nandView

Network & Systems Monitoring

User Guide

Version 1.0

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License

Getting Started With nandView

Welcome to nandView! We'll briefly go over the product's architecture, and then go into what steps are required to start using nandView.

Help is available from any page within nandView. Clicking on the help button will bring you to the topic relevant to that screen. At the top and bottom of every help page is a link to the complete topics list, allowing you to view the entire help guide.

Architecture

nandView is a database driven network & systems monitoring solution. Changes to the configuration take affect immediately and do not require restarting, reloading or rebooting the system. nandView has four main components: the web interface, the database, a poller process and an emailer process.

Web interface - This is primarily how you will interact with nandView. All configuration options can be made through the web interface, while advanced power user can do direct database manipulation.

Database - nandView uses a database to store configuration information, test results and log files.

Poller - This program will run on an automatic, scheduled basis. It conducts the actual tests and determines if they pass or fail.

Emailer - This program will run on an automatic, scheduled basis. It sends out email notifications when appropriate.

Initial Configuration

By accessing this help screen, it's assumed that you have already successfully installed nandView. The database and web components are working. Now you need to configure it.

Step 1 - Set up user accounts. nandView comes with a default account for the purpose of logging in for the first time. The default account name is 'admin' and the default password is 'n@ndView'. You should create several new accounts for your users, and at least one administrative account for yourself. Logout, then login with your new account. You can then delete the default account. If you wish to keep this initial account, we strongly recommend changing it's default password.

Step 2 - Set up email lists. If you want to have nandView send out email notifications about tests that pass or fail, you should set up at least one list before creating devices and tests. You can modify the email addresses associated with this list at any time.

Step 3 - Create new devices or tests. You may also wish to take advantage of the bulk add feature.

Step 4 - Configure preferences. The default values should be sufficient, but feel free to take a quick look.

Step 5 - Verify polling and emailing is working. When polling is working, you'll see the 'last poll' time update on the dashboard, and pass/fail icons advance. To test email, try adding a test that you know will fail. Wait for the test to go critical and the emailer program to run. If polling or email doesn't work, check the installation guide or contact nandView support.

Dashboard

The dashboard is your main interface with nandView. It displays the status of all your tests, as well as links to all the configuration options. The uppermost right corner offers a logout button. It is recommended that all users click the logout button when finished using the nandView web interface.

Overall Status
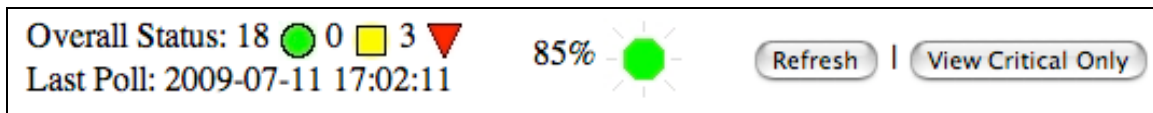
The overall status bar

At the top is the overall status. This will show the total number of successful, warning and failed tests as well as overall health percentage and last poll cycle. If polling or emailing is disabled, you'll see a warning icon here as well. The last poll time is updated whenever the nv_poller program completes a run.

The percentage is calculated by comparing the number of successful and warning tests against the number of failed tests. For this calculation, any test in the missed one poll state (yellow) is still considered as passed.

Two buttons are present on the right hand side. The refresh button will manually reload the page. The dashboard will automatically refresh every few minutes. A preference is available to change the refresh time period. The other button is either marked ' View Critical Only' or 'View All Tests'. For sites with large numbers of tests, you may find it easier to just view critical cases. In either view, the overall status will reflect the entire system status.

Status Grid
The test status grid is a table showing all tests, their status and additional associated data. Entries are group alphabetically by device.

There are four possible status colors/symbols in nandView:

⬤ - Pass (green). This is a test that passed during the last poll cycle, and should be considered as functional.

▢ - Warning (yellow). This test failed during the last poll cycle. To avoid alerting on small hiccups, nandView requires a test fail for the second time before going critical and sending out an email notification.

▼ - Failed (red). This is a test that failed during the last two polling cycles.

◆ - Skipped (gray). This test was skipped during the last cycle. This usually occurs in conjunction with the 'pingfirst' or 'pinglast' tests, or for a newly added device.

Further to the right shows the last change and prior 10 polls. The last change time is updated when the status goes into or out of critical (red). This time won't change for the one missed poll (yellow) status. Next to the time are the prior 10 polls icons. This list goes from most second most recent poll on the left to oldest polls on the right (the most recent poll is the current status).

The email column will show you which email list is associated with that test. The notes column can be used for whatever purpose you wish. It could be a description of that device, the physical location, license keys, manufacturer or so forth. It could also be used for conveying information to other nandView users. For example, an admin could leave a note on a TCP:80 test stating "Installing IIS patches for the next hour". This way, if the test goes critical, other users can see why and not need to do further investigation.

Configuration Links
nandView uses roles based access control to restrict certain users from making configuration changes. The following links will only be present if the user has the appropriate access settings. All links will open in a new window or tab.

Add Device - Add a new device or test. Must have the 'Edit Tests' permission to see.

Add Test - Add a new test to an existing device. Must have the 'Edit Tests' permission to see.

Bulk Add - Easily add multiple devices or tests. Must have the 'Edit Tests' permission to see.

Configure Email - Add, delete or make changes to email lists. Must have the 'Edit Email' permission to see.

Configure Users - Add, delete or make changes to user accounts. Must have the 'Edit Users' permission to see.

Set Preferences - Change system wide nandView preferences, such as polling timeout, dashboard auto refresh time or turn off polling/emailing. Must have the 'Edit Prefs' permission to see.

Change Password - Allows the user to change his password. All users can access this option.

Reports - Generate reports based off information store in the database. Must have the 'View Reports' permission to see. Users with the 'Edit Prefs' permission will also be allowed to delete the log files from the reports page.
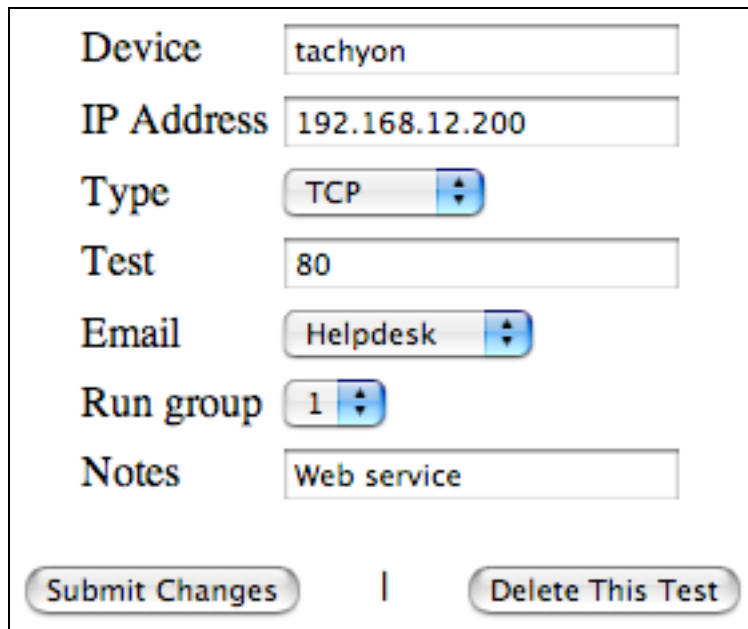
About nandView - This page will show the version number and contact information. All users can access this option.

Users with the 'Edit Tests' or 'Edit Notes' permission will have an extra column on the left side of the test status grid. This will link to the test or notes editor for that test.

Adding and Editing Tests

nandView revolves around the tests. A test is a network service on a particular device that is either working (up, clear) or not working (down, critical). While you can modify the code to support whatever tests you wish, nandView supports four major types out the box: ICMP ping, TCP, UDP and Protocol verification. We'll first explain the supported tests, and then go into creating and deleting them.

The add and edit test screen

Types of Tests
A nandView test contains three parts: the device (and its IP address), a 'type' and a 'test'. The type specifies what kind of test it is, such as a TCP or UDP connection. The 'test' field specifies what to do with the type, such as connect on port 25 or 3306. For example, to check if a web server is running, which runs on TCP port 80, you'd set type to 'TCP' and test to '80'.

ICMP - The ping test is very basic. If the device responds to a ping, it passes. Most device should contain a ping test. Please note that some firewalls will block pings altogether but allow other services to pass. There are three valid entries for the 'test' field with

an ICMP test: ping, pingfirst, pinglast. 'ping' is a straight forward ping. The 'pingfirst' and 'pinglast' tests are a bit unique in that they can affect the rest of the tests for a particular device. If you specify 'pingfirst', then the ping test will run before any other tests for that particular device. If the ping test passes, the other tests are run. If the ping fails, the other tests do not run, and will show the skipped test symbol. The 'pinglast' test does the opposite. If at least one of the other tests passes for that device, the pinglast test will not run. If all other tests fail, then it will run.

TCP - This will check if a TCP port is accepting connections. Specify the port in the 'test' field.

UDP - This will check if a UDP port is accepting and returning information upon connection. Unlike TCP, the UDP protocol is classified as 'connectionless'. This means a client can send data to the server, and doesn't have any guarantees the data got there. nandView tries to get around this by sending a very small data packet to the specified port, and listening to see if the server issued a reply. There is a possibility that your UDP services won't behave in this manner. If you find a particular UDP test never passes, and know the service is working, please inform nandView and we'll see if we can add some workarounds into future versions.

Protocol - The protocol check is an advanced feature of nandView. It goes beyond checking if a connection is accepted, and actually issues commands for certain information transfer protocols. Instead of merely seeing if your email server is accepting connections on port 25, nandView will also make an SMTP HELO request, and look at the output. Protocol tests take in an optional second argument, seperated by a colon, to specify additional information. For example, a protocol test of 'http' will check a web server running on port 80. If you wrote 'http:8080', it'll check on port 8080 instead.

Protocol	Optional Argument	Default Value	Examples	What is sent to the server	What is expected in reply
http	port number	80	http http:8080	GET / HTTP/1.1 Host: ip:port Connection: close	HTTP/1.1 200 OK
ftp	port number	21	ftp ftp:4444	QUIT	221
smtp	port number	25	smtp smtp:5000	HELO	250
dns	domain to lookup	www.google.com	dns dns:yahoo.com	DNS lookup	DNS reply

Add/Edit Devices and Tests

Administrator can add devices, add tests or edit tests from the dashboard. There is an add device and add test link at the bottom of the page, and each row in the test status grid has an edit button. Functionally, they all work the same. The 'add test' screen is slightly different in that it can be used to automatically select the device name and IP address from a list of already entered devices/IPs. Please note that although the dashboard will group together all the tests for a device, to rename a device you need to edit each test individually.

Device - The device name.

IP Address - The IP address the test should connect to. Note that nandView supports devices having multiple IP addresses.

Type - Select the type of test (see above).

Test - Specify the test, such as a port number (see above).

Email - Choose which email list to send critical/clear notifications. The first choice is always (no email), which doesn't send any notifications.

Run group - nandView supports up to four run groups for additional scalability and flexibility. If you don't want or need to use run groups, choose group 1. The poller program runs all the tests in either group 1, 2, 3 or 4. You can choose to run these groups on different schedules (such as group 1 polling every five

minutes, group 2 every thirty minutes) or with different timeout periods.

Notes - Any further description or documentation on this device/test.

Click the button at the bottom to submit the information.

Deleting A Test
To delete a test, click the 'edit' link from the test status grid. Now click on the 'Delete This Test' button. You will be asked to confirm the deletion. Test deletion is permanent and irreversible.

Editing Notes

Users with permission to edit notes, but not edit tests, are presented with a special notes only edit screen. This allows the user to modify just the notes field.

The notes column can be used for whatever purpose you wish. It could be a description of that device, the physical location, license keys, manufacturer or so forth. It could also be used for conveying information to other nandView users. For example, an admin could leave a note on a TCP:80 test stating "Installing IIS patches for the next hour". This way, if the test goes critical, other users can see why and not need to do further investigation.

Bulk Add

If you need to add many tests to nandView, doing so by hand is tedious. We have included a bulk add utility, allowing you to create dozens of tests in one step.

Use the form to enter multiple devices or tests. Type or paste in a comma delimitated list (csv), separating each entry with a return. Do not put spaces between the commas. You can use a spreadsheet program to assist in this.

Format: device,ip_address,type,test,email,run_group,notes

Example for three entries:
web server,192.168.1.12,ICMP,ping,Helpdesk,1,Production web server
web server,192.168.1.12,TCP,80,Helpdesk,1,Production web server
database,192.168.2.22,ICMP,ping,Helpdesk,1,Customer Database

You'll notice the first line in the text box shows the format (device,ip_address,type,test,email,run_group,notes). This line is optional, and will automatically be removed. When you click the 'Add entries' button, the system will show a table and ask to confirm the import. This table shows how the system has parsed your list. You will be informed of any invalid entries, such as specifying a non-existent email list. If everything looks right, click 'Confirm Entries'.

Configuring Email Lists

Every test can be associated with an email list. The list contains one or more email addresses to send the notifications, and any on call time restrictions. If you update the information in an email list, such as the recipients list or subject line tag, it automatically applies to all associated tests. Each list can be assigned an on call schedule. The schedule specifies when emails should be sent out. You can send email during standard business hours, such as 09:00 to 17:00, or choose to send during overnight hours like 17:00-09:00.

The emailer can be turned off through the preferences page. When email is disabled, messages are neither sent out nor queued up. They are permanently removed. This will prevent you from being flooded with old messages when reactivating the emailer. The dashboard will indicate if the emailer has been disabled.

List Name	Admin staff
Address List	user1@nand.net, user2@n
Tag	nv_alert
Send Clear	Yes
Time Restrict	Yes
On Call	08:00:00
Off Call	17:00:00
Weekend	No
Combine	Yes

Submit Changes | Delete This Email List

The add and edit email lists screen

Adding or Editing Email Lists
The main email editor page lists all available lists. The left most column is used to edit a list, while a link at the bottom of the page lets you create a new list.

List name - The displayed name of the email list.

Address List - A listing of email addresses. You can specify multiple email addresses, using a comma inbetween each.
Example: joe@example.com, bob@example.com, e-pager@example.com

Tag - This is a subject line tag. Whatever is entered here will show up at the start of the email subject line. This is useful for setting up email filter rules.

Send Clear - Specify if this list should send messages when a test passes/clears after being in the critical state.

Time Restrict - This must be set to 'Yes' when you wish to use on call time restrictions.

On Call - The start time of the on call shift. This is the time you want to start receiving email. Enter the time in 24 hour notation HH:MM:SS

Off Call - The end time of the on call shift. This is the time you want to stop receiving email. Enter the time in 24 hour notation HH:MM:SS

Weekend - If set to 'No' you will not receive email on the weekend (00:00:00 Saturday to 23:59:59 Sunday).

Combine - This determines if you receive just one email message for the critical tests and one email for the clear tests, or separate emails for each test. Setting this to 'Yes' will cut down on the number of messages you receive.

Deleting An Email List

To delete an email list, click the 'edit' link from the main email editor page. Now click on the 'Delete This Email Test' button. You will be asked to confirm the deletion. You will also be given the option to automatically update all tests assigned to that email list. Email list deletion is permanent and irreversible.

Sample email message, device down

From: nandview@nand.net
Subject: [nv_alert] Critical Alert for "tachyon TCP 80" from nandview

To: user1@nand.net

Critical Alert for "tachyon TCP 80" at 2009-07-07 23:59:32

Sample clear email message, device up (combined messages)

From: nandview@ nand.net
Subject: [nv_alert] 3 Clear Messages from nandview

To: user1@nand.net

3 Clear Messages from nandview

Clear Message for "tachyon ICMP ping" at 2009-07-07 22:14:56
Clear Message for "tachyon TCP 80" at 2009-07-07 22:15:27
Clear Message for "tachyon Protocol http" at 2009-07-07 22:16:29

Configuring User Accounts

User accounts are designed to limit who can access the management system, and what they can do. You can choose to have a generic login, or create an account for every individual user. We recommend creating individual accounts. Changes to account status, such as setting to disabled or changing the role based access controls, take affect immediately. Users currently logged in will be affected by the change.

Username	mike
Password	••••••••
Account Disabled	No
Role Based Access Controls	
Add/Edit Tests	Yes
Edit Notes	Yes
Edit Email Lists	Yes
Edit Preferences	Yes
Edit User Accounts	Yes
View Reports	Yes

Submit Changes | Delete This User

The add and edit user accounts screen

Adding or Editing Users
The main user editor page lists all user accounts. The left most column is used to edit a user, while a link at the bottom of the page lets you create a new user.

Username - The login id for the user. This name will also show up in select reports.

Password - Specify a password for the user. An administrator can change or reset a user's password here as well.

Account Disabled - This will enable or disable accounts. Disabled accounts are not permitted to login and will not be able to access any parts of nandView. Disabling an account is not the same as deleting it, as you can re-enable the account at any time.

Add/Edit Tests - Allow the user to add devices, add tests, edit tests or bulk add.

Edit Notes - Lets the user edit just the notes column for a device. Please note that the 'Add/Edit Tests' permission take precedence over this setting.

Edit Email Lists - Change email lists. A user with the edit email permission, but not the edit tests permission, is not able to reassign a device's email list except when deleting a list outright.

Edit Preferences - Access and change the system preferences, change settings and thresholds, disable polling, disable emailing, disable logging.

Edit User Accounts - Add, edit or delete user accounts. At least one user must have this permission. Note: you are able to remove this permission from your own account.

View Reports - Generate reports. The reports page also offers the ability to purge authentication, email and polling log files. A user must have the view reports and edit preferences permissions to purge the log files.

Deleting A User
To delete a user, click the 'edit' link from the main user editor page. Now click on the 'Delete This User' button. You will be asked to confirm the deletion. User deletion is permanent and irreversible.

Setting Preferences

Administrators can use the preferences page to control nandView
processes and change default values.

Stop Polling	No
Stop Email	No
Stop Logging	No
Dashboard Auto Refresh (0 to disable)	300 seconds
Poll Delay	0 seconds
Email Delay	0 seconds
Run Group 1 Timeout	5 seconds
Run Group 2 Timeout	5 seconds
Run Group 3 Timeout	5 seconds
Run Group 4 Timeout	5 seconds

Submit Changes

The preferences screen

Stop Polling - This setting allows you to stop the poller process.
When disabled, no tests will be polled or updated. The dashboard
will indicate if the poller has been disabled. Note to system
administrators: The poller process is normally called on a schedule
(through cron). It is preferred to temporarily disable the poller
through this preference, as opposed to removing the cron entry.

Stop Email - This setting allows you to stop all email notifications. When email is disabled, messages are neither sent out nor queued up. They are permanently removed. This will prevent you from being flooded with old messages when reactivating the emailer. The dashboard will indicate if email has been disabled. Note to system administrators: The emailer process is normally called on a schedule (through cron). It is preferred to temporarily disable email through this preference, as opposed to removing the cron entry.

Stop Logging - This setting will stop recording data in the authentication, email and polling logs. Reports are generated with data stored in the log files, so turning off logging will affect their output.

Dashboard Auto Refresh - The number of seconds between automatic dashboard refreshes. If you set this to zero, the dashboard will not auto refresh.
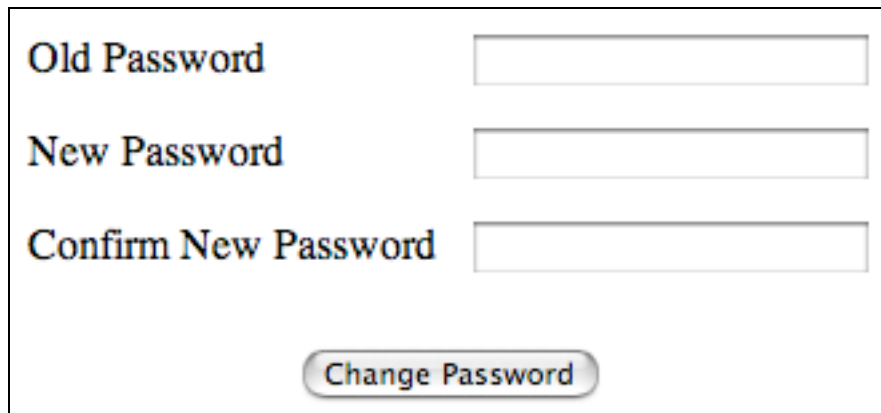
Poll Delay - The number of seconds for the poller to wait between tests. This can be used to make the poller less aggressive, but it will make the runs take longer.

Email Delay - The number of seconds for the emailer to wait between sending messages. This can be used to make the emailer less aggressive, but it will take longer.

Run Group Timeout - Most tests use a timeout period. For example, if you set the timeout to 5 seconds, a TCP connection test will result in failure if it doesn't receive a reply in 5 seconds. A ping test would fail if it doesn't get at least one reply within the 5 seconds. Each run group can have its own timeout value. You may find that your wide area connections take longer to respond than local area connections, resulting in excessive failures on WAN tests. In this scenario, you could put LAN tests in group 1, WAN tests in group 2, and increase the group 2 timeout period. Increasing the timeout may result in the poller runs taking longer.

Change Password

All users have the option to change their login password. A link to the change password form is available on the dashboard. Users must enter their old and new password. Blank passwords may not be entered. Passwords are stored in the database in encrypted format, and cannot be recovered if forgotten. Administrators with the edit user permission can reset a user's password on the user configuration screen.

The change password screen

Reports

nandView can generate reports and statistics based off information logged in the database. Each report is listed with a brief description of what it does. Many reports offer configuration options, such as setting a date/time parameter. Time entries need to be formatted as 'YYYY-MM-DD HH:MM:SS' (in 24 hour format) to return correct values. The default start/end times are one month prior to the current time.

Administrators with the edit preferences permission can purge the log files from the reports page. nandView maintains three logs. An authentication log keeps track of logins, logouts, changes to user accounts, access control violations, login failures and enabling/disabling logging. The email log records when notifications are sent out and when notifications are skipped (such as due to on call time restrictions). The poll log stores the results of the polling process for each test. You can choose to purge any of these logs.

Purging logs will permanently delete all data stored in the log. This operation is instantaneous and irreversible, although you will be asked to confirm the purge before data is removed. Reports are generated with data stored in the log files, so purging will affect their output. For your convenience, nandView will display the estimated disk usage of the log files.

About Page & Additional Help

The about page will list the installed version of nandView, contact information and the license agreement.

nandView website:
http://nandview.com

For basic nandView technical support and questions, email:
tech_support@nandview.com

Inquiries and suggestions, email:
inquery@nandview.com

Professional services, additional support and custom programming are available for hire.

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nandView Network & Systems Monitoring Suite