reset focus to current". This will return both graphs (the timeline and the upper ping graph) to the current time.

Because MultiPing takes so little CPU time when running, you can set it up to ping continuously and then occasionally look back at the collected data for interesting periods.

Shortcut keys and other tips

You can also use the keyboard to scroll. To scroll with the keyboard, select the timeline graph and use one of the following keys:

ALT-HOME	scroll to the beginning of the collected data
ALT-END	scroll to the end of the collected data
ALT-LEFT	scroll back in time (about 5% of the graph width)
ALT-RIGHT	scroll forward in time
ALT-PGUP	scroll back in time (about ½ of the graph width)
ALT-PGDN	scroll forward in time

If you're using a mouse with a scroll wheel, select a time graph and then use the scroll wheel to move forward and backwards in time. Holding the CTRL key while scrolling with the mouse wheel will change the time scale (this can also be depressing the mouse wheel while scrolling).

5.2.1 Controlling Time Graph Visibility

Time graphs are displayed in a couple of ways.

Floating time graphs

Floating Time graphs are manually turned on and off – there is no way for MultiPing to automatically create floating graphs for you. See our Floating Time Graphs [\[15\]](#) section for more details.

Time graphs docked in the main window

Time graphs that are docked in the main window have shared settings, so they scroll and resize together. These graphs can be set to automatically appear, or to only appear on command.

Normally, when you manually enter a new target name, you'll want the time graph to automatically appear. This behavior is controlled in the View menu with the "Auto-show added graphs" option. This only creates new time graphs for targets that are manually entered, not ones that are loaded from file.

Often, when loading from file, you'll have a number of targets and displaying all of them doesn't make sense. This is why the "Auto-show added graphs" doesn't apply to loading from file. If you want all graphs shown after loading a set of targets from file, use the View menu command "Show all timeline graphs" (and the counterpart command "Hide all timeline graphs").

Manually showing a graph

You can hide and/or show a time graph at any time by double-clicking on the target in the upper graph, or right-clicking the target and selecting the "Show this timeline graph" menu option.

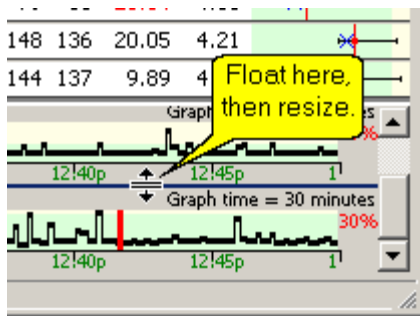
Sorting the time graphs

The upper graph in MultiPing is easily sortable - just by clicking the appropriate column header. Time graphs, though, are not sorted that same way. If you want to sort your time graphs in a particular order, just change the sort order of the upper graph, then right-click on a time graph and select "Sort to match target list."

Resizing time graphs

Once you get a few time graphs shown, you may wish you could resize (make them taller or shorter) the time graphs but are unable to because of the existence of the scrollbar on the time graph area.

To resize all of the time graphs, scroll to the last time graph (the scroll bar should be at the bottom of its range). Now, float your mouse cursor between the lowest graph and the one above it - you should get a resize pointer and you can then size the graphs at your pleasure. All time graph will resize to match.



5.2.2 Pixel Averaging

The height of the red line on a Time Graph indicates the percentage of packet loss in the time period being represented by the pixel. Keep in mind that based on the number of samples you collect and the scale of the lower graph you're showing, all timeouts may show up as 100%, or there may be multiple samples in any pixel.

If you're doing a trace every 10 seconds, and you're showing 10 minutes of samples, this is only 60 samples. Any one sample is going to take multiple pixels to display. On the other hand, if you're doing that same thing and showing 48 hours, that's 17280 samples and some averaging of samples needs to be done to display all the data. This is where the packet loss percentage really makes sense in the lower graph. In this case, you're probably going to have about 35 samples being averaged in any one pixel width, so the line height of the latency is going to be an average number, and the packet loss is going to be a percentage based on how many failed and how many succeeded. If there were no successful samples in a pixel width, then there will be no black line showing the latency, but instead a full-height red line to show 100% packet loss.

Additional information can be found in our knowledge base.

5.3 Floating Time Graphs

MultiPing allows you to "float" a time graph and have it visible independent from the main MultiPing program. This lets you keep a graph visible while doing other things, without having the MultiPing user interface taking any screen real estate.

To create a floating time graph, right-click on the target you'd like to "float" (either in the upper graph area or on the lower docked time-graph if that graph is visible). The popup menu will have an option for "Float Time graph" (or Float this Timeline Graph if right-clicking on the upper graph). Selecting this option will create a floating time graph.

MultiPing floating graphs are distinct, independent graphs, and are moved and manipulated individually. You can right-click on any graph to change the settings for that graph. Listed here are the settings that can be changed from the right-click menu of a floating graph:

- Visible time period. The time period that this graph is showing can be selected. If the predefined list of times isn't right for you, this list is editable by modifying the .INI file. Check our web site for instructions on this. If you want to apply the time period for the currently selected graph to all graphs, use the "View Options" menu and then "set as default".
- Close/Hide this graph. As you might suspect, this just closes the floating window. MultiPing will continue to ping this target even though the graph is closed.
- Change the target this graph is looking at. The current target is listed in the menu, and expanding that menu entry shows all targets currently being monitored by MultiPing. Entries that currently have no floating graph will be bold. The currently selected target has a checkmark beside it. If you want to have multiple floating graphs (with different time periods) for the same target, this is the only way to do that.
- Create Comment. You can annotate the data you're collecting to document events that may affect your network performance. The comment will be created at the point in the graph you right-clicked.
- View Options. This controls how the graph is being displayed, and also lets you apply these settings as the default for future floating graphs. We discuss the View Options in more detail here [\[15\]](#).
- Reset Focus to Current. If you've changed the period of time you're looking at, then you may want to re-focus on the current period. This will show newly collected data as it is collected, rather than using a fixed time period in the past, and this option only exists if the graph is focused on a non-current period.

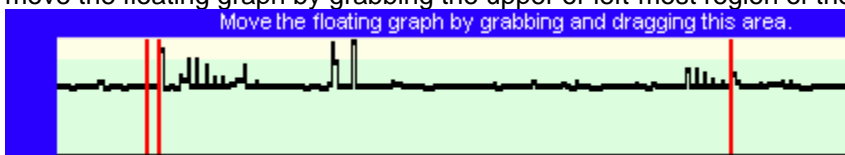
Floating graphs will "snap" to any side of the screen, and also to any other floating graph.

5.3.1 Floating Graph View Options

Floating time graphs [\[15\]](#) have a number of view options that can be applied to them to match your needs. Access these options by right-clicking on a floating graph and selecting "View Options".

Note that this popup dialog can be moved by dragging it (left-click/drag). It closes when you click an area of another program outside of this dialog (i.e.: the task bar, start menu, another area of MultiPing, etc.).

- Show/Hide Title Bar. When the title bar is visible, it is a small Windows "toolbar" size of title bar. Hitting the "X" on this title bar will hide this graph. When the title bar is *not* visible, then you can move the floating graph by grabbing the upper or left-most region of the graph (shown here).



If you grab and drag elsewhere in this graph, then you'll change the time period that you're examining rather than moving the graph.

- Show Time "Ticks". This is the time labels on the bottom of the graph.
- Show Address / Time Period. This is the upper edge of the graph that shows the target and current time period. We suggest that you leave this *on* - otherwise you don't know which target you're looking at, or how much time you're examining.
- Show Latency Scale. This is on the left side of the graph that shows the range of latencies that is being displayed. This is another good option to leave *on*.
- Show Packet Loss Scale. When more than one sample is displayed in every pixel, packet loss might be displayed as a percentage rather than just a red "all-or-nothing" bar. This is occasionally useful, but you may want to turn this *off* to increase the amount of data displayed in any period.
- Stay on top of everything. If this is checked, then you'll always be able to see this graph. This is a popular option to leave on.
- Transparency. You might want to be able to see what's *behind* the floating graph. Use Transparency for this. Note that this is only supported on operating systems that support alpha blending (i.e.: Windows 2000, XP, 2003).
- Set as Defaults. Once you have the options set the way you like, use this button to set the default values that will be used by all new floating graphs. You'll also be prompted here asking if you want to apply these settings to the other graph instances that are currently visible. The time period from the currently selected graph also gets set as the default time value, and is also applied across the other graphs if you select it to do so.

5.4 Workspaces and Data

MultiPing can save its current workspace environment, including all targets, into a file so you can easily reproduce the environment. These files store:

- All targets being currently pinged.
- The list of TimeLine graphs visible in the main screen
- All floating time graphs, their locations, sizes, scales and other settings.
- The sort order (if you're sorting)
- Collected data (if that option is enabled).

By default, when MultiPing is closed, it will automatically save its configuration to one of these files named "DefaultWorkspace.mws" in the MultiPing install directory. When MultiPing is reloaded, it will automatically reload that same file.

You can also manually load a workspace at any time, and save at any time. These files are in text format, in case it needs to be manually manipulated for any reason.

An option that is new to MultiPing version 2 is the ability to save collected data with the workspace.

Using a non-default workspace.

You may have different monitoring scenarios that you use in MultiPing at different times (or maybe at the same time!). When you load a workspace (that isn't the default workspace), the title bar on MultiPing will change to show the workspace name. This allows you to have multiple sessions of MultiPing running doing different things.

Saving collected data with a workspace

New to MultiPing version 2 is the ability to save collected data with your workspace. The collected data is saved in a directory matching the name of your workspace file. When reloading the workspace, the collected data will be reloaded as well.

If, for some reason, the collected data is unavailable, the workspace will still load, but the collected data won't.

5.5 Loading targets from a file

MultiPing supports loading targets from several file types – one general format, and one MultiPing specific type.

Loading generic target lists (*.lst, *.mpl)

MultiPing can load any list of targets from a file – one target per line. Each line in the file is one target, and is parsed exactly as though the target was entered in the "Enter New Target" edit box. Invalid targets in the file will cause an error to be displayed, and MultiPing then moves on to the next line.

Saving generic target lists (*.lst, *.mpl)

At any point, you can save the list of targets that MultiPing is pinging into a file that has one target per line. This can be done from the File menu with the "Save Target List..." menu entry. The default file extension is .mpl (MultiPing List), but this extension isn't special in any way.

MultiPing Workspace (*.mws)

MultiPing workspace files are created by MultiPing and store the "state" of MultiPing. These can then be reloaded later to resume a monitoring session. We have a help section on workspaces [\[16\]](#) which outlines their use.

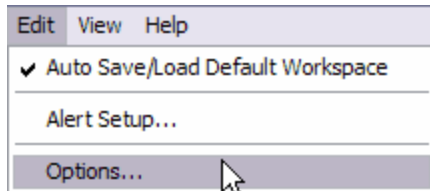
Part



Options

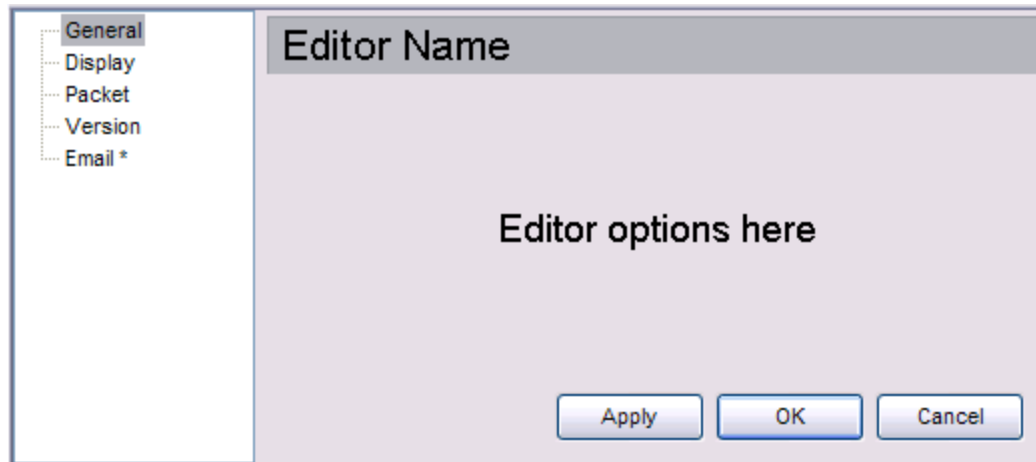
6 Options

This section is a reference of the different options available in the options screen. The option screen is reachable through the Edit -> Options... menu item.



Applying (and identifying) Pending Changes

First, any changes made to these settings do not take affect until you either hit the "Apply" or "OK" button. The Apply button will become enabled when there are any changes pending to be applied.

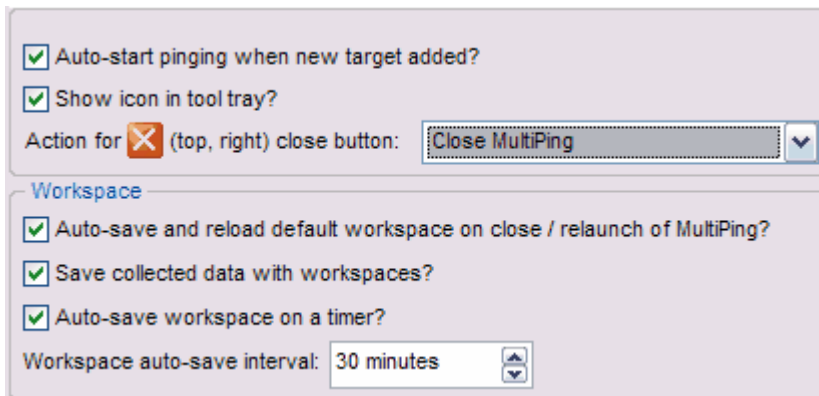


The topics in the tree view with the * marks (asterisk) are the ones that have changed. Hitting the Apply key will write these changes to PingPlotter and put them into affect. Hitting the "OK" button will do the same, but will also close the options dialog.

Hitting cancel will back out the changes that have not been applied.

You can make changes to multiple areas before applying them.

6.1 General



The "General" options section is ... well .. a collection of miscellaneous options.

Auto-start ping when new target added

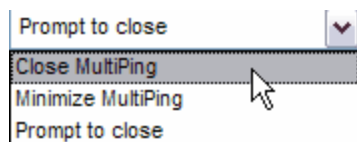
This option allows you to add a number of targets to the target list without immediately starting to ping each one as you add them. The default behavior is to start the ping cycle immediately on adding or loading a target. If this is *off*, you'll need to manually hit the "Start" button. The "Start" button will flash if you add a target with this option turned off - to remind you that no ping is happening.

Show icon in tool tray

A handy option for long term monitoring is the ability to move MultiPing to the tool tray. When minimized, MultiPing will **only** show up in the tool tray. When not minimized, it will also be shown in the task bar.

Action for close button

If you run MultiPing all the time, you might not want to close MultiPing when the "X" button is hit. If that's the case, you have several additional options:



- Close MultiPing: Immediately close MultiPing without prompting.
- Minimize MultiPing: Instead of closing, just minimize to the taskbar or tool tray, depending on your preferences.
- Prompt to close: When this is set, instead of immediately closing, you'll be prompted to close. Hit "Cancel" if you don't want to close.

Auto-save default workspace

If you normally ping the same targets, MultiPing will remember them and automatically save and reload this list when you start / stop MultiPing. If you'd prefer to add your own targets (manually, or by loading another list or workspace^[17]), then turn this option off.

Save collected data with workspace

It can be useful to save collected data with the list of targets you were pinged. This will allow you to resume a ping session without losing any of your collected data. For more details about workspaces, see that section^[16].

Auto-save workspace on a timer

This option is useful when you're saving collected data with your workspaces. If this is off and your computer crashes or MultiPing is closed abnormally, then your collected data might not be saved. Enabling this option will make sure you don't lose all your data.

Setting up an auto-save interval makes sure you don't lose more data than you're comfortable with. There is a list of times that can be picked by hitting the up or down arrows, or you can enter any time you like (e.g., 22 minutes or 75 seconds).

6.2 Display

The "Display" settings control the general display format of MultiPing's graphs, including scaling, coloring, and other general values.

Show legend

The legend is shown above the graphs on MultiPing to indicate the range of latencies used for each color band. This legend is automatically hidden if there isn't enough space for it. Turn **off** this option to never show the legend.

0-100 ms
101-150 ms
151 and up

Warning and Critical speed limits

Changing these values sets the Green / Yellow / Red threshold for the graphs. This is dependant on your expected performance. For a modem, 200 ms might be quite good, while for a T1, it could be considered bad.

Draw X on graph for current sample

When examining current data, sometimes its handy to graph the most recent sample collected. Turn this on to see that.

Draw line to show Min/Max Range

When showing just a few samples, this can be really handy to see the range of latencies. As you increase your window, though, a single bad sample can make this line stretch the scale of the graph.

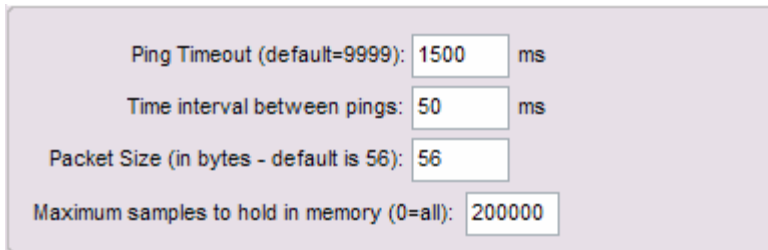
Graph Scale

Normally, setting the graph scale to automatic works pretty well. Sometimes, you might get a few samples *way* out of range, though, that stretches the scale. This is especially likely as you increase the value for samples to include.

Packet Loss

Most often, graphing the packet loss is a handy, easy way to see lost samples. 30% seems to work great for highlighting just the right of loss in most cases, but you're certainly going to run into cases where you want to change this to something lower (as low as 1) or higher (any number is valid – even over 100).

6.3 Packet



Ping Timeout (default=9999): ms
Time interval between pings: ms
Packet Size (in bytes - default is 56):
Maximum samples to hold in memory (0=all):

Ping Timeout

When MultiPing sends out a packet, it waits a certain amount of time for a response. The longer it waits, the more resources it needs to use (to keep sockets open), but the more likely that it will get a response. 9999 is a pretty high number – very few packets take longer than this to return. Some people use 1500 here.

Time interval between hop traces

MultiPing sends out packets without waiting for other packets to return. This doesn't mean, however, that it sends out all packets at once (you don't want to do this, or it might overwhelm your bandwidth). This is in ms (or 1/1000s of a second).

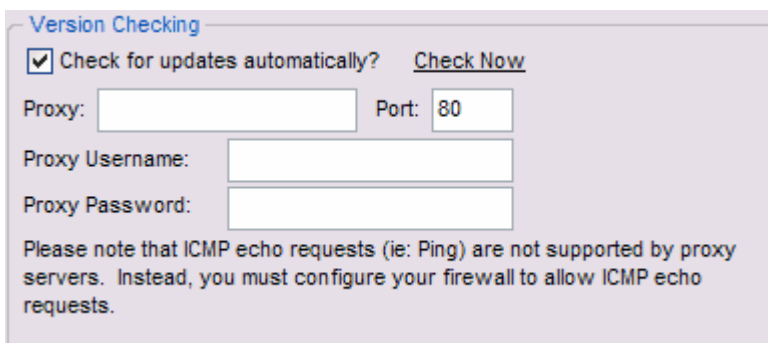
Packet Size

The Packet Size can make a considerable difference in latency performance. Normally, you want to use a relatively small number here. The default is 56 bytes, but in some cases you might need to lower this. Large packets should be used with great care. A 1500 byte packet means MultiPing may be sending out 30-50 K per second worth of data, which can cause its own problems (and makes measuring latency more challenging).

Maximum samples held in memory.

Long-term monitoring sessions might start to fill up memory, making things run slower. If you want to purge off old samples when memory starts to get full, set this. This defaults to 200000, which will take (very) roughly a megabyte of memory per target.

6.4 Version



Version Checking
 Check for updates automatically? [Check Now](#)
Proxy: Port:
Proxy Username:
Proxy Password:
Please note that ICMP echo requests (ie: Ping) are not supported by proxy servers. Instead, you must configure your firewall to allow ICMP echo requests.

Version checking options control how often MultiPing checks to see if there is a new version available. This requires an internet connection. If you're using a proxy server, then entering your proxy server information here will allow MultiPing to check for a newer version of itself.

Please keep in mind that this does not affect the way Ping requests are sent at all. Proxy servers do not support Ping requests, so you'll need to open up your firewall to allow outbound ICMP echo requests and returning ICMP echo replies.

6.5 Email

The screenshot shows a configuration window titled "Email (used for alerts)". It contains two sections:

- Email (used for alerts)**:
 - Return Address:
 - Include "alert" samples in text message
- SMTP Server Setup (used for alerts)**:
 - SMTP Server:
 - Server Port (blank = 25):
 - Use SMTP Authentication?
 - SMTP Server Username:
 - SMTP Server Password:

Email options are used for sending email alert notifications. When sending an alert via email³³, MultiPing needs to know some information before it can dispatch an email. If you're not using email alerts, there is no need to fill in this information.

Return Address

All outgoing emails will have a return address specified, and this is the address that is used. Please make sure you specify a valid address here since this is where all the bounce messages will come from. Some ISP SMTP servers only allow emails sent out with a "from" address of their domain as well, so if you're having problems getting the SMTP server to work, make sure you're using a valid return address.

Include "alert" samples in text message

If this option is checked, any outgoing alert emails will include text showing the samples that failed the alert. As each alert email goes out, the past history is marked as being sent already so that you won't get duplicate data in reoccurring emails.

SMTP Server

The SMTP server is the server that your outgoing mails will go through. This may have been given to you by your ISP or your mail administrator.

Server Port

The default port for most SMTP servers is 25. If you connect to your SMTP server via a different port, then enter that port here. Leaving this blank will use port 25.

SMTP Authentication

Some SMTP servers require a username and password to be able to deliver mail. If this is the case with your server, turn on the "Use SMTP Authentication" checkbox, and then enter your username and password. The password is saved in your MultiPing.ini file using a basic XOR encryption scheme – this will keep your password hidden, but this encryption method is relatively simple to

"crack" if someone really wants to figure it out.

Part



Alerts

7 Alerts

7.1 Creating / Configuring Alerts

What is an alert?

Alerts basically monitor the conditions of a specific IP address, and then do something when those conditions exceed a specific range. The things you can do with an alert are:

- Send an email^[33]
- Play a sound or .WAV file^[32]
- Log to a text file^[34]
- Change the tray icon / show a message^[35]
- Launch an executable^[34]

For example, let's say you need to know when a destination you're monitoring stops responding. You can attach an alert within MultiPing to that IP address so that you receive an email alert if the last 10 of 10 sample requests are lost.

Another possible alert condition to check for is if the average for the last 10 samples is > 500 (or any other number). You can send an email alert, maybe play a .WAV file (if you're usually within hearing distance) or both. Also, if you're trying to show your ISP there's a problem, you might log the data to a file so you have records of every time it happened over a time period.

One user had hardware problems with his cable modem. He set up an alert that launched an executable^[34] that then communicated with a device attached to his computer to reboot the cable modem when alert conditions were met. There are a whole variety of things you can do with alerts and events.

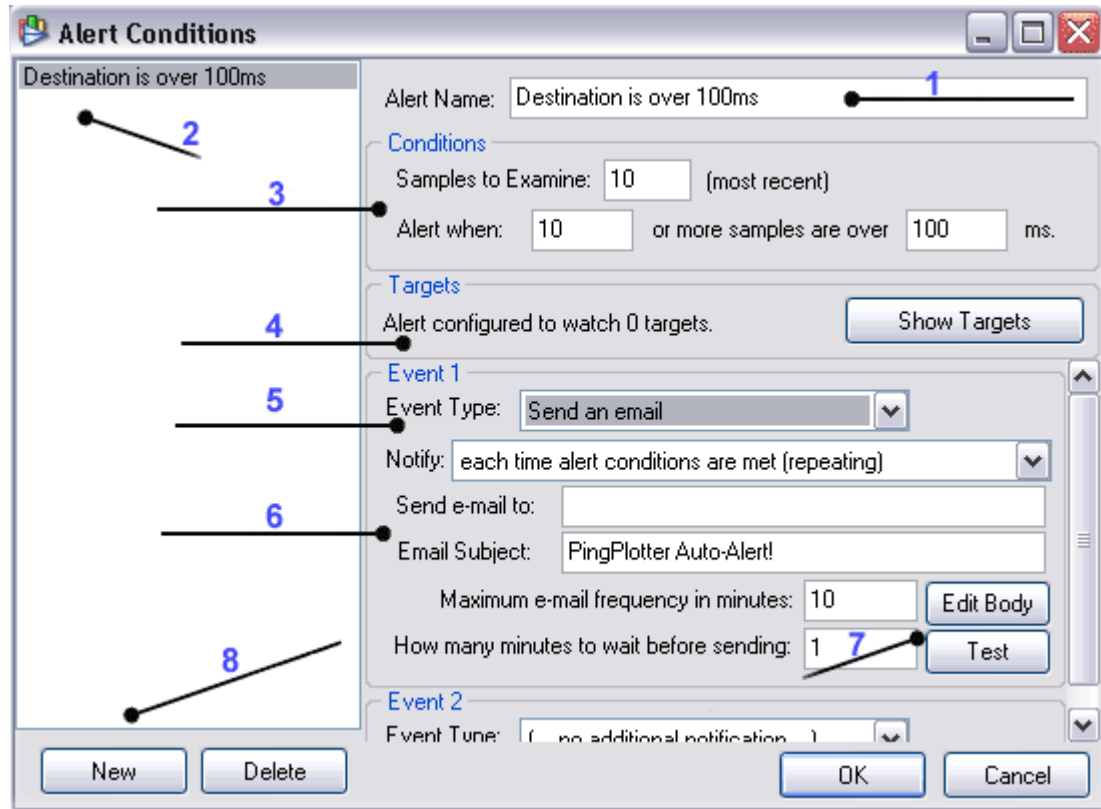
Alert setup can at first seem confusing, but it involves these four steps

1. Setting the Alert Name
2. Setting up the Condition that will trigger the alert.
3. Specifying the Event(s), or what you want MultiPing to do when your alert(s) are triggered.
4. Tying the alert to a target that you're monitoring.

What is an event?

Events go hand in hand with alerts. Any number of events can be created with an alert – so that when some conditions occur, something happens. The "Alert" part specifies the conditions and serves as a container for the events. The "Events" specify what action(s) will happen. You can have any number of events tied to an alert, and any number of alerts tied to a host. Note: You must have an alert tied to an IP address before it will work. Keep reading for more details.

Alert Dialog / Settings



Alerts are defined in the Alert Setup screen under the Edit/Alert Setup menu. Once there, you'll see an image similar to the one above. (Note: if you haven't setup an alert before, you won't see any alerts listed in the list area on the far left of the screen shot). This screen is pretty busy, but also pretty self-explanatory. From the screen capture above, you can see that we have (labeled on the image with corresponding numbers in this list):

1. The Alert Name. In this example we're using "Destination is Over 100ms".
2. The list of alerts you currently have defined. You can see from the image that we have two defined.
3. The Conditions for the alert. In other words, what has to happen for this alert to fire.
4. The Show Targets button that allows us to see how many targets/hops this alert is assigned to, as well as the IP address or DNS name for that hop or hops. If this alert is set to watch 0 targets, then the alert will not fire! We discuss this in more detail later in this topic.
5. The Notification/Trigger Events for this alert. An unlimited number of events can be tied to an alert, but most likely you won't use more than four or five. Please see the Event Notifications/Trigger Notifications section^[32] for all of the trigger notifications available.
6. Each Event/Trigger Notification will allow you to "do something", based on the overall type of alert you're defining. For example, with a Tray Icon Alert^[35] you define the message the pop-up will contain, a Send an Email Alert^[33] needs to know where to send the email and with what frequency to send, a Play a Sound Alert^[32] needs to know what to play, etc. You enter that information here under the trigger event.

7. (These options are only for the Send an Email^[33] Event type). The Edit Body button will take you into the email Alert Email Body Editor, where you can fine tune the alert message body for optimal viewing on a cellphone, pager or other type of handheld device. By clicking this button, you can verify that your email settings are correct^[31], and what your alert email will look like.
8. To define a new alert you click on the New button. To delete an alert, highlight that alert in the list above these buttons and click on the Delete button. When you're done defining the alert click the OK button. Cancel exits this screen without saving anything.

So referring to the image above, you can see we have an alert with a Condition defined where when the last 10 samples are greater than 100ms, we want MultiPing to email us. We've called this alert "Destination is Over 100ms ". If you were watching for a timeout, you'd enter 9999 instead of 100. Do note that 9999 is not a magic number. A lost packet is always greater than any number entered, so you can use 1000, or 20000 here and a dropped packet will exceed either of those numbers.

Setting up an alert.

It's usually best to start out with an alert and event that's easy to verify - like playing a sound, or changing the tray icon. So, let's set up the alert to play a sound when packet loss goes about 40%. Packet loss is a big bad thing, and in many cases is more important than latency. We run a similar alert at Nessoft HQ pretty much continuously.

- Run MultiPing and go to the "Edit/Alert Setup" menu. If you've never set up an alert, you won't have any listed here.
- Hit the "New" button (near the bottom left).
- Enter a name for the alert (We're using "Server is Down") in the "Alert Name" section.
- In traces to examine, use "10". Set it to alert when 4 or more samples are over 9999. (Note: 9999 is not a magic number. A lost packet is always greater than any number entered, so you can use 1000, or 20000 here and a dropped packet will exceed either of those numbers). That setting will alert when 40% packet loss is achieved. The 40% comes from saying to alert if 4 of the last 10 samples were dropped. You might want to do 40 of 100, or 2 of 5 – it depends on the period of time you want it to look at. You probably *don't* want to notify if only one sample is lost, but maybe 2 in a row (which would be examining 2, and alerting if 2 or more traces over 9999). Lots of things you can do here.

Picking an event.

Next, select what you want to happen when the alert fires. We're going to "Play a sound" (This is in the Event 1 area). Notice that as soon as you change the "Event type" to "Play a sound", that "Event 2" will appear, with "(. no additional notification ..)". You can have as many events as you like – and to delete an event, just change its type to "(. no additional notification ..)".

As soon as you pick an event type, a set of options relating to that event type will come up. The "Notify" dropdown is described in more detail elsewhere. For more details on how to set up a sound event, click here^[32].

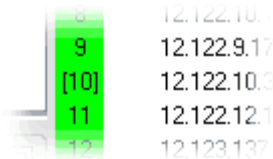
For this example, use "Notify: each time alert conditions are met (repeating)" and then hit the folder icon beside the "Play Sound:" edit field. Browse to an appropriate sound file (.wav or otherwise) on your computer to fill this box.

Using this event, each time a sample is sent out and the alert conditions are met, the selected sound will play.

Tying an alert to an IP.

Once you've got your alert set up, you need to tell it which IPs to "watch" for those conditions. To do this, trace to a destination just like you normally would. Once the path has listed, pick the router/destination from the list you want to monitor - and right-click on the hop number. From the popup, select "Watch this host (Alerts)...". If you want to monitor a destination that isn't responding for some reason, just right-click on the lower time-graph for that host, and you'll have a similar popup menu.

You'll get a dialog that shows the DNS name (if there is one) and the IP address you selected - and then a list of available and selected alerts. Move the alerts you want applied to this IP address into the "Selected" list - and then close the dialog. Monitoring will start immediately.



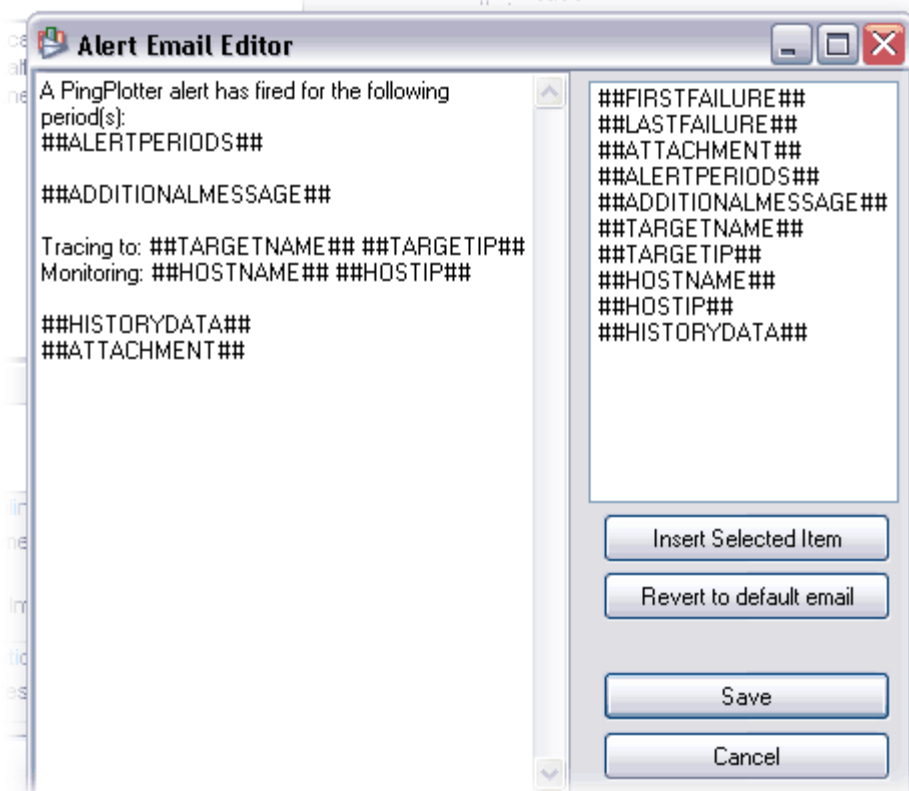
When a hop is being monitored for an alert, the hop number will have brackets around it (i.e.: [10]). You can stop monitoring by right clicking on the hop number and selecting "Watch this host (Alerts)..." and then removing any alerts from the selected list.

You can stop monitoring by right-clicking on the hop number, selecting "Watch this host (Alerts)...", and then removing any alerts from the selected list.



Any time an alert has fired, MultiPing will let you know by putting a red exclamation point (!) next to a hop that has had an alert fire. This is particularly handy when you have an alert that doesn't give you visual or audio cues normally when it fires, like a Send an Email Alert. Now you can see it on the main MultiPing screen before the alert email gets to your inbox.

Editing the body of an email



The Alert Email Body editor allows you to fine tune the body of the alert email to whatever makes sense for your particular receiving device.

For example, if you have alert emails going to your cellphone's inbox, you may only want to have the Target Name, First instance of Failure and Last Instance of Failure in the email. If you have any more text than that, it will be too long, your cellphone will truncate it and the text is pretty much useless to you. We recognized the fact that a lot of people are using RIM devices, pagers or cellphones to receive alert email, and so now we have an editor to help you out.

You can customize the email body text to your liking in the left pane's editor, highlighting attributes on the left and clicking the **Insert Selected Item** button to enter that attribute into the body text to the left. This ability to highlight and insert the alert specific attributes is a great way to avoid typographical errors, and is highly recommended. When you're done with your changes, just click the **Save button** to save your new alert email body. If you get to the point where you want to start over again with the original email, just click the **Revert to default email** button and then start your changes anew. If you change your mind about editing the email body at all, just click the **Cancel** button to go back to the Alert Editor.

A note about "average" response times.

Average response times are a problem. The real problem with **mean** averages is when a server stops responding - what is the average of the last 10 samples if the last 10 were timeouts? Because of the problem with this we always do "when X or more samples is > Y" (this is a **median** average). You can still get your alert to work like an average - by saying "when 5 or 10 samples exceeds 300 ms" (this would be like a mean average over 300ms, but would also fire when there were lost packets).

7.2 Troubleshooting Alerts

If alerts aren't working, there are a number of things you can do to troubleshoot. Here are some suggestions - and feel free to check out our [support pages](#) for more information.

Make sure you're "Watching" a host with the alert.

By far, the most common reason that an alert isn't working is because it isn't tied to an IP address. An alert won't just start working automatically – you need to tell it which host(s) you want that alert to watch.

To attach an alert to an IP, trace to the host you're interested in. Then, right-click on the target you want to monitor and select "Watch this host (Alerts)..." from the menu.

From here, you can move an alert from the "Available" to the "Selected" list. Any alerts on the "Selected" list will watch this host whenever this host is involved in any route (be it an intermediate host, or the final destination).

When a host is being watched by the alert system, there will be brackets around the hop number in the upper graph. If those brackets aren't showing, then that host isn't being watched. This should put a [...] around the hop that's being monitored.

Set up an alert that will fire instantly, with an event that is very evident.

If you have an alert set up – and tied to a host (see above), but it seems like the alert isn't working, then changing your alert parameters (or create a new "test" alert).

Set up "Traces to Examine:" to 10. Alert when "1" or more traces are over 1ms.

Unless your network is responding in 1ms or less, this alert will fire on the first collected sample with the alert enabled.

For an event type, use "Play a sound", or "Tray icon change/notification" as both of these events happen immediately with no wait. In addition, for the "Play a sound", use "each time alert conditions are met (repeating)", as this will continuously make sound, rather than just when conditions start / stop.

Using this sequence, you should be able to tie an alert to just about any host and have the alert conditions fire immediately. Now, add on another event type (ie: email).

You can leave multiple events tied to a single alert – that way you can continue to hear the sound while you're troubleshooting another event type.

7.3 Email Setup (for alerts)

The email setup dialog is used to set up emailing for alerts. If you're not using alerts, or you're not interested in having the alert system email you, then setting this up is not required.

Return Address

All outgoing emails will have a return address specified, and this is the address that is used. Please make sure you specify a valid address here since this is where all the bounce messages will come from. Some ISP SMTP servers only allow emails sent out with a "from" address of their domain as well, so if you're having problems getting the SMTP server to work, make sure you're using a valid return address.

Include "alert" samples in text message

If this option is checked, any outgoing alert emails will include text showing the samples that failed the alert. As each alert email goes out, the past history is marked as being sent already so that you won't get duplicate data in reoccurring emails.

SMTP Server

The SMTP server is the server that your outgoing mails will go through. This may have been given to you by your ISP or your mail administrator.

Server Port

The default port for most SMTP servers is 25. If you connect to your SMTP server via a different port, then enter that port here. Leaving this blank will use port 25.

SMTP Authentication

Some SMTP servers require a username and password to be able to deliver mail. If this is the case with your server, turn on the "Use SMTP Authentication" checkbox, and then enter your username and password. The password is saved in your MultiPing.ini file using a basic XOR encryption scheme – this will keep your password hidden, but this encryption method is relatively simple to "crack" if someone really wants to figure it out.

7.4 Alert Events

7.4.1 Event Notification

Many of the events share a notification mechanism. Here is a list of the types. Note that any alert can have multiple events of the same type, so you can set up a single alert to do something at any one or all of these times.

Each time alert conditions are met (repeating)

The event will happen every time conditions are met. This means the event will happen over and over again – on each sample that causes the alert to fire. In previous versions, this was the only supported notification type.

When alert conditions start (enters alert state)

The first time alert conditions occur, the event will happen. As long as the conditions continue, though, the event won't be repeated. This is a popular use – as you find out about new conditions when they happen, but don't have to be bothered again. As soon as the alert stops happening, then as soon as it starts again, this event will happen again.

When alert conditions end (leaves alert state)

This happens when network conditions improve so that the alert is no longer firing. As soon as the conditions move from bad to good (based on your settings), then this event will happen. A use of this is to have MultiPing email you each time conditions go bad (see above), and then when they improve again – but not to tell you anything in between.

Each time alert conditions are *not* met

This is the exact opposite of the first notification type above. As long as things are good on the network, this event will fire each time a sample is collected.

7.4.2 Event - Play a Sound

One of the most simple event types is to play a sound (i.e.: .wav file) of some kind.

This event can happen based on the standard notification rules^[32], and can play anything that Windows multimedia sound function wants to play. If you want to launch a sound file that this event type doesn't support, use the "Launch an executable"^[34] option instead, as it will launch any file, including sound files.

Click the folder on the right side of the file name to browse for a file. When browsing for files, you can right-click on any sound file to play it (this is an operating system feature, and may not be supported on all operating systems).

Enter "BEEP" (no quotes) here if you just want to beep the computer speaker instead of playing through the sound card.

7.4.3 Event - Send Email

A very popular event type is the "Send Email" event.

Before you can create an event to send an email, you must configure your SMTP server and return email address^[31]. Note that your SMTP server must be accessible on the network to be able to send emails, so it's possible a network failure may not be able to email you. MultiPing will continue to try to send emails once a minute until it is able to get an email out.

Emails are a bit more complicated to set up than most Event types – as it is dependant on your SMTP server, and you don't want to be overwhelmed with emails when conditions are bad, but you *do* want to know what's going on.

First off, you can fire emails based on the standard MultiPing notification types. See the associated documentation for more details^[32].

Send e-mail to:

This can be an individual email address, or a list of addresses separated by either a , or a ; (both work equally well). Please do not set this up to be someone at your ISP unless they have agreed that they want to see this information. A huge portion of getting problems solved is playing the game right, and overwhelming people with automated emails is almost certainly going to work against you.

Email Subject:

This defaults to "MultiPing Auto-Alert!", but can be customized with a variety of variables / text. Click here to see this list^[35].

For emails, the \$host makes a huge amount of sense (i.e.: \$host is down!), while the time/date aren't as useful because the email already contains data about this in most cases.

Maximum email frequency and minutes to wait

The next two settings control the frequency at which you'll get e-mails during alert conditions. The first (Maximum e-mail frequency) is pretty self-explanatory - you'll only get e-mails that often.

The second (How long to wait for worse conditions) specifies how long MultiPing will wait after its first alert condition to send an e-mail. This option allows you to wait a few minutes to find out if it was a temporary or more permanent alert condition. You may not want one immediately - because you'll want to wait a bit more info to be included - so you may want to wait 5 minutes or so before that first e-mail gets sent off.

Testing and error messages



Once you have your e-mail set up, use the "test" button to see what the message will look like (and also to make sure all the settings are working). Any errors should be displayed here.

Many of the errors that occur during testing can be attributed to incorrect email setup – so go there and validate your settings^[31].

Here are some specific knowledge base articles on possible error numbers:

Socket error 10053

Socket error 10060

Socket error 11004

Any Socket error is being generated by the SMTP server itself, not MultiPing, so if you're getting an error number not listed here, or in our knowledge base, try doing a search on your favorite search engine to see if you can find more information about the error you're getting.

7.4.4 Event - Launch an executable

This event type gives you all kinds of capabilities to do things when network conditions go south.

While this option is called "Launch an executable", it can actually launch any file. It can launch documents, links, .mp3s, batch files, whatever – really anything with a file association that Windows will know what to do with.

Of course, you can control when you want to launch the executable (when the problem starts? when it ends?). See the associated documentation for more details.^[32]

The filename to launch (and/or parameters for that filename) can use variables^[35] to pass an IP Address, name and date/time to the called program. Note that these are always parsed – and there is no way to cause these to be passed as literals. If you need to have one of these strings as literals passed to an executable, then you'll need to set up an intermediate link, batch file, or similar.

Note: The launching program isn't closed – it's just launched. You'll need to configure your setup to do any appropriate follow-on actions.

7.4.5 Event - Log to file

The "Log to file" alert writes data to a text file whenever alert conditions are met.

Log times for entire route?

This option specifies if you want to write data to the text file just for the monitored host, or the entire route. Leaving this off means that for each time alert conditions are met, one data item will be written to the file – for the monitored host. If the switch is turned on, then data for the entire route will be written.

Filename:

The filename is *required* to have the \$host variable in it (or some variable that changes depending on which host / target is being logged^[35]). If it is missing, then the file will be nonsensical if you attach this alert to more than one host. The following variables can be used as part of the filename. Note there is no way to "escape" the following sequences, so these are always parsed and can't be specified as literals in the filename.

\$host	Host name (or IP address, if no name exists).
\$hostip	The host IP address
\$hostdnsname	The resolved DNS name for the host
\$year	Current Year
\$month	Current Month
\$day	Current day of month
\$hour	Current hour
\$minute	Current minute
\$second	Current second
\$date	Same as \$year-\$month-\$day.
\$time	The same as \$hour\$minute - note the absence of any punctuation - that's to make sure the file name is valid, if this mask is being used in a file name.

Note that one directory level of depth will be created automatically if it doesn't already exist, so you can specify `c:\ppdata\%host\filename.txt` and the `$host` directory will be created as needed. Only one directory of depth will be created, however, so if the `c:\ppdata` directory didn't already exist, an error would occur.

7.4.6 Event - Tray Icon Change

This is a great event to add to most of your alerts. It's helpful to be able to see if there's an alert condition under way, and a quick glance at the tray can let you know by using the event.


The Tray Icon Change notification will do one or both of the following:

Change default icon to red during alert conditions

If you already have MultiPing showing in the tray, this will change the existing green icon and add red to indicate that an alert has fired. If you don't have MultiPing in the tray already, then a red icon will be added to the tray. When the alert condition(s) are over, the icon will change back to green.

Popup message in tray

This shows a "balloon" message coming out of the tray. Not all versions of Windows support this message (ie: some versions of Windows 95), in which case no balloon will show. Only one balloon can be shown at a time, so the newest balloon always wins (a new balloon message will replace an older one).

Variable substitution  will be done on your message text.

One of our favorite messages is: Alert fired on \$host, \$date \$time. This is a great message because it stays up until you acknowledge it, so when you come back to a PC, you can see what alert fired, what host it happened on, and what time it *last* happened. This may be over a weekend, but the message will still be there telling you that an alert happened.

7.5 Variable Substitution

A number of the alert parameters allow you to insert a variable which will be substituted for a value when the alert happens. Here is a list.

\$host	Host name (or IP address, if no name exists).
\$hostip	The host IP address
\$hostdnsname	The resolved DNS name for the host
\$year	Current Year
\$month	Current Month
\$day	Current day of month
\$hour	Current hour
\$minute	Current minute
\$second	Current second
\$date	Same as \$year-\$month-\$day.
\$time	The same as \$hour\$minute - note the absence of any punctuation - that's to make sure the file name is valid, if this mask is being used in a file name.

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