DIY Zoning: Visualization

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1. Under Construction, Really

Warning:

All the stuff below pertains to old as Moses `0.1p7dev3` release, available here. It can't be recommended - though amazingly stable (people have used it for years), it is very old, and making it work on modern distributions is somewhat difficult.

Current code base is under heavy development, and DZ Blog contains a series of articles regarding build and configuration. When the dust settles, those articles will be sorted out and moved here.

DZ3 Quickstart is the first article in the series.

2. Using the temperature/humidity/pressure graphing software

As of release 0.1p5, the DAC is completely plug-and-play. Once DAC starts, it will create an RRD database corresponding to the network configuration (this may take a couple of minutes).

Note:

In DZ3, *everything* can be logged (that was one of main design considerations for DZ3). Read DZ3 Data Logger: Logging *Everything* for more details.

There are two options to create the graphs: use `RRDTool`, or use `JRobin`. `RRDTool` was the only option available until release 0.1p6, and `JRobin` is a default starting with 0.1p6 release.

Run `./configure --enable-rrdtool` to use `RRDTool`, and `./configure --enable-JRobin` to use `JRobin`.

Warning:

These options are mutually exclusive: RRD databases created by `RRDTool` and `JRobin` are not binary compatible. Make up your mind before it is too late, because otherwise there'll be a hassle of transforming one into another.

2.1. Using RRDTool

Use `/usr/bin/dz_graph_temperature` script (provided you installed DAC as an RPM, otherwise the location will be `${installation-prefix}/bin/dz_graph_temperature`) to create the graps. It is recommended to add this script to a `cron` job.

2.2. Using JRobin

This option is available starting with release 0.1p6.

Graphs are rendered about every 5 minutes.

> **Note:**
> The option to use `RRDTool` is still available - even though `JRobin` is essentially hassle-free, `RRDTool` is much faster, which starts to matter when your database starts spanning a few years back. Also, there's a convenience of scripting.

3. Accessing the graphs

Regardless of the tool used, the graphs will be generated in `/usr/share/dz/var/html` (or in `${installation-prefix}/var/html`).

If you have an Apache installation at the moment you install `dz-dac` RPM, the RPM post-install script will create a symlink so you can see the resulting temperature graphs at http://localhost/dz/ (if your Apache installation is standard enough, that is).

4. Using third-party software for visualization

DZ intentionally provides a limited set of visualization tools. Amount of data it provides is increasing day by day, and in about March 2005 it was eventually realized that data visualization subset is perfectly illustrated by one of Murphy's Laws: *"Inside of every large problem there is a smaller one, struggling to get out"*. Therefore, the decision was made to freeze the existing visualization functionality, use it as example only, and recommend users to accomodate the visualization solution of their choice. It is possible that at some time visualization plugins created specifically for DZ will appear, but it hasn't happened yet.

5. Analyzing the data

When you have at least a month worth of graphs, you will easily see the patterns. Then, you will know **exactly** what needs fixing, and what was perceived, but not real.

As an added bonus, you will be able to detect the problems you never thought existed. Or the problems that escaped your attention just because you weren't there. As an example, check out the Funny A/C behavior thread from HVAC-Talk (archived on DIY Zoning website, original expired).

6. Next Step

Upon analysis, it may turn out that you should start with fixing the problems that you already have, not come up with something new. In particular, these problems may turn out to be:

- Inadequate unit. Not only may it be too small, but it may be too large. Example: oversized AC in a climate like Florida or Georgia will not remove enough humidity. Oversized furnace in Minnesota will not allow to achieve proper heat distribution, and some parts of the house will be too cold, though the furnace will cycle more frequently than it is required {FIXME: discuss the ways to alleviate problems related to oversized units (example: changing the coil)};
- Undersized ductwork;
- Insufficient air return (this seems to be the most common problem for Arizona) {discuss the ways to fix this};
- Improperly charged unit. Unless there's a TXV {link to FAQ}, different charge will be required for different ambient temperature range.

If you decided to proceed with DZ installation, it's time to install the Dampers