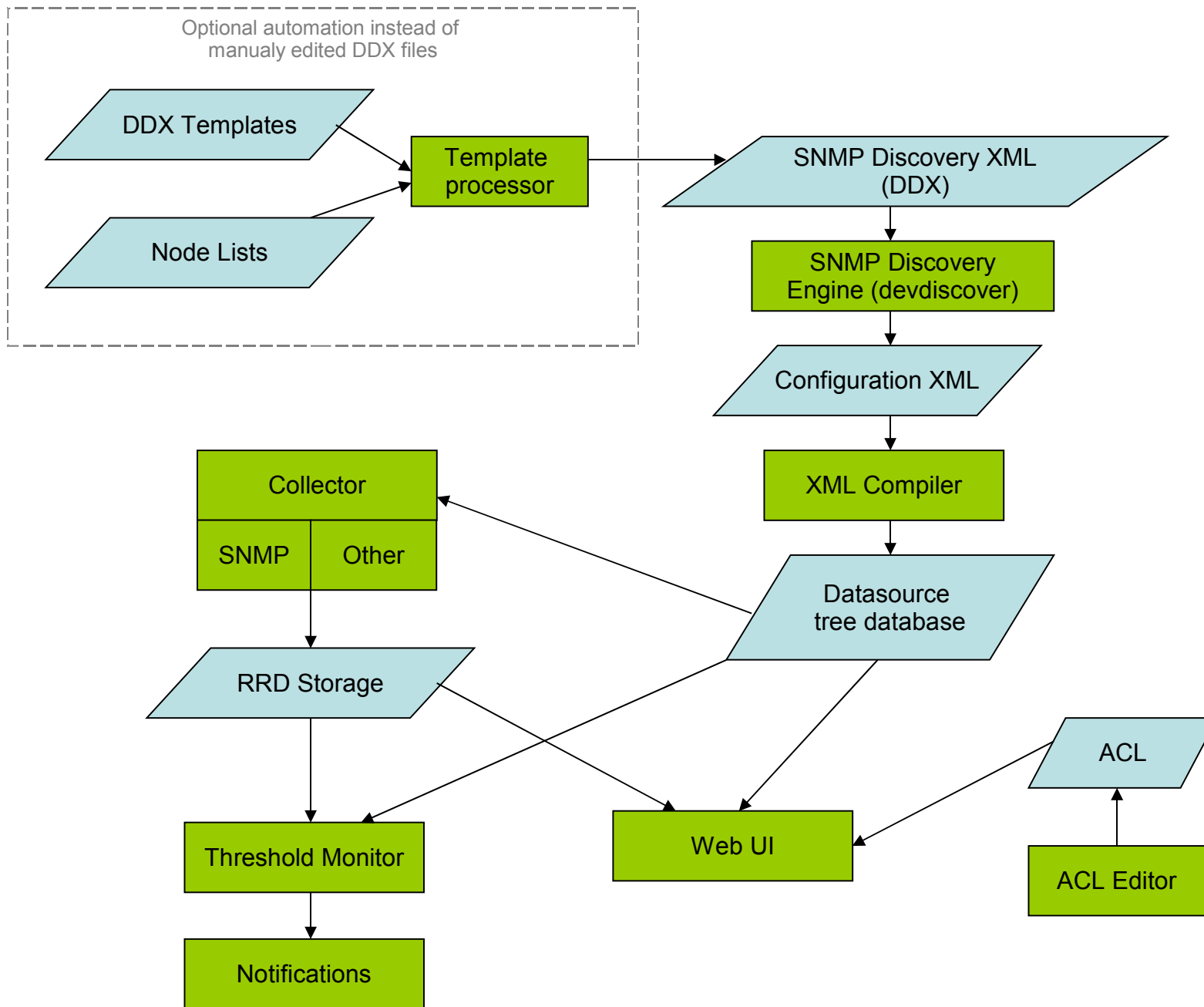# Torrus Functional Overview

Torrus features

- Hierarchical object database

- Modular structure

- SNMP discovery and collector

- Threshold monitor

- Billing data export

- Web user interface

Optional automation instead of manualy edited DDX files

DDX Templates

Node Lists

Template processor

SNMP Discovery XML (DDX)

SNMP Discovery Engine (devdiscover)

Configuration XML

XML Compiler

Collector

SNMP | Other

Datasource tree database

RRD Storage

ACL

Threshold Monitor

Web UI

ACL Editor

Notifications

3

SNMP Discovery XML

- Usually located in `/usr/local/etc/torrus/discovery`
- Proposed extension: *DDX* (Device Discovery XML)
- Consists of global and per-host parameters

```
<?xml version="1.0" encoding="UTF8"?>
<snmp-discovery>
  <param name="data-dir" value="/data/torrus/collector_rrd"/>
  ……… other global parameters
  <host>
    <param name="snmp-host" value="cmts1.tvtnet.ch"/>
    ……… other host-specific parameters
  </host>
</snmp-discovery>
```

Important DDX parameters

- `data-dir:` *where RRD files will be stored*

- `domain-name:` *used for DNS-based snmp-host's*

- `host-subtree:` *place in the tree hierarchy*

- `snmp-community, snmp-version, snmp-timeout, snmp-retries, snmp-port`

- `snmp-host:` *hostname or IP address*

- `output-file:` *where to save the discovery results*

DDX: output-bundle

- `<param name="output-bundle" value="NYC/devices1.xml"/>`

- Defines a configuration file that would include all files generated by this DDX

- Allows easy generation of one XML file per SNMP host

DDX: selectors

- Selectors are a way to add new actions to the discovered elements (interfaces, CPUs, power supplies, etc.).

- Most of customization you want to do on the discovery results can be done through selectors.

- Typical actions: adding threshold monitors and data export for billing.

DDX: selectors (cont.)

- This example adds the threshold monitor to all interfaces that have "DNS" in their descriptions:

```
<host>
    <param name="snmp-host" value="1.2.3.4"/>
    <param name="symbolic-name" value="switch1.example.com"/>
    <param name="output-file" value="EXAMPLE_COM/1.2.3.4.xml"/>

    <param name="selectors"  value="dnstraffic"/>
    <param name="dnstraffic-selector-type"      value="RFC2863_IF_MIB"/>
    <param name="dnstraffic-selector-expr"     value="{ifComment}"/>
    <param name="dnstraffic-ifComment"          value="DNS"/>
    <param name="dnstraffic-selector-actions"
           value="InBytesMonitor, OutBytesMonitor"/>
    <param name="dnstraffic-InBytesMonitor-arg" value="dnstraffic"/>
    <param name="dnstraffic-OutBytesMonitor-arg" value="dnstraffic"/>
 </host>
```

DDX: static tokensets

- Tokenset is a set of graphs that are viewable on a single web page.

```
<param name="define-tokensets">
  upstream-peering: Upstream peering;
  large-customers: Large customers
</param>

<host>
  <param name="snmp-host" value="10.0.0.1"/>
  <param name="symbolic-name" value="core02.example.net"/>
  <param name="output-file" value="example_net/core02.example.net.xml"/>

  <param name="RFC2863_IF_MIB::tokenset-members">
    upstream-peering: POS5_0;
    large-customers: GigabitEthernet0_2, Serial3_0, FastEthernet4_0
  </param>
</host>
```

Datasource trees

- Each tree can run multiple *collector* processes and one *monitor* process.

- Web interface access control lists set the user permissions per tree. Currently it is not possible to set different permissions inside the tree.

- Trees are defined in `torrus-siteconfig.pl`, usually located in `/usr/local/etc/torrus/conf`.

Datasource configuration XML

- Multiple XML files are compiled into one datasource tree.

- Usually they consist of discovery results and templates from Torrus distribution.

- In rare occasions, manual editing is required.

- Files are usually located in `/usr/local/etc/torrus/xmlconfig`.

- `site-global.xml` is usually included in all trees.

Basic commands

- Run SNMP discovery:

  `torrus dd -in=EXAMPLE.ddx [-verbose]`

- Compile XML configuration:

  `torrus compile -tree=EXAMPLE [-verbose]`

- Collector, monitor and Apache will reload the configuration automatically.

Startup and shutdown

- Torrus daemons are usually started via
  `/etc/init.d/torrus start`

- NEVER stop the torrus daemons with "kill -9"

- If the daemons have stopped abnormally (e.g. because of server crash), stop all daemons and the Apache server and perform the database recovery.

Recommended setup

- One tree to run the collector – includes all devices.

- Multiple view-only trees for user web access and threshold monitoring

- Fine tuning of collector schedules is required for installations with more than 20-30 thousand SNMP objects (see User guide and Scalability guide).

Future developments

- Web UI with granular access control, custom properties, favorites, etc.

- Distributed and redundant architecture.

- Management console with web interface.