

ICMPUtil 2.0



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ICMPUtil User manual

ICMPUtil displays graphically the response time of multiple hosts using ICMP echo requests.

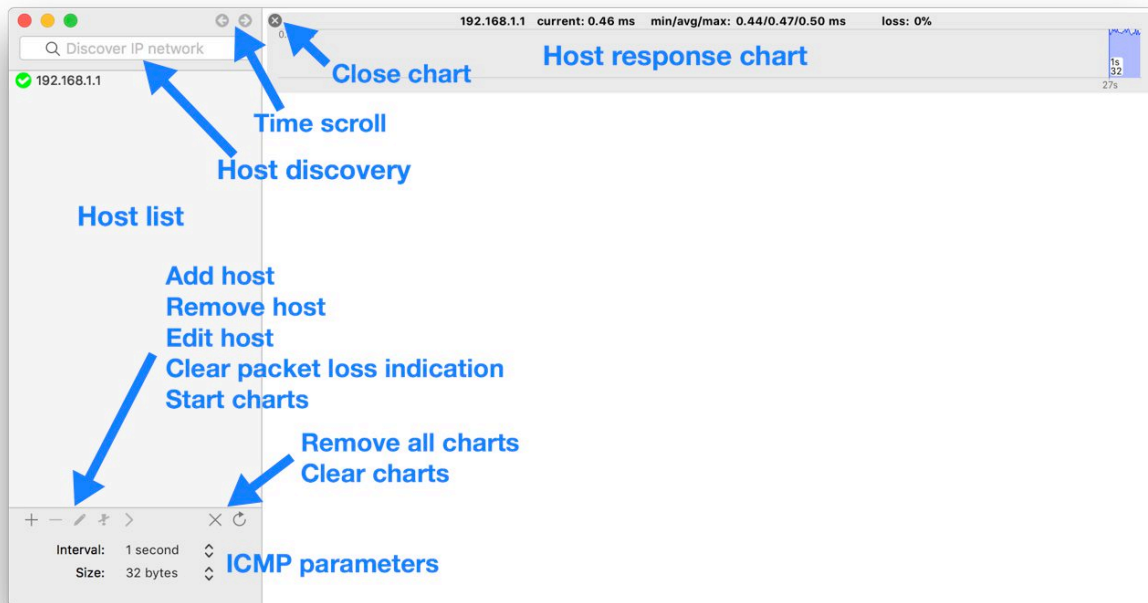
@ermita@ode

www.ermitacode.com



Using ICMPUtil

The ICMPUtil window is divided in two main areas:



The left area contains the following elements:

- **Discover IP network.** Enter an IP network address or address range and press **Enter** to discover the reachable hosts in this network or range. Valid address formats are:
 - Subnet address: **n.n.n.n/mask length** (for example: 192.168.1.0/24)
 - Address range: **n.n.n.n-n** (for example: 192.168.1.200-240)
 - Class C subnet: **n.n.n.0** (for example: 192.168.1.0)
 - Host address: **n.n.n.n** (for example: 192.168.1.40)
- **Hosts list:** contains the current Host Addresses discovered using the **Host discovery** field or entered manually. The hosts can be selected to be monitored in the right area of the window.
 - + Add manually a host address to the host list (keyboard shortcut: ⌘+).
 - Remove the selected host(s) in the host list (keyboard shortcut: ⌘-).
 - ✎ Edit the name of the selected host in the Host list (keyboard shortcut: ⌘E).
 - ✖ Clear packet loss indications of the selected hosts (keyboard shortcut: ⌘X).
 - > Start monitoring of the selected host(s) in the list (keyboard shortcut: ⌘↵).

✕ Remove all charts.

🔄 Clear the contents of all the charts.

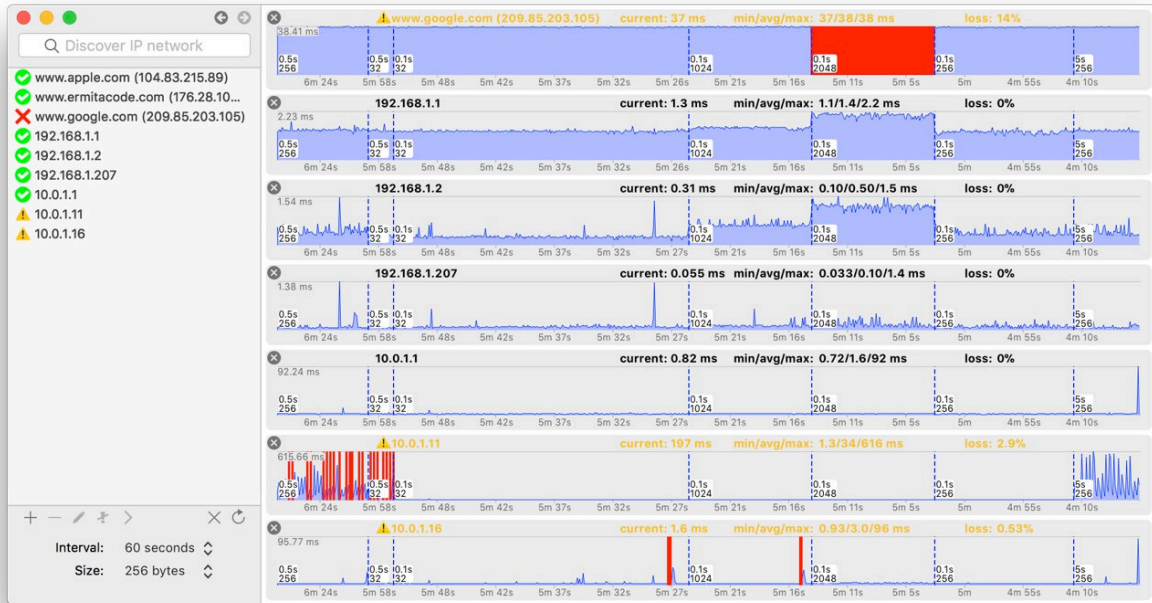
Alternatively you can use the menu options **File>Add Host...**, **File>Remove Hosts**, **File>Edit Host...**, **File>Reset Packet Loss Indication**, **File>Start ICMP Charts**, **File>Remove All Charts** and **File>Clear Charts**.

The hosts list contents can be also loaded from a file or saved to a file.

The hosts shown in the host list have a symbol indicating its current status.

- **ICMP parameters:** control the ICMP echo request interval and the packet size used for the response time strip charts shown in the right area of the window. Available response intervals are **0.1, 0.2, 0.5, 1, 2, 5, 10, 30** and **60** seconds.

The right area displays the response time charts.



Each response chart box shows in the header the following information:

- Host IP address and name (if defined).
- Current response time in milliseconds.
- Minimum/average/maximum response times in milliseconds.
- % packet loss.

Red lines indicate packet loss (no ICMP response in the configured interval).

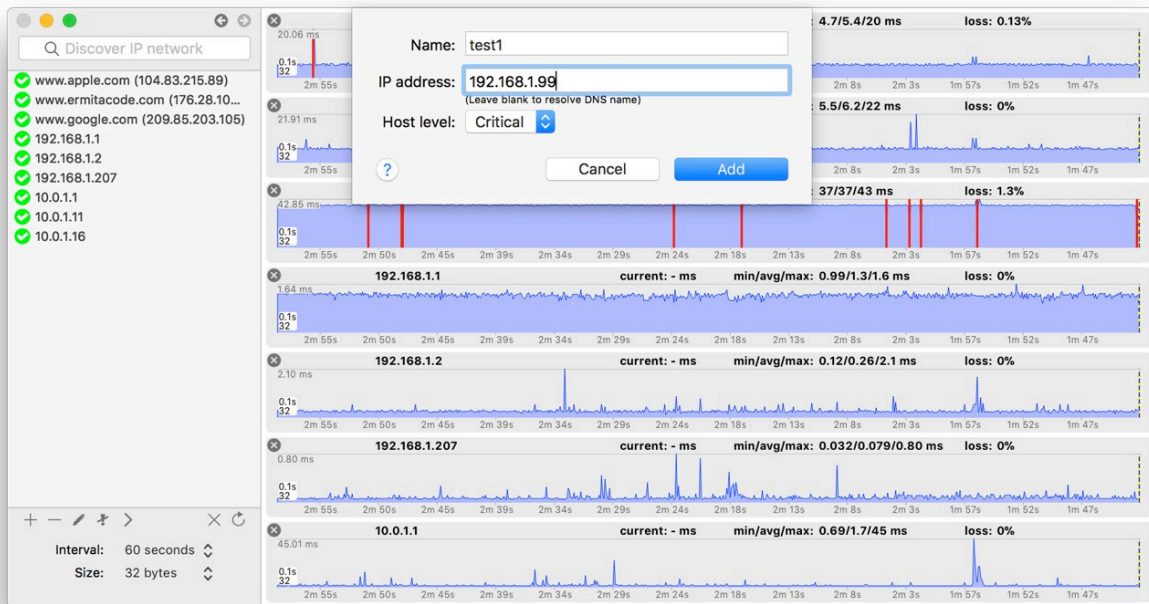
You can close a chart using the **X** button located in the top left corner of the chart.

You scroll the charts in time using the **←** and **→** buttons located in the top of the window or using the mouse horizontal scrolling.

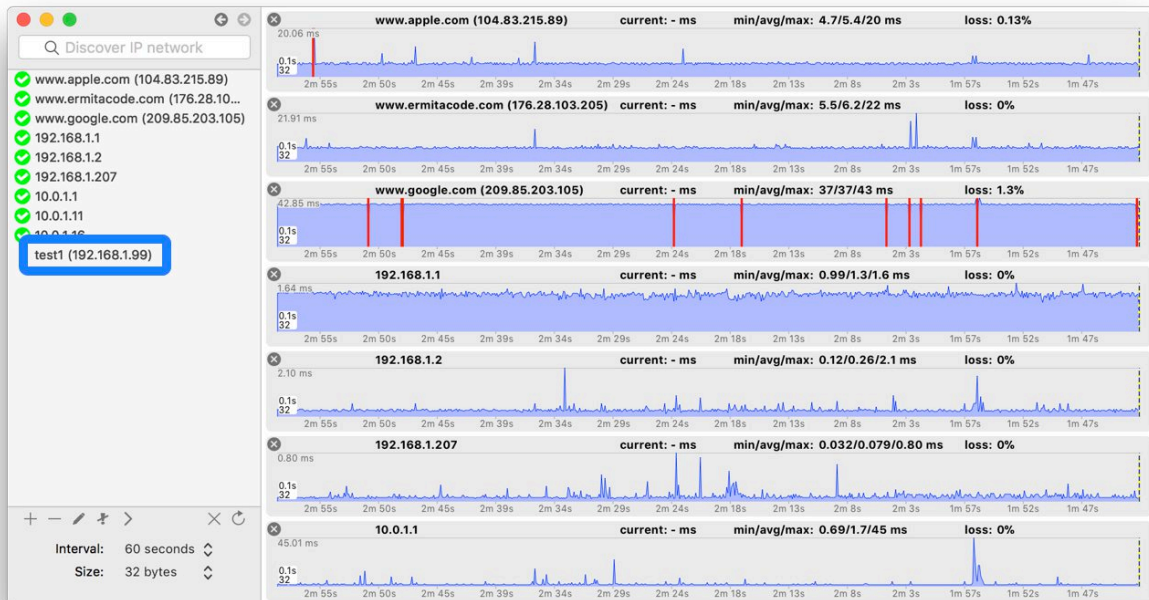
The chart area can be printed or saved to a PDF file.

ICMP Adding Hosts

To add a new host click the + button below the hosts list:



Then click **Add** to add the new host:



You can enter data in the following ways:

- Enter a descriptive name in the **Name** field and the IP Address in the **IP address** field. The Host will be added to the Hosts list as **name (IPAddress)**.
- Enter a Host DNS name in the **Name** field and leave empty the **IP address** field. The DNS name will be resolved and the entry **DNSname(resolvedIPAddress)** will be added to the hosts list.

- Enter an **IP address** and leave blank the **Name** field to add it without a descriptive alias.

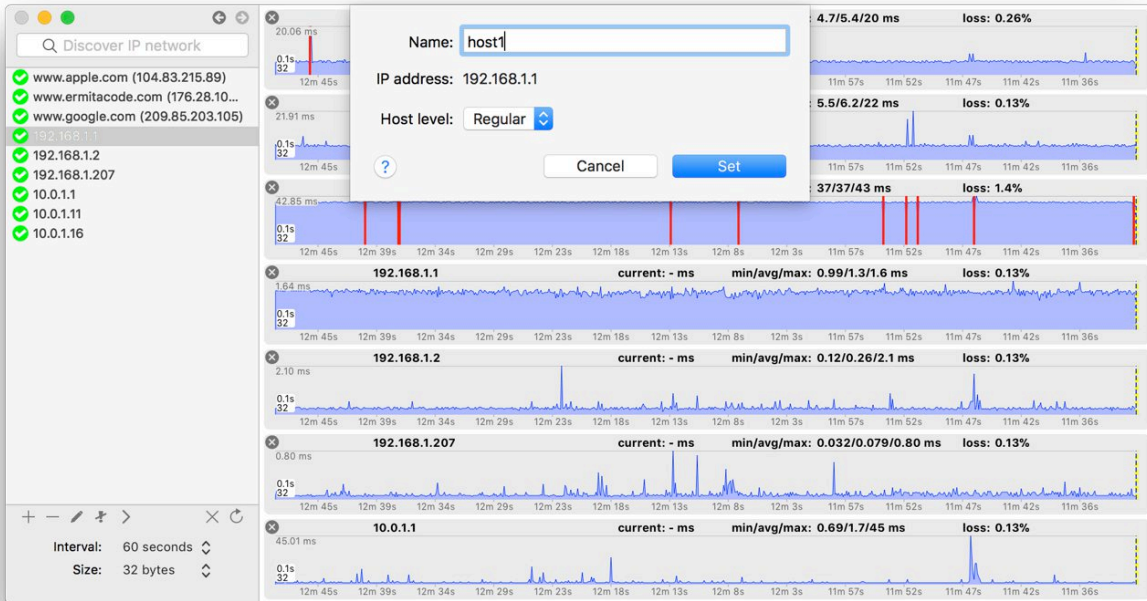
The **Host level** field sets a **Regular** or **Critical** level for the host and is used to select the email destinations to be notified when the packet loss reaches a configured threshold.

Hosts can also be added performing discovery.

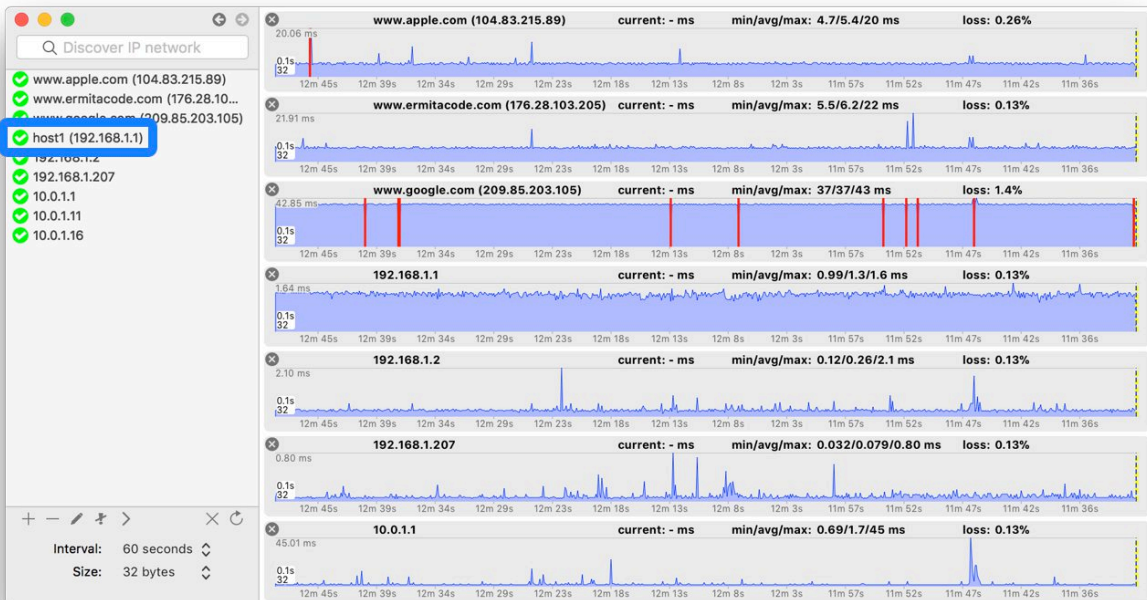


Editing Hosts

To edit the name of a host select it and click the  button below the hosts list:



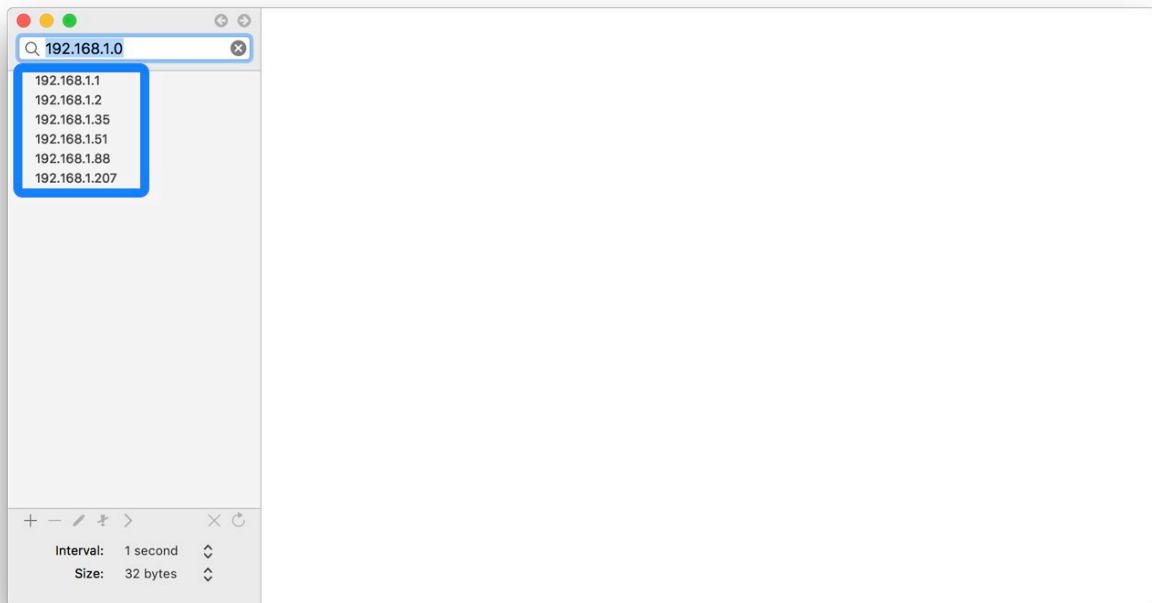
Then click **Set** to save the modified host name:





Discovering Hosts

To discover reachable hosts enter an IP network address or address range and press **Enter**:



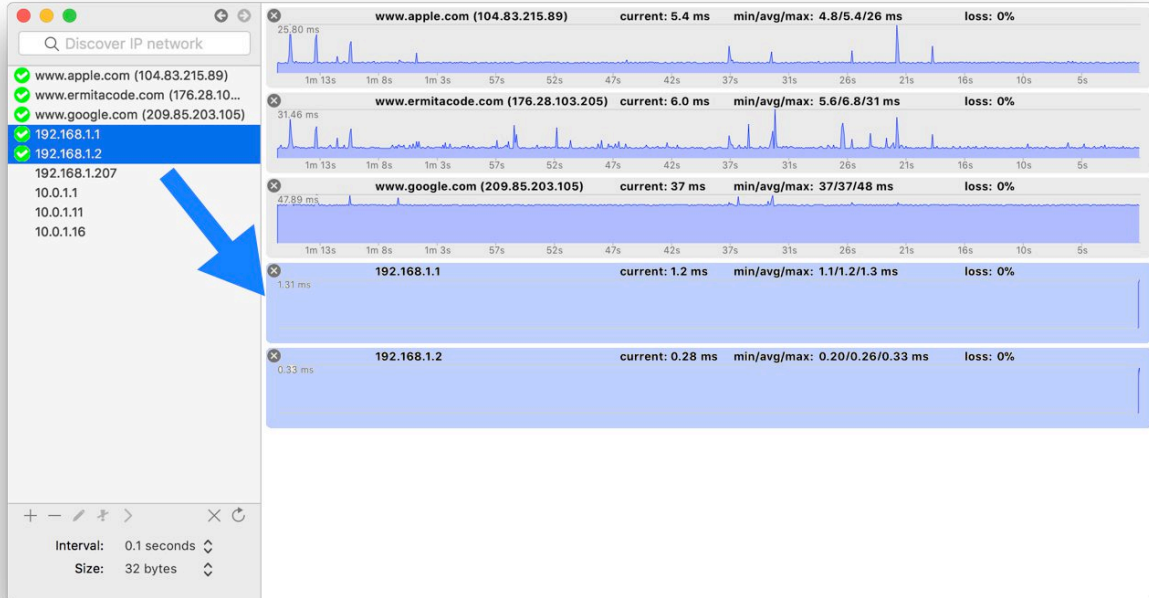
Valid address formats are:

- Subnet address: **n.n.n.n/masklength** (for example: 192.168.1.0/24)
- Address range: **n.n.n.n-n** (for example: 192.168.1.200-240)
- Class C subnet: **n.n.n.0** (for example: 192.168.1.0)
- Host address: **n.n.n.n** (for example: 192.168.1.40)



Monitoring Hosts

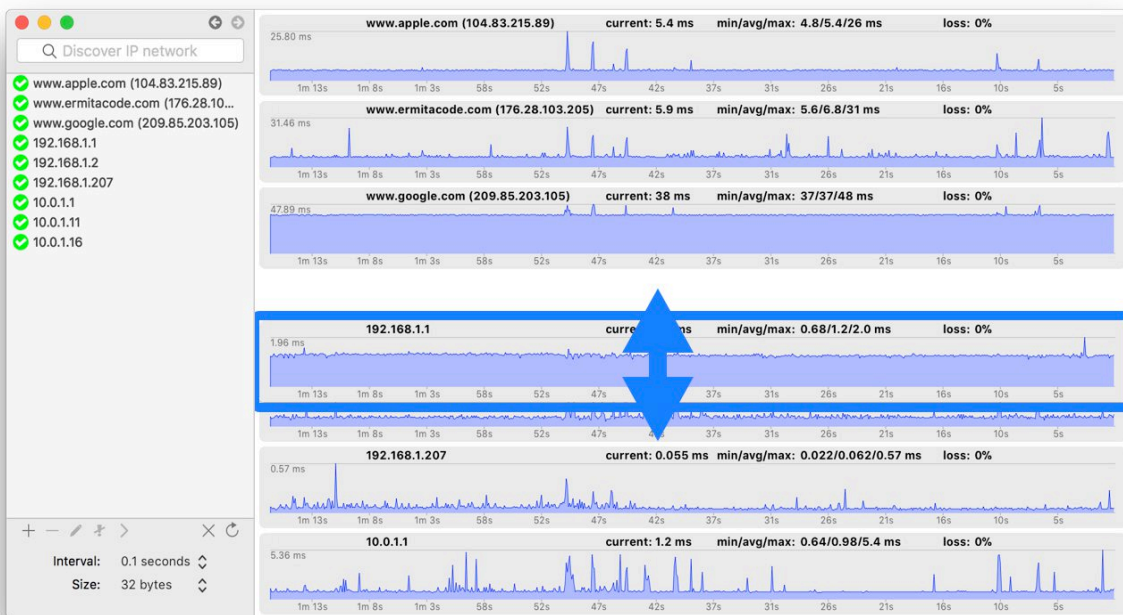
To start monitoring the ICMP response time of hosts, select them in the hosts list and click the **>** button below the hosts list, double click in the selection or press the **Enter** key:



A time response strip chart will be created for each selected host. The new added charts are momenta are signaled with a blue flash. Monitored hosts will show in the hosts list with a check mark **✓**.

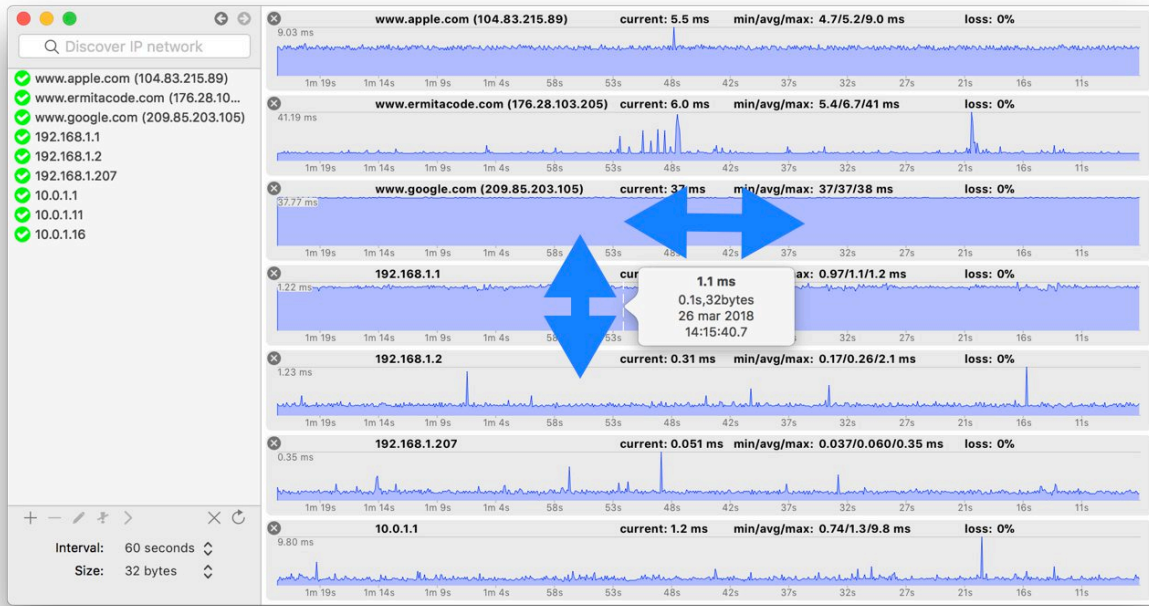
You can close a strip chart by clicking the close button **✕** in the chart top left corner.


You can reorder the strip charts by dragging the chart to the desired position:



You can explore specific values of response time by right clicking on a chart and dragging the mouse over it. Then you can also

press the left and right arrow keys to displace the popover over the chart. Using the up and down arrow keys you can displace the popover through the charts:



Charts with packet loss are signaled with a  symbol in the host list and an indication in chart title.

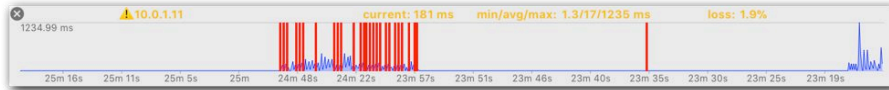


Packet Loss Indications

The hosts shown in the host list can have a symbol indicating its current status:

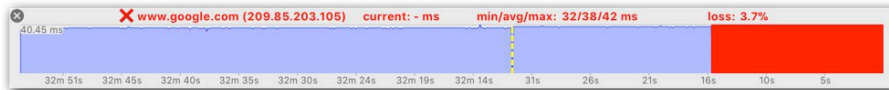
- ✔ The host is monitored and not packet loss has been produced.
- ⚠ The host is monitored and at least a packet loss has been produced.
- ✖ The host is monitored and the unreachable packet loss threshold has been reached.

If the **Show packet loss alerts in chart titles** Alert preferences option is enabled, packet loss is also signaled in the host chart with a yellow chart title:



You can cancel this alert selecting the host and clicking the button or using the **File>Reset Packet Loss Indication** main menu option (keyboard shortcut: ⌘X).

If the **Show packet loss alerts in chart titles** Alert preferences option is enabled, unreachable hosts (the unreachable packet loss threshold has been reached) are also signaled in the host chart with a red chart title:



If the **Show packet loss icon badge** Alert preferences option is enabled, the number of hosts with packet loss is shown in the dock icon badge or in the menu bar status icon:



Hosts without a symbol are not actually monitored in the right charts area.

Packet loss and unreachable host events can generate notifications if the **Send packet loss notifications** option is enabled in Alerts preferences. Additionally, when a notified unreachable host status is recovered (responses are received from the host), if the **Send recovery notifications** option is enabled in Alerts preferences, a recovery notification is sent.

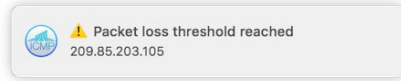


Notifications

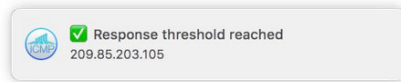
Notification Center is a feature in macOS that provides an overview of alerts from applications. It displays notifications until the user completes an associated action, rather than requiring instant resolution. Notifications work with the apps to let you know when something has changed. For example, you can see when there's incoming email in Mail, or upcoming appointments in Calendar.

ICMPUtil can optionally send user notifications related to hosts packet loss:

- If the **Send packet loss notifications** option is enabled in Alerts preferences, when the configured packet loss threshold is reached ICMPUtil generates a *Packet loss threshold reached* notification:

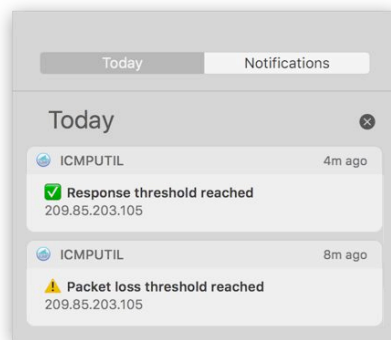


- If the **Send recovery notifications** option is enabled in Alerts preferences, after a packet loss notification, ICMPUtil will generate a *Response threshold reached* notification when the configured response threshold is reached:



Each app displays these notifications as a banner, alert, or badge. You can configure how macOS will display ICMPUtil notifications.

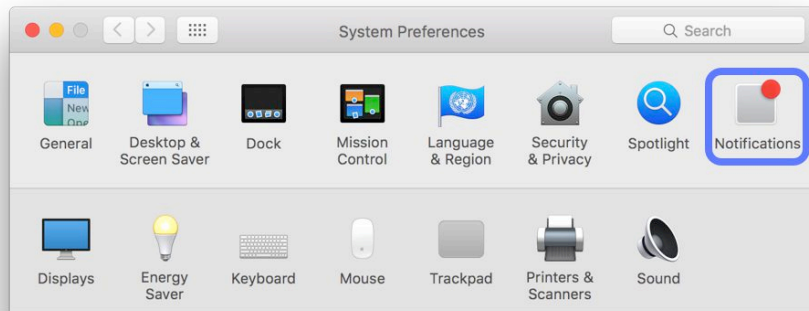
The OS X Notification Center can be used as a simple log of ICMPUtil events:



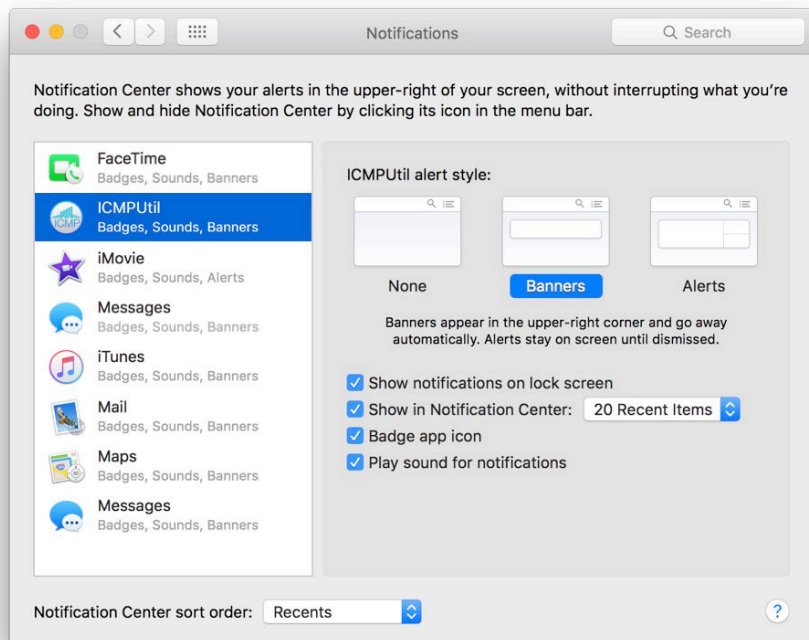
Clicking in a ICMPView notification will cause the ICMPView window to be open and the related chart will flash if it is active.

Configuration

To configure how ICMPUtil notifications are displayed open macOS **Preferences** and click **Notifications**:



Select **ICMPUtil** in the app list:





Mail notifications

If configured, ICMPUtil sends packet loss and unreachable host alerts as notifications.

Additionally, these notifications can be sent as mail messages to the configured mail destinations in the Mail preferences.

To select which alert notifications are progressed as mail messages to a mail destination, the affected device **Host level** and the mail destination **Host level** are used:

- Alerts for hosts with a **Critical** host level will only be sent to mail destinations with a **Critical** host level.
- Alerts for hosts with a **Regular** host level will be sent to all mail destinations.

The following figure shows a mail destinations list example configuration:

Destination address	Host level	Enabled
adm1@xx.com	Critical	✓
adm2@yy.com	Regular	✓
adm3@zz.com	Regular	✓

In this example, alerts for hosts with a **Critical** host level are sent to all mail destinations but alerts for hosts with a **Regular** host level are not sent to the **adm1@xx.com** destination because its host level is **Critical**.



Host Files

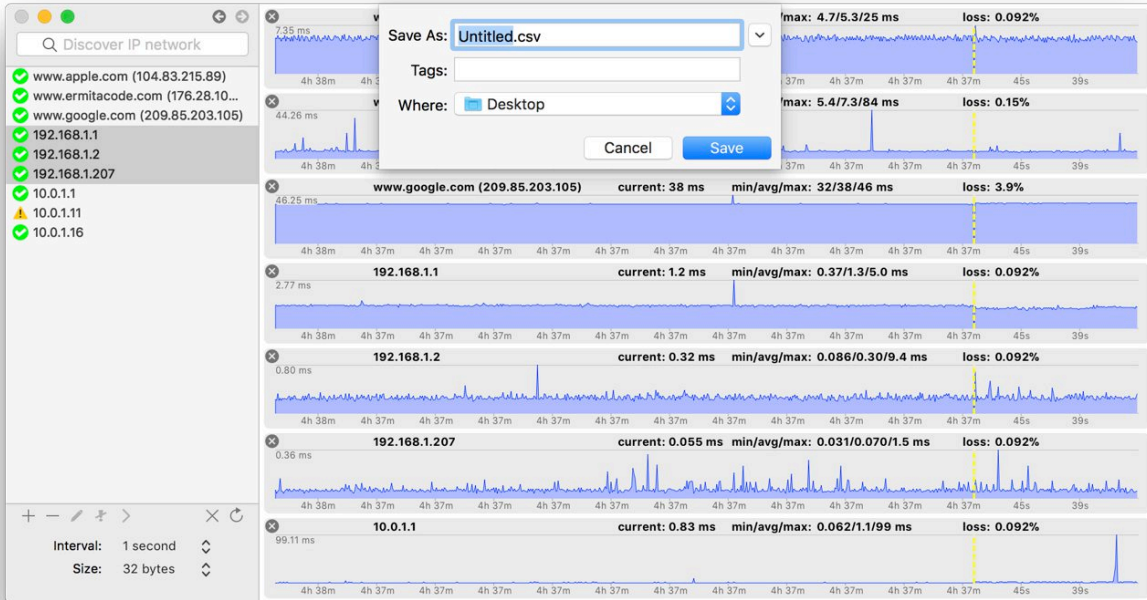
The content of the hosts list can be loaded from and saved to files. The format of these files is the same as the UNIX **/etc/hosts** file.

- To load a hosts file click the **File>Load Hosts...** menu option and select the file name to load. The entire Hosts list will be replaced by the contents of the file.
- To add a hosts file to the actual contents of the Hosts list click the **File>Add Hosts...** menu option and select the file name to load.
- To save the current contents of the Hosts list to a file click the **File>Save Hosts...** menu option and select the file name to save.



Esporting to a CSV file

If you need to include the response times of one or several hosts in a report or generate a custom chart with this data, you can save them to a CSV file. To export to a CSV file, select the hosts in the host list and click the **File>Export to CSV...** menu option:



The format of the CSV information is composed by a header line with the selected host IP addresses an several lines containing the timestamp (seconds from the 00:00:00 UTC on 1 January 2001 reference date) and the response time in milliseconds for each host:

```
date,192.168.1.1,192.168.1.2,192.168.1.207
543773991.991947,1280,268,60
543773992.106680,2773,217,190
543773992.206989,1322,315,44
543773992.312343,1283,236,47
543773992.416603,1312,244,67
543773992.516916,1300,282,55
543773992.617439,1281,328,53
543773992.717871,1185,232,94
543773992.818450,1290,273,48
543773992.921317,1239,277,245
```

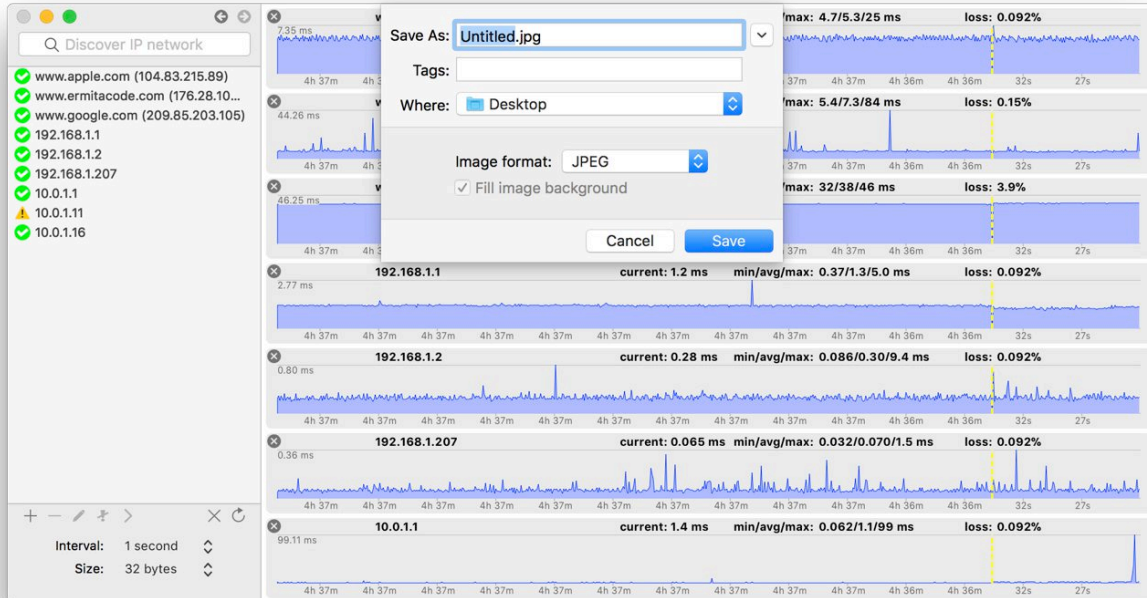
Opening this file with the **Numbers** app you can obtain the following table:

date	192.168.1.1	192.168.1.2	192.168.1.207
543773991.991947	1280	268	60
543773992.106680	2773	217	190
543773992.206989	1322	315	44
543773992.312343	1283	236	47
543773992.416603	1312	244	67
543773992.516916	1300	282	55
543773992.617439	1281	328	53
543773992.717871	1185	232	94
543773992.818450	1290	273	48
543773992.921317	1239	277	245



Saving to an Image File

If you need to include the charts in a report, you can save them to an image file and then import it into your document. To save to an image file click the **File>Save Image...** menu option:

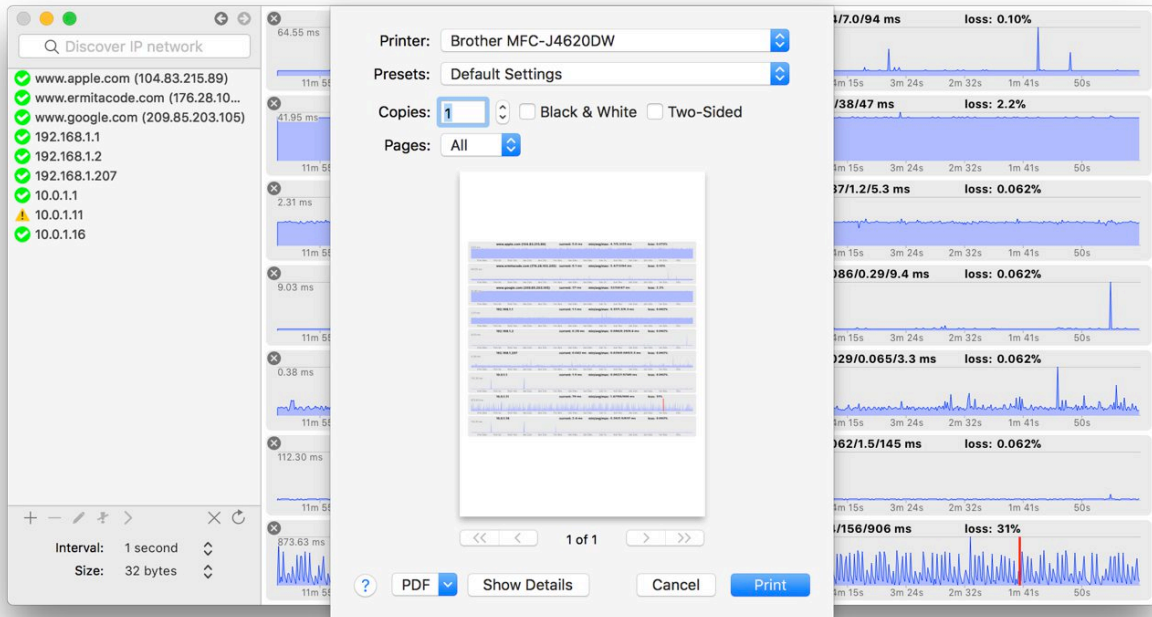


Available image formats are JPEG, JPEG-2000, PNG, GIF and TIFF.

For JPEG-2000, PNG, GIF and TIFF Formats it is possible to set an Image transparent background unsetting the **Fill image background** check button.

Printing

To print the response time strip chart area click the **File>Print...** menu option.



Select the printer and press the **Print** button or use the **PDF** menu to save a PDF copy to disk.



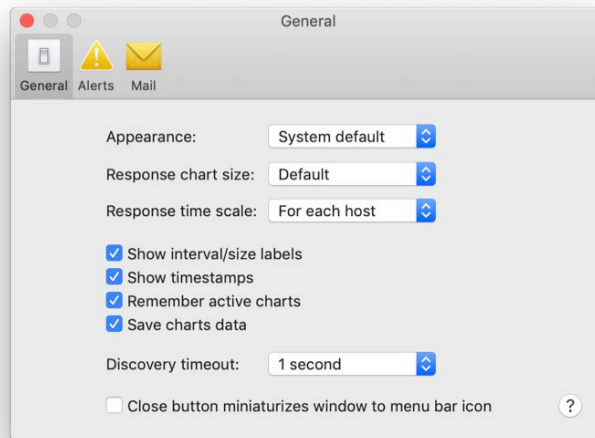
Preferences

To open the Preferences panel click the **ICMPUtil>Preferences...** menu option.

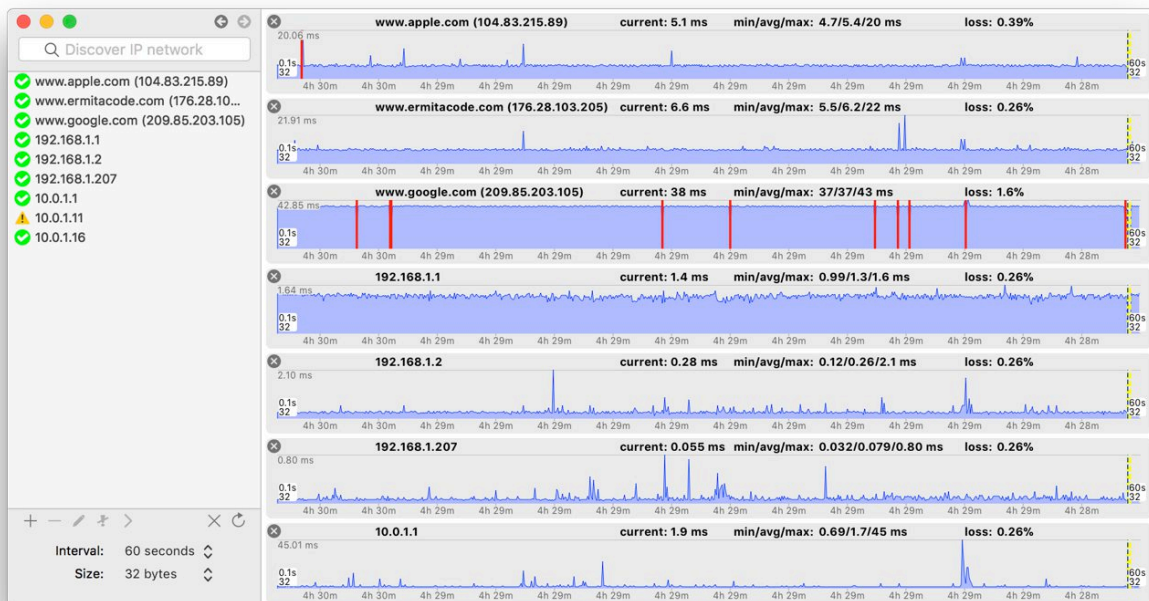
Preferences are grouped in General, Alerts and Mail preferences.

ICMP General Preferences

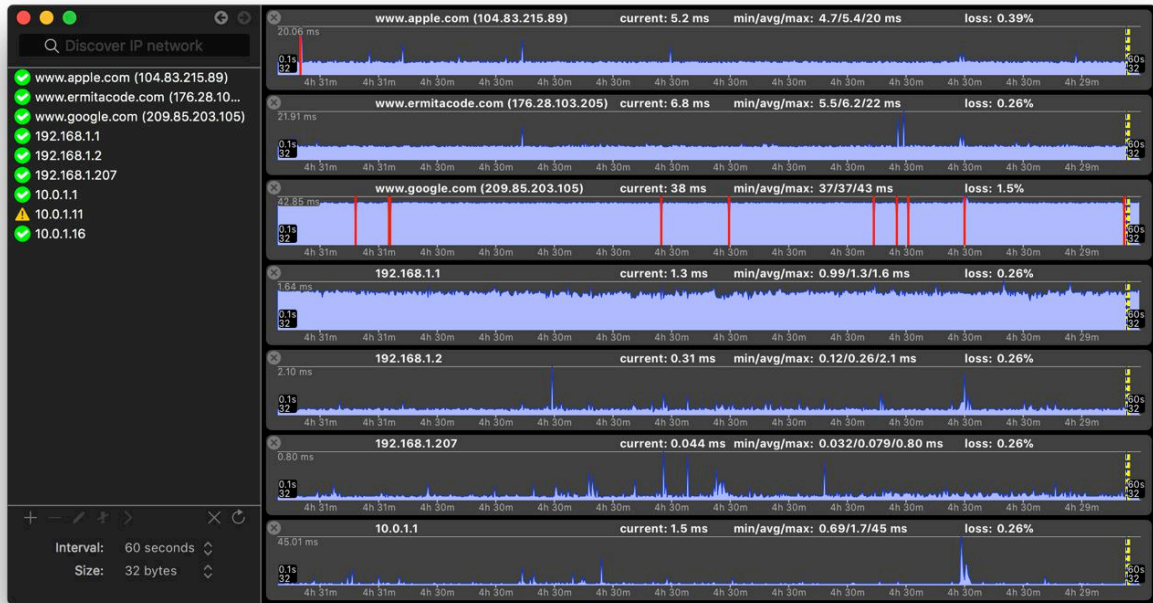
The following figure shows the General preferences:



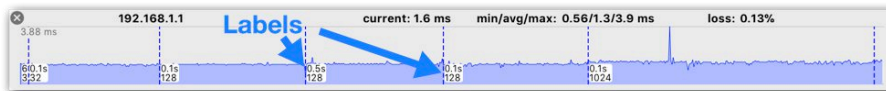
- **Appearance.** The following options are available:
 - **System default.** The System Preferences Appearance setting is used to select light or dark appearance.
 - **Light.** The following image shows the light appearance:



- **Dark.** The following image shows the dark appearance:



- **Response chart size.** Establishes the height of the charts. Four heights can be selected: **Default**, **Small**, **Medium** and **Large**.
- **Response time scale.** Defines how the scale of values of the strip charts are computed. The following options are available:
 - **For each host.** The scale of each strip chart is independent and is equal to the maximum visible value in each strip chart.
 - **Same for all hosts.** The scale of all strip charts is the same and is equal to the maximum visible value in all strip charts.
- **Show interval/size labels.** When this option is enabled the time intervals with different ICMP parameters are separated with dashed vertical lines and the parameters for each interval (ICMP interval and packet size) are shown in labels:



- **Show timestamps.** This option shows chart timestamps:



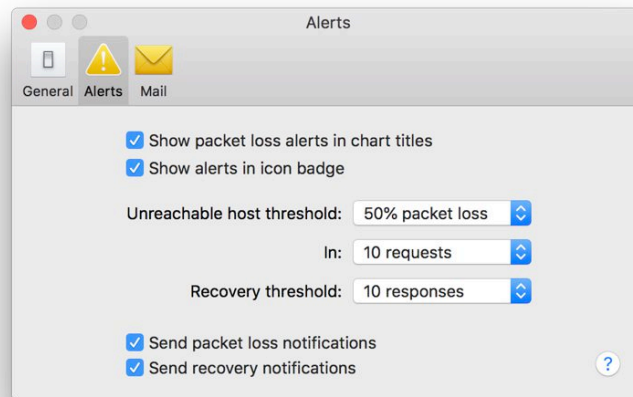
- **Remember active charts.** This option open automatically the last active charts when ICMPUtil is restarted.
- **Save charts data.** This option allows saving the current host response data so that they will be available the next time ICMPUtil is started.
- **Discovery timeout.** Establishes the time to wait the ICMP echo responses while discovering hosts in a IP network or range.
- **Close button miniaturizes window to menu bar icon.** This option causes the ICMPUtil window to miniaturize as a status menu bar icon when closing it:





Alerts Preferences

The following figure shows the Alerts preferences:



- **Show packet loss alerts in chart titles.** Show packet loss and unreachable indications in the title of the charts.
- **Show packet loss icon badge.** Show the number of charts with packet loss in the dock icon badge:

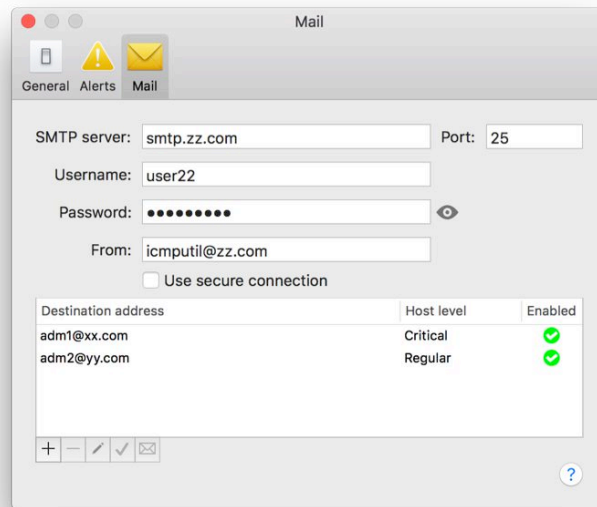


- **Unreachable host threshold.** Fraction of lost packets to generate a packet loss notification. Available values are **100, 75, 50** and **25%**. The fraction is calculated on the amount of packets established in the next configuration parameter.
- **In.** Number of packets on which the **Notification threshold** is calculated. Available values are **1, 2, 4, 10, 20** and **50 requests**.
- **Recovery threshold.** Number of continuous responses received to generate a response notification. Available values are **5, 10, 20** and **50 responses**.
- **Send packet loss notifications.** Enables packet loss notifications.
- **Send recovery notifications.** Enables host response recovery notifications.



Mail Preferences

The following figure shows the Mail preferences:



SMTP server parameters:

- **SMTP server.** IP address or DNS name of the SMTP server to be used to send alert mail notifications.
- **Port.** SMTP port.
- **Username.** User to authenticate in the SMTP server.
- **Password.** Password to authenticate in the SMTP server.
- **From.** Mail address to be used as origin of the messages.
- **Use secure connection.** Use TLS/SSL to secure the connection to the SMTP server.

Destinations list:

This table contains the destination mail address to send alert mail notifications.

A mail destination has the following parameters:

- **Destination address.** Mail address to send the mail notifications.
- **Host level.** Defines the host level required to send alert mail notifications to the destination.
- **Enabled.** Mail notifications are sent only if the destination is enabled.

To add a mail destination to the table click the button (keyboard shortcut ⌘+).

To remove a mail destination entry from the table select it and click the button (keyboard shortcut ⌘-).

To modify a destination select it and click the button or double click the destination entry.

You can enable or disable a mail destination using the button.

You can test the SMTP and destinations configuration sending test mails to the destinations mail addresses.

To send a test mail to a destination select it and click the button:

