Network Monitoring, Management and Automation

Using Cacti

npNOG 5

Dec 8 - 12, 2019

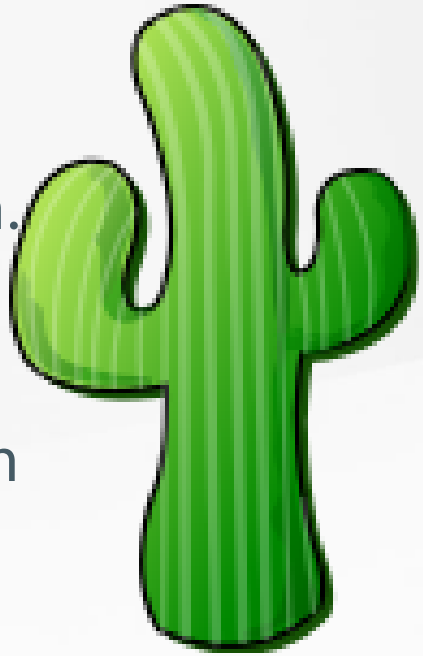
Introduction

- Network Monitoring Tools
  - Availability
  - Reliability
  - ***Performance***

Cacti monitors the `performance` and usage of devices.

Introduction: Cacti

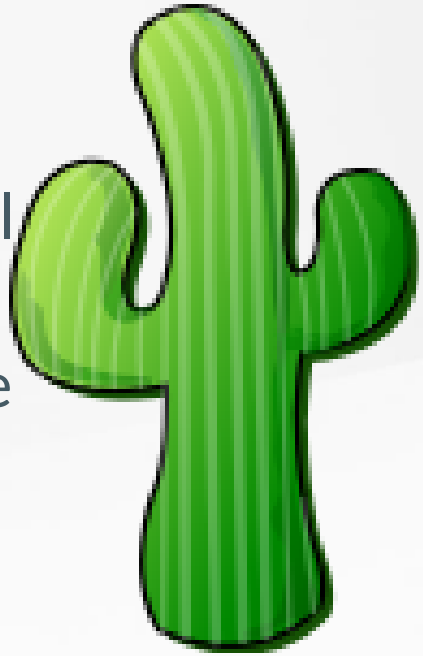
Cacti:



- is a complete network graphing solution.
- it harness the power of RRDTool's data storage and graphing functionality.
- it stores all of the necessary information to create graphs in a MySQL database
- it maintain Graphs, Data Sources, and Round Robin Archives in a database
- it handles the data gathering.
- it supports the use of SNMP.

Introduction: Cacti (contd.)

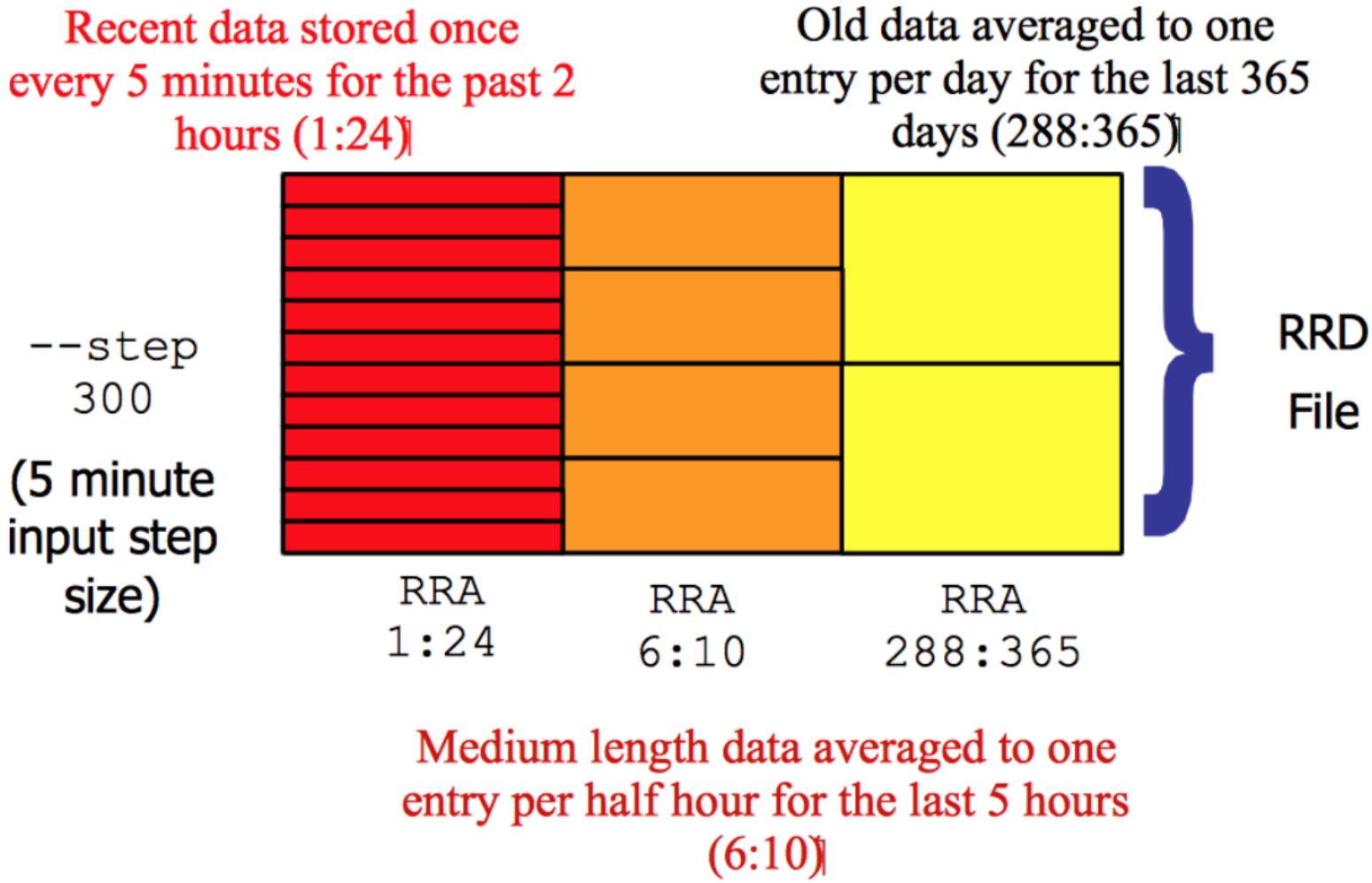
- a tool to monitor, store and present network and system/server statistics
- Designed around RRDTool with a special emphasis on the graphical interface
- Almost all of Cacti's functionality can be configured via the Web.
- You can find Cacti here: https://www.cacti.net/



About RRDtool

- Round Robin Database for time series data storage
- Command line based
- From the author of MRTG
- Made to be faster and more flexible
- Includes CGI and Graphing tools, plus APIs
- Solves the Historical Trends and Simple Interface problems as well as storage issues
- Find RRDtool here: https://oss.oetiker.ch/rrdtool/

RRDtool Database Format



General Description

1. Cacti is written as a group of PHP scripts.
2. The key script is “poller.php”, which runs every 5 minutes (by default). It resides in /usr/share/cacti/site.
3. To work poller.php needs to be in /etc/cron.d/cacti like this:

```
MAILTO=root
*/5 * * * * www-data php /usr/share/cacti/site/poller.php \
>/dev/null 2>/var/log/cacti/poller-error.log
```

4. Cacti uses RRDtool to create graphs for each device and data that is collected about that device. You can adjust all of this from within the Cacti web interface.
5. The RRD files are located in /var/lib/cacti/rra when cacti is installed from packages.

Advantages

- **You can measure Availability, Load, Errors and more all with history**.
  - Cacti can display your router and switch interfaces and their traffic, including all error traffic as well.
  - Cacti can measure drive capacity, CPU load (network h/w and servers) and much more. It can react to conditions and send notifications based on specified ranges.
- **Graphics**
  - Allows you to use all the functionality of rrdgraph to define graphics and automate how they are displayed.
  - Allows you to organize information in hierarchical tree structures.
- **Data Sources**
  - Permits you to utilize all the functions of rrdcreate and rrdupdate including defining several sources of information for each RRD file.

Advantages (contd.)

- **Data Collection**
  - Supports SNMP including the use of php-snmp or net-snmp
  - Update data sources via SNMP or define scripts to capture required data
  - cactid implements SNMP routines in C with multi-threading
- **Templates**
  - Create templates to reutilize graphics definitions, data and device sources
- **Cacti Plugin Architecture**
  - Extends Cacti functionality. Many, many plugins are available. Part of the default Cacti installation in Ubuntu version 12 and above.
- **User Management**
  - Manage users locally or via LDAP
  - Assign granular levels of authorization by user or groups of users.

Disadvantages

- Configuring Interfaces via the web interface is tedious
- Use provided command-line scripts instead
- Upgrading versions difficult if installed from source.

Advice:

For continuous use or large installations it is likely that you will be using scripts and tools to automate the configuration of Cacti.

References

- Cacti Web Site:
  https://www.cacti.net/
- Plugin Documentation:
  https://docs.cacti.net/plugins
- Cacti Discussion Group:
  https://forums.cacti.net/