NAME

vnstat – a console-based network traffic monitor

SYNOPSIS

vnstat [**−5bDedhlmqstvy?**] [**−−95th**] [**−−add**] [**−−alert** *output exit type condition limit unit*] [**−−begin** *date*] [**−−config** *file*] [**−−days** [*limit*]] [**−−db** *file*] [**−−dbdir** *directory*] [**−−dbiflist** [*mode*]] [**−−debug**] [**−−end** *date*] [**−−fiveminutes** [*limit*]] [**−−help**] [**−hg**] [**−−hours** [*limit*]] [**−−hoursgraph**] [**−i** *interface*] [**−−iface** *interface*] [**−−iflist** [*mode*]] [**−−json** [*mode*] [*limit*]] [**−−limit** *limit*] [**−−live** [*mode*]] [**−−locale** *locale*] [**−−longhelp**] [**−−merge** *source destination*] [**−−months** [*limit*]] [**−−oneline** [*mode*]] [**−−query** [*mode*]] [**−−rateunit** [*mode*]] [**−−remove**] [**−−rename** *name*] [**−ru** [*mode*]] [**−−setalias** *alias*] [**−−short**] [**−−showconfig**] [**−−style** *number*] [**−−top** [*limit*]] [**−tr** [*time*]] [**−−traffic** [*time*]] [**−−version**] [**−−xml** [*mode*] [*limit*]] [**−−years** [*limit*]] [*interface*]

DESCRIPTION

vnStat is a console-based network traffic monitor. It keeps a log of 5 minute interval, hourly, daily, monthly and yearly network traffic for the selected interface(s). However, it isn't a packet sniffer. The traffic information is read from the **proc**(5) or **sys** filesystems depending on availability resulting in light use of system resources regardless of network traffic rate. That way vnStat can be used even without root permissions on most systems.

Functionality is divided into two commands. The purpose of the **vnstat** command is to provide an interface for querying the traffic information stored in the database whereas the daemon **vnstatd**(8) is responsible for data retrieval, caching and storage. Although the daemon process is constantly running as a service, it is actually spending most of its time sleeping between data updates.

OPTIONS

--95th Show 95th percentile output for the ongoing month. This output uses the 5 minute resolution data of the ongoing month to calculate the 95th percentile traffic rate for received, transmitted and total. In addition, the minimum, average and maximum traffic rates for received, transmitted and total are also shown. This output requires the **5MinuteHours** configuration option to have a value of at least 744 for storing all the necessary data, otherwise 100% coverage isn't possible.

--add Create database entry for interface specified with **−i** or **−−iface** option. The daemon can be running during this operation and will automatically start monitoring the interface without a restart within **SaveInterval** minutes if configuration option **RescanDatabaseOnSave** is enabled. Otherwise the daemon needs to be restarted in order for the added interface to be monitored.

--alert *output exit type condition limit unit*

Depending on values of given parameters, show alert, use different exit status or a combination of both when configured situation is met.

output parameter takes a number from 0 to 3 and controls when, if at all, the command will result in output. '0' never produces output, '1' always produces output, '2' shows output only when usage estimate exceeds *limit* and '3' shows output only when *limit* is exceeded.

exit parameter takes a number from 0 to 5 and controls the exit status of the command. '0' always uses exit status 0, '1' always uses exit status 1, '2' uses exit status 1 if usage estimate exceeds *limit* but otherwise exit status 0 and '3' uses exit status 1 if *limit* is exceeded but otherwise exit status 0. '4' and '5' are equivalents of '2' and '3' with the difference that exit status 2 is used instead of exit status 1 when the condition is met. This can help differentiate alerts from errors as errors will always use exit status 1.

type parameter defines to which time range type usage the *limit* is compared against. Available options: 'h', 'hour', 'hourly', 'd', 'day', 'daily', 'm', 'month', 'monthly', 'y', 'year', 'yearly', 'p', '95', '95%'.

condition parameter defines if *limit* is compared to received (rx), transmitted (tx), total or estimated usage of these three. Available options: 'rx', 'tx', 'total', 'rx_estimate', 'tx_estimate', 'total_estimate'. Estimate options aren't available for 95th percentile *type*.

limit is a greater than zero integer without decimals which defines the traffic usage limit using the unit defined with the *unit* parameter. *unit* accepts the following options: 'B', 'KiB', 'MiB', 'GiB', 'TiB', 'PiB', 'EiB', 'KB', 'MB', 'GB', 'TB', 'PB', 'EB'. For 95th percentile *type* the following options are available: 'B/s', 'KiB/s', 'MiB/s', 'GiB/s', 'TiB/s', 'PiB/s', 'EiB/s', 'kB/s', 'MB/s', 'GB/s', 'TB/s', 'PB/s', 'EB/s', 'bit/s', 'Kibit/s', 'Mibit/s', 'Gibit/s', 'Tibit/s', 'Pibit/s', 'Eibit/s', 'kbit/s', 'Mbit/s', 'Gbit/s', 'Tbit/s', 'Pbit/s', 'Ebit/s'. Usage must exceed *limit* in order for the alarm to activate. Exactly the same usage as *limit* does not raise the alarm.

Estimate calculation isn't limited to the estimate options in *condition* parameter but can also be achieved by using the estimate option in *output* or *exit* parameters. Missing or invalid parameters or parameter combination will result in **--alert** specific help output being shown.

-b, --begin *date*

Begin the list output with a specific date / time defined by *date* instead of the begin being selected based on the number of entries to be shown. If *date* isn't available in the database then the closest later date will be used. *date* supports the following formats: YYYY-MM-DD HH:MM, YYYY-MM-DD and "today". This option can only be used with **--json** , **--xml** and list outputs.

--config *file*

Use *file* as configuration file instead of using automatic configuration file search functionality. If **--config** is used multiple times, the configuration settings from files later on the command line will override configuration settings loaded from earlier files if the settings defined in the files overlap.

-d, --days *[limit]*

Show traffic statistics on a daily basis for the last days. The length of the list will be limited to 30 entries unless configured otherwise or unless the optional *limit* parameter is used. All entries stored in the database will be shown if *limit* is set to 0.

--db *file*

Use *file* as database file instead of searching for a database from the directory specified in the configuration file or the hardcoded default if no configuration file is available. This option overrides **--dbdir**.

--dbdir *directory*

Use *directory* as database directory instead of using the directory specified in the configuration file or the hardcoded default if no configuration file is available. This option is ignored if **--db** is also defined.

--dbiflist *[mode]*

List interfaces currently in the database. If *mode* is not defined or is set to 0 then the output will use a one line verbose format. If *mode* is set to 1 then the output will contain one interface per line and if *mode* is set to 2 then only the interface count will be shown as a single number. See also **--iflist**.

-D, --debug
Show additional debug output.

-e, --end *date*
End the list output with a specific date / time defined by *date* instead of the latest date / time in the database. If *date* isn't available in the database then the closest earlier date will be used. *date* supports the following formats: YYYY-MM-DD HH:MM and YYYY-MM-DD. This option can only be used with **--json** , **--xml** and list outputs. In list outputs the estimate line is replaced with a sum line with values representing the sums of each column. The sum line is shown only if the output consists of more than one data line. This is applicable even if the defined *date* is the same as the current date. The top list also requires **--begin** to be used at the same time with this option.

-5, --fiveminutes *[limit]*
Show traffic statistics with a 5 minute resolution for the last hours. The length of the list will be limited to 24 entries unless configured otherwise or unless the optional *limit* parameter is used. All entries stored in the database will be shown if *limit* is set to 0.

-h, --hours *[limit]*
Show traffic statistics on a hourly basis. The length of the list will be limited to 24 entries unless configured otherwise or unless the optional *limit* parameter is used. All entries store in the database will be shown if the *limit* is set to 0.

-hg, --hoursgraph
Show traffic statistics on a hourly basis for the last 24 hours using a bar graph followed by a table representing the numerical data.

-i, --iface *interface*
Select one specific *interface* and apply actions to only it. For database queries, it is possible to merge the information of two or more interfaces using the *interface1+interface2+...* syntax. All provided interfaces must be unique and must exist in the database when the merge syntax is used. Optionally, depending on the **InterfaceMatchMethod** configuration setting, *interface* can be replaced with *alias* previously set using **--setalias**. Merge syntax isn't supported when *alias* is used. The **-i, --iface** option is optional and *interface* can be used as parameter on the command line for selecting the used interface even without the option being explicitly used.

--iflist *[mode]*
List currently available interfaces. If *mode* is not defined or is set to 0 then the output will use a one line verbose format. If *mode* is set to 1 then the output will contain one interface per line and if *mode* is set to 2 then only the interface count will be shown as a single number. See also **--dbiflist**.

--json *[mode] [limit]*
Show database content for selected interface or all interfaces in json format. All traffic values in the output are in bytes unless otherwise indicated by the name of the key. An optional *mode* parameter can be used for limiting the output to only selected information. Everything except the 95th percentile output is shown by default. Setting *mode* to 's' will output a summary containing the last 2 entries of 5 minute, hourly, daily, monthly and yearly resolution data, 'f' will output only 5 minute resolution entries, 'h' hours, 'd' days, 'm' months, 'y' years, 't' the top days and 'p' the 95th percentile. Alternatively or in combination with *mode* an optional *limit* parameter can be used to limit the number of entries in the output. The **--json** option can be used in combination with **-l, --live** and **-tr** options without *mode* or *limit* having any effect to the output. The **jsonversion** field in the output contains the API version information. It will be changed only when the

names or structures of previously existing content gets changed. In comparison, the **vnstatversion** field exists only as extra information.

--limit *limit*

Set the maximum number of shown entries in list outputs to *limit*. Usage of **--limit** overrides the default list entry limit values and the optional *limit* parameter given directly for a list query. All entries stored in the database will be shown if *limit* is set to 0. **--limit** can also be used to control the length of **--json** and **--xml** outputs.

-l, --live *[mode]*

Display current transfer rate for the selected interface in real time until interrupted. Statistics will be shown after interruption if the runtime was more than 10 seconds. An optional *mode* parameter can be used to select between the displaying of packets per second (mode 0) and transfer counters (mode 1) during execution. **--style** can also be used to affect the layout of the output. The output will be in json format if used in combination with **--json** option.

--locale *locale*

Use *locale* instead of using the locale setting specified in the configuration file or the system default if no configuration file is available.

--longhelp

Show complete options list.

--merge *source destination*

Merge interface data from *source* database to *destination* database. Unless interfaces are specified, all interfaces from *source* will be merged to *destination*. A new database will be created if *destination* doesn't exist. If an interface of the same name doesn't exist in *destination* then a direct copy action for the data from *source* will be executed. If an interface of the same name already exists in *destination* then an additive merge action will be executed. The *source* database is always accessed as read-only and will never be modified by the merge actions. Changes to the *destination* database cannot be reversed as subtraction actions aren't supported. Execution of the merge needs to be acknowledged with an additional parameter. If this additional parameter isn't provided then a preview of the actions with additional guidance will be shown.

Both *source* and *destination* can either refer directly to database files or use an alternative *file:interface* syntax where the database file is suffixed with *:* followed with an interface name. When used as *source*, the alternative syntax allows specifying one interface to be merged from *source* to *destination* instead of all interfaces being merged. Additionally, it's possible to use the alternative syntax in *destination* for specifying to which interface the data will be merged to.

-m, --months *[limit]*

Show traffic statistics on a monthly basis for the last months. The length of the list will be limited to 12 entries unless configured otherwise or unless the optional *limit* parameter is used. All entries stored in the database will be shown if *limit* is set to 0.

--oneline *[mode]*

Show traffic summary for selected interface using one line with a parsable format. The output contains 15 fields with ; used as field delimiter. The 1st field contains the API version information of the output that will only be changed in future versions if the field content or structure changes. The following fields in order 2) interface name, 3) timestamp for today, 4) rx for today, 5) tx for today, 6) total for today, 7) average traffic rate for today, 8) timestamp for current month, 9) rx for current month, 10) tx for current month, 11) total for current month, 12) average traffic rate for current month, 13) all time total rx, 14) all time total tx, 15) all time total traffic. An optional *mode* parameter can be used to force all fields to output in bytes without the unit itself shown.

-q, --query *[mode]*
Force database query mode. An optional *mode* parameter can be used to override the default query mode. 'a' results in short summary output being used when there are more than one interface in the database, otherwise regular summary output is used. 's' results in regular summary output being shown for one interface regardless of the number of interfaces in the database. When the optional *mode* parameter isn't defined, the configured *QueryMode* will be used instead.

--remove
Delete the database entry for the interface specified with **–i** or **––iface** and stop monitoring it. The daemon can be running during this operation and will automatically detect the change.

--rename *name*
Rename the interface specified with **–i** or **––iface** in the database with new name **name**. The new name cannot already exist in the database. This operation doesn't cause any data loss. The daemon should not be running during this operation.

-ru, --rateunit *[mode]*
Swap the configured rate unit. If rate has been configured to be shown in bytes then rate will be shown in bits if this option is present. In the same way, if rate has been configured to be shown in bits then rate will be shown in bytes when this option is present. Alternatively, *mode* with either 0 or 1 can be used as parameter for this option in order to select between bytes (0) and bits (1) regardless of the configuration file setting.

--setalias *alias*
Set *alias* as an alias for the selected interface to be shown in queries. The set alias can be removed by specifying an empty string for *alias*. The daemon can be running during this operation.

-s, --short
Use short output mode. This mode is also used when more than one interface is available in the database and no specific interface is selected.

--showconfig
Show current configuration using the same format as the configuration file itself uses.

--style *number*
Modify the content and style of outputs. Set *number* to 0 for a narrower output, 1 for enabling bar column, 2 for same as previous but with average traffic rate visible in summary output and 3 for enabling average traffic rate in all outputs where it is supported. 4 disables the use of terminal control characters in **-l, --live** and **-tr, --traffic** modes.

-t, --top *[limit]*
Show all time top traffic days. The length of the list will be limited to 10 entries unless configured otherwise or unless the optional *limit* parameter is used. All entries stored in the database will be shown if *limit* is set to 0. When used with **--begin** and optionally with **--end**, the list will be generated using the daily data instead of separate top entries. The availability of daily data defines the boundaries the date specific query can access.

-tr, --traffic *[time]*

Calculate how much traffic goes through the selected interface during the given *time* seconds. The *time* will be 5 seconds if a number parameter isn't specified. The output will be in json format if used in combination with **--json** option. However, in that case, the countdown before results isn't shown. **--style** can also be used to affect the layout of the output.

-v, --version

Show current version.

--xml *[mode] [limit]*

Show database content for selected interface or all interfaces in xml format. All traffic values in the output are in bytes unless otherwise indicated by the name of the key. An optional *mode* parameter can be used for limiting the output to only selected information. Everything except the 95th percentile output is shown by default. Setting *mode* to 's' will output a summary containing the last 2 entries of 5 minute, hourly, daily, monthly and yearly resolution data, 'f' will output only 5 minute resolution entries, 'h' hours, 'd' days, 'm' months, 'y' years, 't' the top days and 'p' the 95th percentile. Alternatively or in combination with *mode* an optional *limit* parameter can be used to limit the number of entries in the output. The **xmlversion** field in the output contains the API version information. It will be changed only when the names or structures of previously existing content gets changed. In comparison, the **vnstatversion** field exists only as extra information.

-y, --years *[limit]*

Show traffic statistics on a yearly basis for the last years. The list will show all entries by default unless configured otherwise or unless the optional *limit* parameter is used. All entries stored in the database will also be shown if *limit* is set to 0.

-?, --help

Show a command option summary.

FILES

/var/lib/vnstat/

Default database directory.

/etc/vnstat.conf

Config file that will be used unless *$HOME/.vnstatrc* exists. See **vnstat.conf**(5) for more information.

EXAMPLES

vnstat Display traffic summary for the default interface or multiple interfaces when more than one is monitored.

vnstat -i eth0+eth1+eth3

Display traffic summary for a merge of interfaces eth0, eth1 and eth3.

vnstat -i eth2 --xml

Output all information about interface eth2 in xml format.

vnstat --json

Output all information of all monitored interfaces in json format.

vnstat -i eth0 --setalias local

Give interface eth0 the alias "local". That information will be later visible as a label when eth0 is queried.

vnstat -i eth2 --remove

Delete database entries for interface eth2 and stop monitoring it.

RESTRICTIONS

Updates need to be executed at least as often as it is possible for the interface to generate enough traffic to overflow the kernel interface traffic counter. Otherwise, it is possible that some traffic won't be seen. With 32-bit interface traffic counters, the maximum time between two updates depends on how fast the interface can transfer 4 GiB. Note that there is no guarantee that a 64-bit kernel has 64-bit interface traffic counters for all interfaces. Calculated theoretical times are:

```
10 Mbit:     54 minutes
100 Mbit:     5 minutes
1000 Mbit:   30 seconds
```

Virtual and aliased interfaces cannot be monitored because the kernel doesn't provide traffic information for that type of interfaces. Such interfaces are usually named eth0:0, eth0:1, eth0:2 etc. where eth0 is the actual interface being aliased.

Using long date output formats may cause misalignment in shown columns if the length of the date exceeds the fixed size allocation.

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SEE ALSO

vnstatd(8), **vnstati**(1), **vnstat.conf**(5), **proc**(5), **ifconfig**(8), **units**(7)