Alerts and Actions

Understanding Alerts

When a problem occurs at a datacenter, Application, or SLA, the Monitoring Station can send alerts to users. Alerts are notifications that inform users who are configured to receive alerts of the problem. The notification message contains the following information:

- the type of notification, either Problem or Recovery
- the date and time when the problem occurred
- the name of the host on which the problem occurred
- the status of the host (see Understanding the Status of Services for more information)
- the name of the service that is experiencing the problem
- the current state of the service
- any output from the monitor

Whenever the status of an Element changes (for example, from Critical to Warning), up.time sends an alert.

You can also configure *alert escalations* that occur if a warning is sent and is not acted upon. For example, if an alert is sent to a system administrator, and the administrator does not attend to the problem within a specified amount of time, then the alert will be sent to the administrator's manager.

up.time can send alert to a phone, pager, or one or more email addresses.

The following is a sample email alert:

```
Notification type: Problem  1/12/2008 10:52
Host: filter
Host State: N/A
Service: FS Capacity - Filter
Service State: WARN/
Output: /var is 92% full
```

The following is a sample pager alert:

```
subject:  CRIT Alert
content:
5/7/2005 13:22
Type: Problem
Service: FTP (CRIT)
Host: filter (CRIT)
```

Understanding the Alert Flow

Alerts in up.time follow a specific flow. When up.time detects a problem with a host, it issues an alert. up.time then continues to check the host at specific intervals and reports on the status of the host.

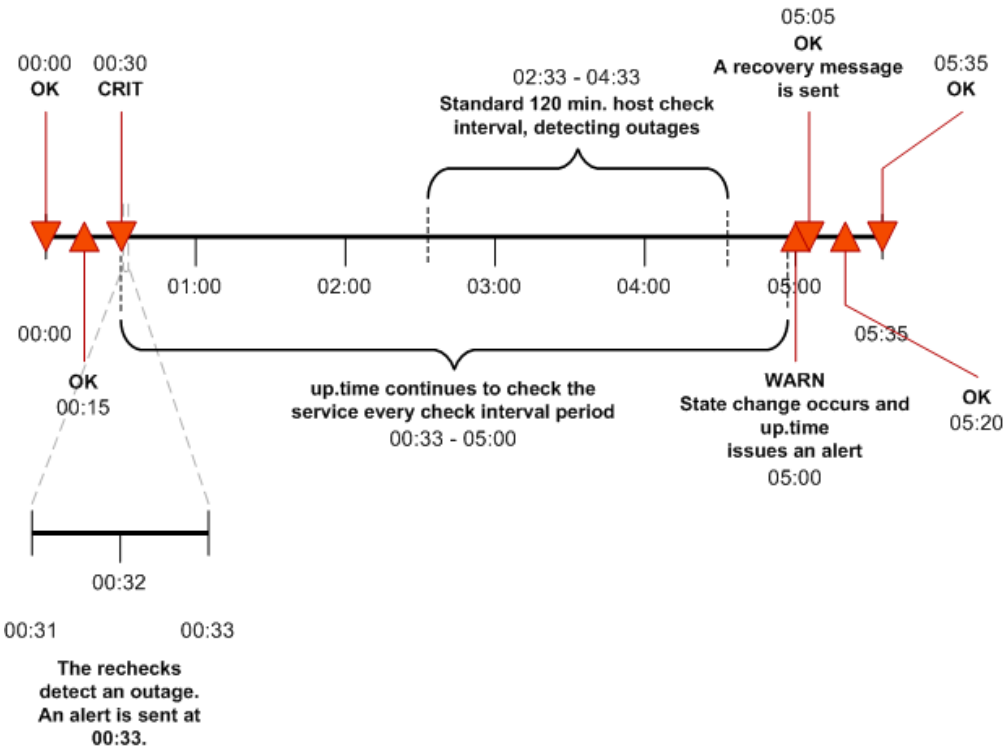
Considering the following example:

- up.time checks the host system every 15 minutes
- alerts are sent continually every check interval until up.time detects a change in the state of the host system
- whenever an error is encountered, up.time rechecks the system every minute
- if all rechecks up to the maximum number of rechecks fails, up.time issues an alert

up.time encounters a critical error on a host. up.time performs three rechecks at one minute intervals–all of which return a critical error–and then sends an alert after the third recheck.

up.time then checks the host every two hours. While up.time encounters two critical errors, it does not send an alert. Then, the status of the host changes from Critical to Warning. When this change is detected, up.time sends an alert informing recipients of the change in status. When the status of the host changes to OK, up.time issues an alert informing recipients that the host has recovered.

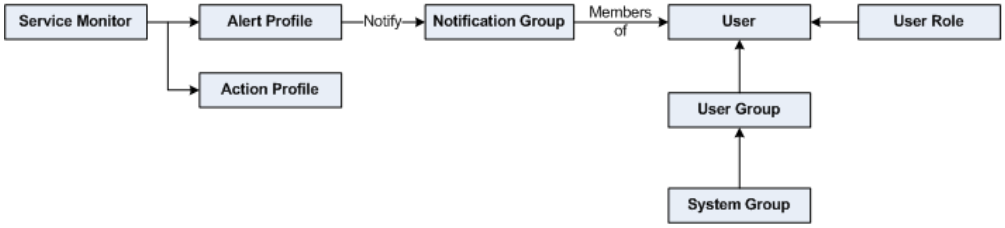
This alert flow is illustrated in the following diagram:



All service monitors have a common set of Monitor Alert Settings that configure aspects of the alert flow.

Alert Profiles

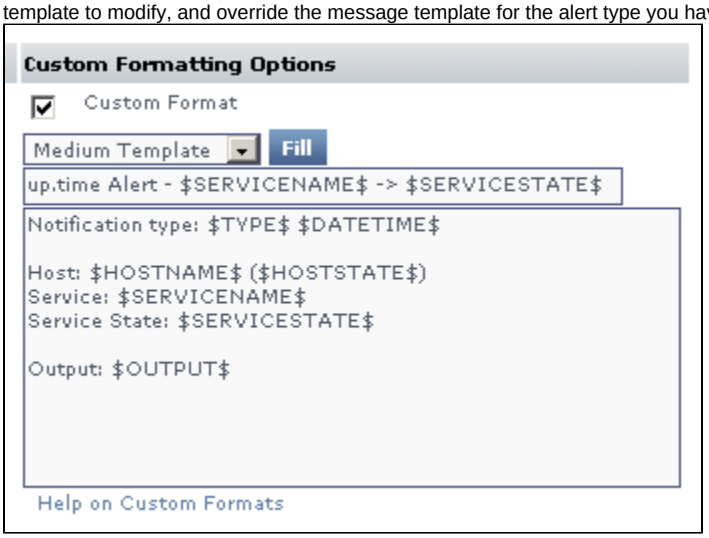
Alert Profiles are templates that tell up.time how to react to various alerts that are generated by service checks. Alert Profiles enable up.time to execute a series of actions in response to the failure of a service check or when a threshold is exceeded. The following diagram illustrates how an Alert Profile works:



An Alert Profile can send an alert via email, or to a pager or a cell phone. You can configure any or all of these actions to occur simultaneously by associating the Alert Profile to multiple Notification Groups. For example, if a Web server process stops responding, both the system administrator and Web server administrator can be notified.

Custom Alert Formats and Alert Scripts

Alert Profiles include standard message templates for emails and pagers, which are well suited for most alerting needs. However, you can customize the format of the alert using predefined variables. When creating or configuring an Alert Profile, selecting the **Custom Format** option will provide you with a template to modify, and override the message template for the alert type you have selected:



See Custom Alert Message Variables for more information.

In addition to sending alert messages, up.time can also execute an alert script. When an outage occurs, the script is run on the Monitoring Station, once for each user that will receive notification. Like custom alert messages, alert scripts use predefined variables to represent outage-specific information; these variables are passed to the script at the time of the outage.

For information on alert script variables, see Script Alert Variables. For more information on alert scripts, see the uptime software Knowledge Base article, *Creating Custom Alert Scripts in up.time Alert Profiles*.

Creating Alert Profiles

To create Alert Profiles, do the following:

1. On the up.time tool bar, click **Services**.
2. In the tree panel, click **Add Alert Profile**.
   The **Add Alert Profile** window appears.
3. Type a descriptive name for the profile in the **Name of Alert Profile** field.
4. In the **Start alerting on notification number** field, enter the number of times an error must occur before up.time sends an alert notification.
5. Enter the number of times to re-send the notification in the **End alerting on notification number** field.
   You can also select the **Never Stop Notifying** check box to have up.time send notifications indefinitely.
6. Select one or more of the following notification options:
   - **Email Alert**
     Sends the alert to the email addresses of the members of a Notification Group.
   - **Pager Alert**
     Sends the alert to the pagers of the members of a Notification Group.
   - **Script Alert**
     Executes an alert script on the Monitoring Station, once for each user that will receive notification of the alert.
     Since this alert option relies on a script or batch file, enter its name and path in the **Script Path** field (for example, on Linux, `/usr/local/uptime/scripts/scriptAlert.sh`).
7. If you are using an email or pager notification, and would like to use a custom message instead of the standard template, click the **Custom Format** check box to begin creating a custom alert message:
   a. To expedite message creation, select a **Short Template**, **Medium Template**, or **Long Template**, then click **Fill**.
   b. Optionally modify the alert subject header.
   c. Optionally modify the alert message body.

   For information on custom alert message variables, see Custom Alert Message Variables.
8. Select one or more **Notification Groups** that will receive the notifications.
9. Optionally attach this alert profile to one or more existing **Service Monitors**.
10. Click **Save**.

Viewing Alert Profiles

To view Alert Profiles, do the following:

1. On the up.time tool bar, click **Services**.
2. In the tree panel, click **View Alert Profiles**.
   The **Alert Profiles** subpanel appears. The subpanel displays the settings that you configured when you created the profile, as well as a list of the services that are attached to the profile.
3. To test whether or not the profile will send alerts, click **Test Alert Profile**.
   A popup window appears, and the alert is sent using the notification method (email, pager, or script) that is specified in the profile. The following is an example of an email alert:

```
Notification type: Problem 27/4/2006 09:19
Host: Test Host (OK)
Service: Test Monitor
```

```
Service State: OK
Output: This is a test notification; please ignore.
```
When the alert is sent, the message `Alert Profile Tested` appears in the popup window. If an error message appears in the popup window, edit the profile and test it again.

Editing Alert Profiles

To edit Alert Profiles, do the following:

1. On the up.time tool bar, click **Services**.
2. In the tree panel, click **View Alert Profiles**.
3. Click the **Edit Alert Profile** icon beside the name of the profile that you want to edit.
   The **Edit Alert Profile** window appears.
4. Edit the **Alert Profile** fields as described in the section, Creating Alert Profiles.

Associating Alert Profiles to Elements

You can associate an Alert Profile to any Service Monitor, Application, or SLA if their state changes from OK to Warning or Critical. Alert Profiles are normally associated with any of these monitored items at the time of their configuration; Alert Profile assocations can also be modified with existing service monitor definitions.

See Using Service Monitors, Working with Applications, and Adding and Editing SLA Definitions for more information about configuring Service Monitors, Applications, and SLAs, respectively.

Action Profiles

Action Profiles are templates that direct up.time when it encounters a problem on a monitored system. You can associate an Action Profile to any Service Monitor, Application, or SLA if their state changes from OK to Warning or Critical. Action Profiles are normally associated with any of these monitored Elements at the time of their configuration; Action Profile assocations can also be changed when you are modifying existing service monitor definitions.

See Using Service Monitors, Working with Applications, and Adding and Editing SLA Definitions for more information about configuring Service Monitors, Applications, and SLAs, respectively.

Actions include one of the following tasks:

- write an entry to a log file
- run a recovery script that can reboot a non-responsive server; or restart an application, process, or service
- stop, start, or restart a Windows server
- initiate a VMware vCenter Orchestrator workflow
- send an SNMP trap to a specific traphost and trap community

As templates, Action Profiles can be reused for any number of Service Monitor configurations. This means you can create a series of them as standard actions used to respond to typical types of problems you may encounter, depending on what role a Service Monitor is playing (for example, availability or performance).

VMware vCenter Orchestrator Workflow Actions

If an administrator has integrated up.time with VMware vCenter Orchestrator (see VMware vCenter Orchestrator Integration), you can configure Action Profiles to initiate Orchestrator workflows.

Orchestrator is a VMware vCenter Server add-on that allows its administrators to create workflows that automate vCenter management tasks. These Orchestrator workflows are open ended: all vCenter actions are available for automation through the processing of parameters and runtime arguments. up.time Action Profiles can be configured to provide input parameters to specific workflows, thus integrating vCenter management with up.time's monitoring and alerting capabilities.

For example, if up.time is monitoring memory, CPU, and hard disk use for a virtualized server, the passing of performance thresholds can trigger an Action Profile that, in turn, triggers an Orchestrator workflow that creates a new virtual machine to alleviate resource strain. In a converse example, if up.time is monitoring a virtualized server for long periods of inactivity, a triggered Action Profile can initiate an Orchestrator workflow that shuts down the instance to free up resources.

By tightly integrating up.time's monitoring and alerting with VMware vCenter Orchestrator's automated virtual environment administration, you can accelerate your organization's reaction time with virtual systems management, and map established policies to automated actions.

When configuring Action Profiles, up.time communicates with Orchestrator and dynamically produces a list of all available workflows. (This includes any third-party workflow packages that have been installed on the Orchestrator server, including the *up.time* Orchestrator package.)

When a workflow is selected, and the **Get Parameters** button is clicked, the corresponding input parameter fields are dynamically displayed, allowing you to specify parameter values required to completely configure the workflow for execution should an up.time alert initiate it.

Orchestrator Input Parameter Variables

When configuring a VMware vCenter Orchestrator workflow, you have at your disposal a set of up.time-specific variables that can be entered as parameter variables, and whose ensuing runtime values will be passed to the Orchestrator workflow during execution. The variables available to you are those that are used when creating a custom alert format. See Custom Alert Message Variables for information.

SNMP Trap Actions

You can also configure an Action Profile to send an SNMP trap to a particular host. An SNMP trap is notification that is issued by a system that is running SNMP when a problem occurs. The host to which the SNMP trap is sent must be running an SNMP trap listener.

If you use SNMP traps, the trap message will be sent in the format specified by the up.time MIB. This MIB is found in the `/scripts` directory. The uptime software enterprise OID is `.1.3.6.1.4.1.24216`.

Creating Action Profiles

To create Action Profiles, do the following:

1. On the up.time tool bar, click **Services**.
2. In the tree panel, click **Add Action Profile**.
   The **Add Action Profile** window appears.
3. Enter a name for this profile in the **Name of Action Profile** field.
4. Specify the number of times an error must occur before up.time sends a notification in the Start action on notification number field.
5. Specify the number of times action will be carried out in the End action on notification number field.
   Optionally, select the Never Stop Notifying option to continually carry out the action in this profile until the problem is resolved.
6. If VMware vCenter Orchestrator integration has been enabled, and you would like the Action Profile to drive an Orchestrator workflow, do the following:
   a. In the Select Workflow field, input a workflow to configure.
      You can either scroll through and select the workflow from the drop-down list, or begin typing the workflow's name.
   b. Click Get Parameters .
      up.time will retrieve information from the Orchestrator server and dynamically display configuration fields for the chosen workflow's input parameters.
   c. Configure the input parameter fields for the workflow.
      For information on the specific configuration parameters available for the chosen workflow, consult the appropriate developer's documentation.
7. If you would like the Action Profile to write to a log, in the Log File field, enter the name and path to a log file on the Monitoring Station to which error information will be written.
8. If you would like the Action Profile to run a recovery script, in the Recovery Script field, enter the name and path to a script that will reboot a server, or restart an application, process, or service.
   The recovery script will also have the following information appended to it:
   - the date and time on which the error occurred
   - the type of error notification that was sent
   - the name of the host on which the error occurred
   - the state of the host
   - the name of the service that threw the error
   - the state of the service
   - the output that was generated by the error
     for example:

     ```
     "/usr/local/uptime/recover.sh" "24/12/2007 5:01:05" "Problem" "printserver" "null" "WinSrv-Print Spooler" "CRIT/threshold error" "servicestatus: Not Running does not match Running (Service 'Print Spooler' found, status: Not Running, took 12ms)"
     ```

   For information on predefined variables that can be used in Action Profile scripts, see Recovery Script Variables.

   > You can also use the recovery script to file trouble tickets with a system like Remedy, or to interact with third party software packages.

9. If you are setting up an Action Profile for a Windows server, you can also leave the Windows Service as Agent , and complete the following fields:
   - Windows Host
     The name of the host on which the service is running.

     > Enter `$HOSTNAME$` in this field to create a dynamic hostname. For failing services that call this Action Profile, the corresponding hostname will be used when this action runs.
     >
     > You can use this dynamic hostname in conjunction with service groups, where an issue can originate from one of many hosts.

   - Agent Port
     The port on which the up.time agent that is installed on the system is listening. The default is 9998 .
   - Use SSL
     Select this option if up.time will securely communicate with the host using SSL (Secure Sockets Layer).
   - Agent Password
     Enter the password that is required to access the agent that is running on the system that is being monitored. For information on setting the agent password, see the uptime software Knowledge Base article entitled, *What is the password for the Windows agent?*
   - Windows Service
     The display name of the specific Windows service to which the Action Profile will apply. The display name of a service appears in the **Name** column of the **Services** Control Panel, or in the **Description** column of the Windows Task Manager **Services** tab.

     > The service display name must be entered verbatim, including spaces, otherwise it will not be correctly processed. Double-clicking a service name in the **Services** Control Panel opens a properties window where you can highlight and copy the service **Display name**.

   - Action
     Select one of the following actions:
     - None
     - Start
     - Stop
     - Restart
10. If you are setting up an Action Profile for a Windows server that is using a WMI implementation, you can also select the Windows Service as WMI, and complete the following fields:

- WMI Host:
  The name of the host on which the service is running.
- Windows Domain:
  The Windows domain in which WMI has been implemented.
- Username:
  The name of the account with access to WMI on the Windows domain.
- Password:
  The password for the account with access to WMI on the windows domain.
- Windows Service
  The display name of the specific Windows service to which the Action Profile will apply. The display name of a service appears in the **Name** column of the **Services** Control Panel, or in the **Description** column of the Windows Task Manager **Services** tab.

  > The service display name must be entered verbatim, including spaces, otherwise it will not be correctly processed. Double-clicking a service name in the **Services** Control Panel opens a properties window where you can highlight and copy the service **Display name**.

- Action
  Select one of the following actions:
  - None
  - Start
  - Stop
  - Restart

11. If you want to send SNMP traps to a particular host, complete the following fields:
    - SNMP Trap Host
      The name of the host that monitors SNMP traps.
    - SNMP Trap Port
      The port number on the trap host to which the SNMP trap is sent.
    - SNMP Trap Community
      The name which acts as a password for sending trap notifications to the trap host.
    - SNMP Trap OID (optional)
      The object identifier (OID) that identifies the SNMP trap - for example, `.1.3.6.1.2.1.34.4.1.7`.
12. If Splunk integration has been enabled, and you would like the Action Profile to write to the Splunk log, complete the following fields:
    - Splunk Hostname
      The host name of the server on which Splunk is running.
    - Logging Port
      The port on which the Splunk server is listening for logging requests. This port is configured in Splunk, and you will need to contact the Splunk administrator for this information.
    - Click the Use SSL option to securely access the Splunk server using SSL.

    For more information on Splunk integration, see See Splunk Settings..
13. Optionally attach this alert profile to one or more existing **Service Monitors**.
14. Click Save.

Viewing Action Profiles

To view Action Profiles, do the following:

1. On the *up.time* tool bar, click *Services* .
2. In the *Tree* panel, click *View Action Profiles* .
   The *Action Profiles* subpanel appears, displaying the settings that you configured when you created the profile, as well as a list of the services that are attached to the profile.
3. To test whether or not the profile works, click the *Test Action Profile* button.
   A popup window appears, and the Monitoring Station tries to carry out the action defined in the profile. When the action is completed, the message *Action Profile tested* appears in the popup window.
   If an error message appears in the popup window, edit the profile and test it again.

Editing Action Profiles

To edit Action Profiles, do the following:

1. On the up.time tool bar, click **Services**.
2. In the tree panel, click **View Action Profiles**.
3. Click the **Edit Action Profile** icon beside the name of the profile that you want to edit.
   The **Edit Action Profile** window appears.
4. Edit the Action Profile fields as described in the section Creating Action Profiles.

Monitoring Periods

Monitoring Periods are the times over which a service monitor will be actively monitoring a host. The Monitoring Periods also apply to the times when up.time sends alerts

up.time comes with the following Monitoring Periods:

- 24x7 – Monitoring is performed 24 hours a day, seven days a week.
- 9am to 5pm weekdays – Monitoring is performed from 9 a.m. to 5 p.m., Monday to Friday.
- Never – No monitoring is carried out.

You can add Monitoring Periods that suit your needs. For example, you can create a Monitoring Period called " Weekends" that only monitors a host from 12:00 a.m. on Saturday to 11:59 p.m. on Sunday.

Adding Monitoring Periods

To add Monitoring Periods, do the following:

1. On the up.time tool bar, click **Services**.
2. In the tree panel, click **Add Monitoring Period**.
   The **Add Monitoring Periods** window appears.
3. Type a name in the **Monitoring Period Name** field.
4. In the **Definition** section, enter one or more time period expressions that combine to create a full Monitoring Period definition.
   See Time Period Definitions for information on the types of time period expressions that are valid in up.time.
5. Click **Save**.