Replication Overview

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Each netdata is able to replicate/mirror its database to another netdata, by streaming collected metrics, in real-time to it. This is quite different to data archiving to third party time-series databases.

When a netdata streams metrics to another netdata, the receiving one is able to perform everything a netdata performs:

- visualize them with a dashboard
- run health checks that trigger alarms and send alarm notifications
- archive metrics to a backend time-series database

The following configurations are supported:

netdata without a database or web API (headless collector)

Local netdata (`slave`), **without any database or alarms**, collects metrics and sends them to another netdata (`master`).

The user can take the full functionality of the `slave` netdata at http://master.ip:19999/host/slave.hostname/. Alarms for the `slave` are served by the `master`.

In this mode the `slave` is just a plain data collector. It runs with... **5MB** of RAM (yes, you read correct), spawns all external plugins, but instead of maintaining a local database and accepting dashboard requests, it streams all metrics to the `master`.

The same `master` can collect data for any number of `slaves`.

database replication

Local netdata (`slave`), **with a local database (and possibly alarms)**, collects metrics and sends them to another netdata (`master`).

The user can use all the functions **at both** http://slave.ip:19999/ and http://master.ip:19999/host/slave.hostname/.

The `slave` and the `master` may have different data retention policies for the same metrics.

Alarms for the `slave` are triggered by **both** the `slave` and the `master` (and actually each can have different alarms configurations or have alarms disabled).

netdata proxies

Local netdata (`slave`), with or without a database, collects metrics and sends them to another netdata (`proxy`), which may or may not maintain a database, which forwards them to another netdata (`master`).

Alarms for the slave can be triggered by any of the involved hosts that maintains a database.

Any number of daisy chaining netdata servers are supported, each with or without a database and with or without alarms for the `slave` metrics.

mix and match with backends

All nodes that maintain a database can also send their data to a backend database. This allows quite complex setups. Example:

1. netdata `A`, `B` do not maintain a database and stream metrics to netdata `C` (live streaming functionality, i.e. this PR)
2. netdata `C` maintains a database for `A`, `B`, `C` and archives all metrics to `graphite` with 10 second detail (backends functionality)
3. netdata `C` also streams data for `A`, `B`, `C` to netdata `D`, which also collects data from `E`, `F` and `G` from another DMZ (live streaming functionality, i.e. this PR)
4. netdata `D` is just a proxy, without a database, that streams all data to a remote site at netdata `H`
5. netdata `H` maintains a database for `A`, `B`, `C`, `D`, `E`, `F`, `G`, `H` and sends all data to `opentsdb` with 5 seconds detail (backends functionality)
6. alarms are triggered by `H` for all hosts
7. users can use all the netdata that maintain a database to view metrics (i.e. at `H` all hosts can be viewed).

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netdata.conf configuration

These are options that affect the operation of netdata in this area:

```
[global]
    memory mode = none | ram | save | map
```

`[global].memory mode = none` disables the database at this host. This also disables health monitoring (there cannot be health monitoring without a database).

```
[web]
    mode = none | single-threaded | multi-threaded
```

`[web].mode = none` disables the API (netdata will not listen to any ports). This also disables the registry (there cannot be a registry without an API).

```
[backend]
    enabled = yes | no
    type = graphite | opentsdb
    destination = IP:PORT ...
    update every = 10
```

`[backend]` configures data archiving to a backend (it archives all databases maintained on this host).

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streaming configuration

A new file is introduced: `/etc/netdata/stream.conf`. This file holds streaming configuration for both the sending and the receiving netdata.

API keys are used to authorize the communication of a pair of sending-receiving netdata. Once the communication is authorized, the sending netdata can push metrics for any number of hosts.

You can generate an API key with the command `uuidgen`. API keys are just random GUIDs. You can use the same API key on all your netdata, or use a different API key for any pair of sending-receiving netdata.

options for the sending node

This is the section for the sending netdata. On the receiving node, `[stream].enabled` can be `no`. If it is `yes`, the receiving node will also stream the metrics to another node (i.e. it will be a `proxy`).

```
[stream]
    enabled = yes | no
    destination = IP:PORT ...
    api key = XXXXXXXXXX
```

This is an overview of how these options can be combined:

target	memory mode	web mode	stream enabled	backend	alarms	dashboard
headless collector	`none`	`none`	`yes`	only for `data source = as collected`	not possible	no
headless proxy	`none`	not `none`	`yes`	only for `data source = as collected`	not possible	no
proxy with db	not `none`	not `none`	`yes`	possible	possible	yes
central netdata	not `none`	not `none`	`no`	possible	possible	yes

options for the receiving node

`stream.conf` looks like this:

```
# replace API_KEY with your uuidgen generated GUID
[API_KEY]
    enabled = yes
    default history = 3600
    default memory mode = save
    health enabled by default = auto
    allow from = *
```

You can add many such sections, one for each API key. The above are used as default values for all hosts pushed with this API key.

You can also add sections like this:

```
# replace MACHINE_GUID with the slave /var/lib/netdata/registry/netdata.public.unique.id
[MACHINE_GUID]
    enabled = yes
    history = 3600
    memory mode = save
    health enabled = yes
    allow from = *
```

The above is the receiver configuration of a single host, at the receiver end. `MACHINE_GUID` is the unique id the netdata generating the metrics (i.e. the netdata that originally collects them `/var/lib/netdata/registry/netdata.unique.id`). So, metrics for netdata `A` that pass through any number of other netdata, will have the same `MACHINE_GUID`.

allow from

`allow from` settings are netdata simple patterns: string matches that use `*` as wildcard (any number of times) and a `!` prefix for a negative match. So: `allow from = !10.1.2.3 10.*` will allow all IPs in `10.*` except `10.1.2.3`. The order is important: left to right, the first positive or negative match is used.

`allow from` is available in netdata v1.9+

tracing

When a `slave` is trying to push metrics to a `master` or `proxy`, it logs entries like these:

```
2017-02-25 01:57:44: netdata: ERROR: Failed to connect to '10.11.12.1', port '19999'
(errno 111, Connection refused)
2017-02-25 01:57:44: netdata: ERROR: STREAM costa-pc [send to 10.11.12.1:19999]: failed
to connect

2017-02-25 01:58:04: netdata: INFO : STREAM costa-pc [send to 10.11.12.1:19999]:
initializing communication...
2017-02-25 01:58:04: netdata: INFO : STREAM costa-pc [send to 10.11.12.1:19999]: waiting
response from remote netdata...
2017-02-25 01:58:14: netdata: INFO : STREAM costa-pc [send to 10.11.12.1:19999]:
established communication - sending metrics...
2017-02-25 01:58:14: netdata: ERROR: STREAM costa-pc [send]: discarding 1900 bytes of
metrics already in the buffer.
2017-02-25 01:58:14: netdata: INFO : STREAM costa-pc [send]: ready - sending metrics...
```

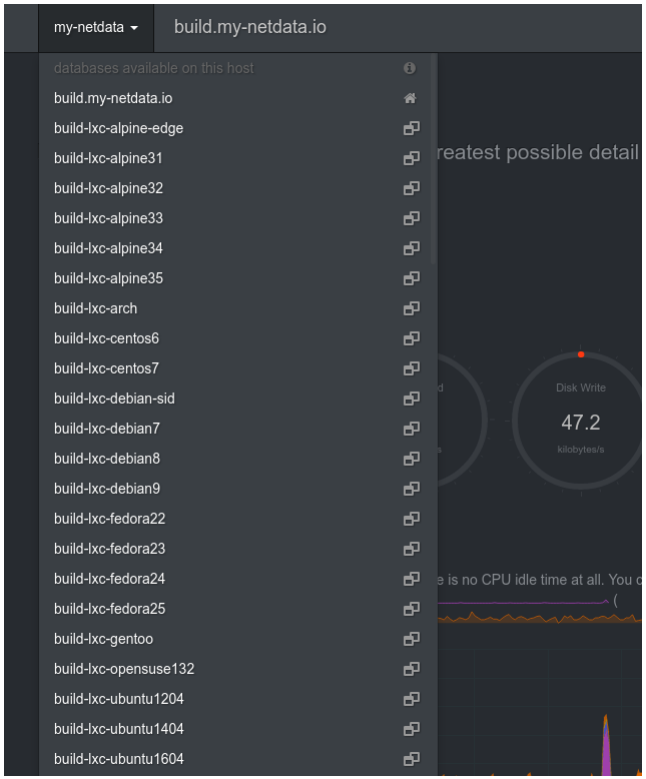
The receiving end (`proxy` or `master`) logs entries like these:

```
2017-02-25 01:58:04: netdata: INFO : STREAM [receive from [10.11.12.11]:33554]: new
client connection.
2017-02-25 01:58:04: netdata: INFO : STREAM costa-pc [10.11.12.11]:33554: receive thread
created (task id 7698)
2017-02-25 01:58:14: netdata: INFO : Host 'costa-pc' with guid '12345678-b5a6-11e6-8a50-
00508db7e9c9' initialized, os: linux, update every: 1, memory mode: ram, history entries:
3600, streaming: disabled, health: enabled, cache_dir: '/var/cache/netdata/12345678-b5a6-
11e6-8a50-00508db7e9c9', varlib_dir: '/var/lib/netdata/12345678-b5a6-11e6-8a50-
00508db7e9c9', health_log: '/var/lib/netdata/12345678-b5a6-11e6-8a50-
00508db7e9c9/health/health-log.db', alarms default handler:
'/usr/libexec/netdata/plugins.d/alarm-notify.sh', alarms default recipient: 'root'
2017-02-25 01:58:14: netdata: INFO : STREAM costa-pc [receive from [10.11.12.11]:33554]:
initializing communication...
2017-02-25 01:58:14: netdata: INFO : STREAM costa-pc [receive from [10.11.12.11]:33554]:
receiving metrics...
```

For netdata v1.9+, streaming can also be monitored via `access.log`.

Viewing remote host dashboards, using mirrored databases

On any receiving netdata, that maintains remote databases and has its web server enabled, `my-netdata` menu will include a list of the mirrored databases.



Selecting any of these, the server will offer a dashboard using the mirrored metrics.

Learn how to create dashboards with charts from one or more netdata servers!

Running behind another web server

- Running behind nginx
- Running behind apache
- Running behind lighttpd
- Running behind caddy

Donations

- Donations netdata has received

Blog

- December, 2016

  Linux console tools, fail to report per process CPU usage properly

- April, 2016

  netdata v1.1.0 released

  You should install QoS on all your servers (Linux QoS for humans)

  Monitor application bandwidth with Linux QoS (Good to do it, anyway)

  Monitoring SYNPROXY (Linux TCP Anti-DDoS)

- March, 2016

  Article: Introducing netdata (the design principles of netdata)

Other monitoring tools

Clone this wiki locally

`https://github.com/firehol/`

Clone in Desktop

netdata

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