Tungsten Dashboard for Clustering

Continuent Ltd
Abstract

This manual documents Tungsten Dashboard 1.0.

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Up to date builds of this document: Tungsten Dashboard for Clustering [Online], Tungsten Dashboard for Clustering [PDF]
# Table of Contents

1. Tungsten Dashboard Overview .......................................................... 5
2. Tungsten Dashboard Pre-Requisites ..................................................... 7
3. Tungsten Dashboard Security Limitations ............................................ 8
4. Configure the Tungsten Cluster Manager API ...................................... 9
5. Test Connectivity to the Tungsten Manager API Directly ....................... 10
6. Install the Tungsten Dashboard ........................................................ 11
7. Configure the Apache 2 Web Server .................................................. 12
8. Configure the Tungsten Dashboard .................................................... 14
9. Install and Configure HA Proxy ........................................................ 16
10. Test Connectivity to the Tungsten Manager API via HAProxy .................. 17
11. Access the Tungsten Dashboard GUI via a browser ............................. 18
12. Tungsten Dashboard User Interface .................................................. 19
    12.1. Tungsten Dashboard User Interface Overview ................................ 19
    12.2. Dashboard Navigation Bar One .................................................... 20
    12.3. Dashboard Navigation Bar Two .................................................... 20
    12.4. Dashboard Navigation Bar Three .................................................. 20
    12.5. Dashboard Composite Parent Row .............................................. 21
    12.6. Dashboard Composite Member Rows ............................................ 21
    12.7. Dashboard Composite Member Node Rows .................................... 23
    12.8. Dashboard Standalone Cluster ................................................... 24
A. Dashboard Frequently Asked Questions [FAQ] ........................................ 26
B. Release Notes .................................................................................... 27
    B.1. Tungsten Dashboard 1.0.7 GA [26 November 2019] .......................... 27
    B.2. Tungsten Dashboard 1.0.6 GA [3 September 2019] .......................... 27
    B.3. Tungsten Dashboard 1.0.5 GA [28 June 2019] ................................ 27
    B.5. Tungsten Dashboard 1.0.3 GA [22 March 2019] ............................... 28
    B.7. Tungsten Dashboard 1.0.1 GA [17 September 2018] ........................ 28
    B.8. Tungsten Dashboard 1.0.0 GA [10 May 2018] ................................ 29
C. Upgrade the Tungsten Dashboard ....................................................... 30
D. UI Operational Scope Table ............................................................. 31
E. Included External Packages In Use ...................................................... 36
List of Figures

1.1. Tungsten Dashboard Architecture ........................................................................................................... 6
12.1. Tungsten Dashboard User Interface ......................................................................................................... 19
12.2. Example Navigation Bar One .................................................................................................................... 20
12.3. Example Navigation Bar Two .................................................................................................................... 20
12.4. Example Navigation Bar Three ................................................................................................................. 20
12.5. Example Composite Parent Row ............................................................................................................. 21
12.6. Example Composite Member Rows ......................................................................................................... 21
12.7. Example Composite Member Node Rows ................................................................................................. 23
12.8. Example Standalone Cluster ................................................................................................................... 25
Chapter 1. Tungsten Dashboard Overview

A simple GUI management tool for Continuent Tungsten v5.3.x and above.

Important
Read this entire document before attempting installation.

This application was written using PHP, jQuery and Bootstrap and uses HA Proxy to distribute API requests. The Apache 2 web server was used for the examples in this document.

The Dashboard is usually installed on a standalone web server with HA Proxy installed.

HA Proxy routes API requests to the various database nodes running the manager API listener on port 8090. There is one frontend per cluster. Each backend contains all db nodes for that cluster.

The architecture diagram below displays how things would look when using a 6-node Composite cluster named *global*, with two member clusters, named *east* and *west*. 
Figure 1.1. Tungsten Dashboard Architecture
Continuent Tungsten Dashboard needs the following prerequisites to function:

- Continuent Tungsten Clustering v5.3.0 and above or v6.0.1 and above only.
- Web server with PHP support (sample configs provided for Apache 2.2 and 2.4)
- HA Proxy - [http://www.haproxy.org](http://www.haproxy.org)
- Make sure to open ALL of the appropriate firewall ports to ensure access.
  - The default architecture would require TCP port 8090 open between the web server running the Dashboard and all cluster nodes in all clusters that are to be administered by the GUI application.
  - By default, port 80 will need to be open from the client browser to the web server running the Tungsten Dashboard. If HTTPS has been implemented, TCP 443 must be opened in addition to port 80.
Chapter 3. Tungsten Dashboard Security Limitations

Continuent Tungsten Dashboard has the following security limitations:

Warning
- THERE IS NO API SECURITY YET - If you enable the API on the Manager, anyone may connect to it. Use your firewall to block port 8090 from non-essential hosts.

Warning
- SSL (https) is not yet supported on the Manager API endpoints.

Warning
- Please use Apache Basic Auth to lock down access to the Tungsten Dashboard GUI.

Warning
- SSL (https) configuration for the Tungsten Dashboard is possible, but is beyond the scope of this document.

Warning
- Locking only works on a single web server host, so if you have installed the Tungsten Dashboard on more than one host, the lock is not shared and is therefore ineffective.
Chapter 4. Configure the Tungsten Cluster Manager API

Add the following to `/etc/tungsten/tungsten.ini` (in [Tungsten Clustering for MySQL 6.1 Manual]) under the `[defaults]` section:

```
mgr-api-port=8090
mgr-api=true
mgr-api-address=0.0.0.0
mgr-api-full-access=true
```

Inform the running manager of the changed configuration:

```
shell> tpm update
```

**Important**

You may need to restart the manager.

Verify that the port is listening:

```
shell> sudo netstat -pan | grep 8090
```
Chapter 5. Test Connectivity to the Tungsten Manager API Directly

Test connectivity to the Tungsten Manager API directly using curl:

```bash
shell> curl -s http://db1:8090/manager/status/east/
shell> curl -s http://db4:8090/manager/status/west/
shell> curl -s -X POST http://db4:8090/manager/control/west/heartbeat
```
Chapter 6. Install the Tungsten Dashboard

Important
Please change the example values below to match your specific environment.

For example, create a new user called `tungsten`, group `tungsten`, homedir `/home/tungsten`:

```
sudo useradd -m -d /home/tungsten -s /bin/bash -c "Tungsten Dashboard" -U tungsten
```

Note: Later on you will need to add the `apache` user to the `tungsten` group and restart apache.

Now create the Tungsten Dashboard web root directory and all needed subdirectories:

```
sudo mkdir /volumes/data/www/tungsten
sudo chown -R tungsten: /volumes/data/www/tungsten
sudo su - tungsten
cd /volumes/data/www/tungsten
mkdir etc logs
chmod 2770 logs
chmod 2750 etc
```

Still as user `tungsten`, download the software using the temporary URL provided by Continuent, or login to the web download portal to obtain the software (https://www.continuent.com/downloads/), then copy to the web root directory for use in the next step:

```
cd
grep -O tungsten-dashboard-1.0.0-123.tar.gz 'TEMP_URL_PROVIDED_BY_CONTINUENT'
tar xvzf tungsten-dashboard-1.0.0-123.tar.gz
cd tungsten-dashboard-1.0.0-123
rsync -a html/ /volumes/data/www/tungsten/html/
cd /volumes/data/www/tungsten/html/
rm -rf locks
mkdir /volumes/data/www/tungsten/html/locks
chmod 2775 /volumes/data/www/tungsten/html/locks
```
Chapter 7. Configure the Apache 2 Web Server

Important

Please change the example values below to match your specific environment.

Add the apache user to the tungsten group:

```
shell> sudo usermod -a -G tungsten apache
```

Create the apache configuration file for the web service:

```
shell> sudo vim /etc/httpd/conf.d/z01-tungsten-dashboard.conf
```

For Apache version 2.2:

```
<VirtualHost *:80>
ServerName dashboard.yourdomain.com
DocumentRoot /volumes/data/www/tungsten/html
DirectoryIndex index.php
ServerAdmin dashboard.apache.admin@yourdomain.com

<Directory "/volumes/data/www/tungsten/html">
AllowOverride All
Options +FollowSymLinks +ExecCGI -Indexes
Order allow,deny
Allow from all
#AuthType Basic
#AuthName "Tungsten Dashboard - RESTRICTED"
#AuthUserFile /volumes/data/www/tungsten/etc/.htpasswd
#Require valid-user
</Directory>
</VirtualHost>
```

For Apache version 2.4:

```
<VirtualHost *:80>
ServerName dashboard.yourdomain.com
DocumentRoot /volumes/data/www/tungsten/html
DirectoryIndex index.php
ServerAdmin dashboard.apache.admin@yourdomain.com

<Directory "/volumes/data/www/tungsten/html">
AllowOverride All
Options +FollowSymLinks +ExecCGI -Indexes
Order allow,deny
Allow from all
Require all granted
#RequireAll
#AuthType Basic
#AuthName "Tungsten Dashboard - RESTRICTED"
#AuthUserFile /volumes/data/www/tungsten/etc/.htpasswd
#Require valid-user
#</RequireAll>
</Directory>
</VirtualHost>
```

Check the configuration and restart the web server:

```
shell> sudo apachectl configtest
shell> sudo apachectl restart
```

To use Apache 2.2 Basic Authentication, uncomment the four commented-out lines then run:

```
To use Apache 2.4 Basic Authentication, uncomment the RequireAll section above, comment out the line "Require all granted" then run:
```

12
Configure the Apache 2 Web Server

```bash
shell> htpasswd -c /volumes/data/www/tungsten/etc/.htpasswd {desiredlogin}
shell> sudo apachectl configtest
shell> sudo apachectl graceful
```
Replace the service names and ports in $\text{jsonConfig}$ to match your HA Proxy setup:

```
$shell> sudo su - tungsten
$shell> cd /volumes/data/www/tungsten/html/
$shell> mv config.php.sample config.php
$shell> vim config.php
```

**Important**

*** There is a one-to-one relationship between Tungsten services and haproxy ports. See examples following this section. ***

- Host and port are required for all clusters.
- A cluster is marked as a composite parent if it has the "children" array, even if the array is empty.
- A cluster is marked as a composite child if it has the "memberOf" key defined.
- All Composite member [child] clusters require their own definitions so we know about the host and port for each.
- All cluster service names MUST be unique. If you have clusters in different environments that have the same names, they will conflict.

Added in v1.0.7: To solve this problem, add the sub-key `actualName` pointing to the "real" name of the service, and change the top-level cluster service name to some alias that you understand. For example, you have two clusters named "east", one in prod and the other in staging:

```
"clusters": {
    "east_prod": {
        "host": "localhost",
        "port": "8091",
        "actualName": "east"
    },
    "east_staging": {
        "host": "localhost",
        "port": "8092",
        "actualName": "east"
    }
}
```

- Please note that the `host: localhost` should remain localhost because this tells the app to call the haproxy server on the GUI server node, which will then handle routing to the appropriate manager/database node.
- You may add your own custom menu options to the tools menu by editing the menus->tools section in the json configuration.
- By default the Auto-refresh feature is disabled [i.e. set to zero]. You may enable `autoRefreshDelay` by setting it to one of the Auto-Refresh time interval values.
- By default, the list of Auto-Refresh time intervals is defined as 5, 10, 30, 60, 120 or 300 seconds. You may change that by using the `autoRefreshList` setting, i.e.:

```
"autoRefreshList": [3,5,10,30,60,120,300,600]
```

**Important**

PLEASE NOTE: `autoRefreshList` values less than 3 seconds are strongly discouraged.

- By default the nodes will display for each cluster. You may set `startExpanded` to 0 to have the display start in collapsed view
- Under normal circumstances, you should not need to get a lock, since all operations automatically attempt to obtain a lock for efficiency purposes. This has the side-effect of leaving your session in a locked state.

There are two settings that help address this situation, `autoUnlockHeartbeat` and `autoUnlockAll`.

You may set `autoUnlockHeartbeat` to 1 to automatically unlock after issuing a heartbeat command.

You may set `autoUnlockAll` to 1 to automatically unlock after issuing any command.

- You may set `dashboardMaintenanceScreen` to 1 to display a Maintenance-In-Progress message.
- The default Tab Badge update rate is 30 seconds. You may disable it by setting `tabUpdateRate` to zero (0). You may change the refresh rate in seconds by specifying a non-zero value.
Configure the Tungsten Dashboard

• Use `lockBaseDir` to change the location of the temporary lock files. The default is `{WEBROOT}/locks/`, i.e. a `lockBaseDir` of `/tmp` (in [Tungsten Clustering (for MySQL) 6.1 Manual]) will yield a lock directory of `/tmp/locks`.

• Added in v1.0.7: Use `msgFadeOutTimer` to automatically close messages after the defined timeout in seconds. The default is 60 seconds.

This is a sample standalone cluster configuration from `config.php`:

```
$jsonConfig = <<<EOJ
{
  "clusters": [
    {"north": {"host":"localhost", "port":8093}},
    {"west": {"host":"localhost", "port":8093}}
  ],
  "menus": {
    "tools": {
      "Add your links here":"http://docs.continuent.com/tungsten-dashboard-1.0/tungsten-dashboard-configure-dashboard.html",
      "Archive Mode Docs":"http://docs.continuent.com/tungsten-clustering-5.2/operations-status-changingstates.html#operations-status-changingstates-archive",
    }
  },
  "settings": {
    "dashboardMaintenanceScreen":0,
    "autoRefreshList": [5,60,120,300],
    "autoRefreshDelay":0,
    "startExpanded":1,
    "jumpToTopOnMsg":1
  }
}
EOJ;
```

This is a sample composite cluster configuration from `config.php`:

```
$jsonConfig = <<<EOJ
{
  "clusters": {
    "global": {"host":"localhost", "port":8091, "memberOf":"global"},
    "east": { "host": "localhost", "port": 8092, "memberOf": "global"},
    "west": { "host": "localhost", "port": 8093, "memberOf": "global"}
  },
  "menus": {
    "tools": {
      "Add your links here": "http://docs.continuent.com/tungsten-dashboard-1.0/tungsten-dashboard-configure-dashboard.html",
      "Archive Mode Docs": "http://docs.continuent.com/tungsten-clustering-5.2/operations-status-changingstates.html#operations-status-changingstates-archive",
    }
  },
  "settings": {
    "dashboardMaintenanceScreen":0,
    "autoRefreshList": [5,60,120,300],
    "autoRefreshDelay":0,
    "startExpanded":1,
    "jumpToTopOnMsg":1
  }
}
EOJ;
```
Chapter 9. Install and Configure HA Proxy

The Tungsten Cluster Manager listens on port 8090 for API calls, so we configure the HA Proxy listener ports to not conflict with that.

There must be one frontend per cluster, so the first one starts with port 8091.

In the example below, we assign frontend port 8091 to the composite global, frontend port 8092 to the cluster east and frontend port 8093 to the cluster west.

It is imperative that there be one backend per cluster containing all nodes in that cluster. In the case of a composite, the backend should contain all nodes from all member clusters.

In the below example, backend east contains member nodes db1-3, backend west contains nodes db4-6 and backend global contains nodes db1-6.

NOTE: See `haproxy.cfg` in the `examples` directory for a more complete sample config to be used locally on a web server or jump host.

Install and prepare the HA Proxy install:

```
shell> sudo -i
global
shell> yum install haproxy
cfg
shell> cp /etc/haproxy/haproxy.cfg haproxy.cfg.orig
```

Edit `/etc/haproxy/haproxy.cfg` and define the services and associated hosts:

```
frontend global
    bind *:8091
default_backend global
frontend east
    bind *:8092
default_backend east
frontend west
    bind *:8093
default_backend west
backend global
    balance roundrobin
    server db1 db1.yourdomain.com:8090 check
    server db2 db2.yourdomain.com:8090 check
    server db3 db3.yourdomain.com:8090 check
    server db4 db4.yourdomain.com:8090 check
    server db5 db5.yourdomain.com:8090 check
    server db6 db6.yourdomain.com:8090 check
backend east
    balance roundrobin
    server db1 db1.yourdomain.com:8090 check
    server db2 db2.yourdomain.com:8090 check
    server db3 db3.yourdomain.com:8090 check
backend west
    balance roundrobin
    server db4 db4.yourdomain.com:8090 check
    server db5 db5.yourdomain.com:8090 check
    server db6 db6.yourdomain.com:8090 check
```

Configure start at boot:

```
shell> chkconfig haproxy on
```

Restart the HA Proxy service:

```
shell> service haproxy restart
```
Chapter 10. Test Connectivity to the Tungsten Manager API via HAProxy

Test connectivity to the Tungsten Manager API via HAProxy using curl:

```bash
shell> curl -s http://localhost:8091/manager/status/global/
shell> curl -s http://localhost:8092/manager/status/east/
shell> curl -s http://localhost:8093/manager/status/west/
shell> curl -s -X POST http://localhost:8093/manager/control/west/heartbeat
```
Chapter 11. Access the Tungsten Dashboard GUI via a browser

Access the Tungsten Dashboard GUI via a browser:

Browser URL: http://dashboard.yourdomain.com/
Chapter 12. Tungsten Dashboard User Interface

This section describes all of the features and functionality available in our browser-based Graphical User Interface.

12.1. Tungsten Dashboard User Interface Overview

Below is a sample of how the Dashboard would look for a Composite cluster called `world` with two 3-node member clusters, called `east` and `west`:

Figure 12.1. Tungsten Dashboard User Interface

1. Navigation Bar One
2. Navigation Bar Two
3. Navigation Bar Three
4. Example Composite cluster parent `world` summary row with controls
5. Example Composite cluster member `east` summary row with controls
6. Example cluster relay node `db1` summary row with controls
7. Example cluster slave node `db3` summary row with controls
8. Example Composite cluster member `west` summary row with controls
9. Example cluster master node `db4` summary row with controls
10. Example cluster witness node `db6` summary row with controls
11. Footer with copyright, back-to-top link, visit count and session id
12.2. Dashboard Navigation Bar One

Nav Bar One is the first horizontal bar across the top of the window.

Figure 12.2. Example Navigation Bar One

1. Logo and site title - click either to return to the home page [full page load]
2. Clusters menu - All cluster configured in the config.php file will be displayed in a hierarchical view. Click on any one to limit the view to that cluster. If you select a Composite cluster, the parent and all member clusters will show.
3. Tools menu - various links to outside resources. Custom links may be added here via the config.php file in the web root directory.
4. Help feature - click to reveal helpful information.

12.3. Dashboard Navigation Bar Two

Nav Bar Two is the second horizontal bar across the top of the window.

Figure 12.3. Example Navigation Bar Two

The badges for “Policy Not Auto” and “Not Ready” tabs are auto-updated via AJAX every 30 seconds independently of the Auto-Refresh setting on Navigation Bar Two.

1. All Clusters Tab - click to see all available clusters, same as clicking logo and site title [full page load]
2. Policy Not Auto Tab - click to see all only those clusters where the policy is set to other than Automatic
3. Not Ready Tab - click to see only clusters that are not in the Ready state
4. Filtering feature - enter a value to search for in the cluster name. The search is case in-sensitive and has automatic wildcards on both sides of the string. Click on the Clear button to empty out the filter field.

12.4. Dashboard Navigation Bar Three

Nav Bar Three is the third horizontal bar across the top of the window.

Figure 12.4. Example Navigation Bar Three

1. Content title - shows current view or filter in use
2. Auto-refresh feature - select a refresh rate of 0 [off], 5, 10, 30, 60, 120 or 300 seconds. This will enable AJAX-based reloads of the clusters in the content section without reloading the entire page. Look for the spinner in the refresh button per cluster when the refresh is triggered.
3. Reload button - same as clicking the top logo [full page load]
4. Hide All Details button - each database node is expandable to display all available details. This button closes them all.
5. Show All Details button - each database node is expandable to display all available details. This button opens them all.
6. Collapse All button - each Composite cluster is expandable to display all available node rows. This button closes them all.
7. Expand All button - each Composite cluster is expandable to display all available node rows. This button opens them all.
8. Clear Messages button - dismiss all messages that are showing at the top of the screen.
12.5. Dashboard Composite Parent Row

A composite Parent row contains controls for the entire Composite cluster.

Figure 12.5. Example Composite Parent Row

1. Cluster type **composite** vertical tag, resource icon and parent cluster name
2. Composite cluster status. The color will change based on the status. Status will be one of: Ready, Warning, or Error
3. Cluster Policy. One of: Automatic, Maintenance or Mixed. There is a state-sensitive dropdown menu to allow the Policy to be changed.
4. Cluster type - one of: Standalone, Composite, Master or Slave. Master and Slave both imply Composite membership. Standalone has no composite membership. This field is a duplicate of the vertical tag at the start of field (1), above.
5. Connections - display the total number of active connections from all Connectors to all nodes in the entire Composite cluster. If you hover over the info icon, you can see the full breakdown by node.
6. Composite actions dropdown menu - these are the same commands available when using `cctrl -multi` followed by use `{composite_service_name_here}`, i.e.:
   ```
   shell> cctrl -multi
   [LOGICAL] / >
   use world
   [LOGICAL] /world >
   {your_selected_command_here}
   • Heartbeat (actually **cluster heartbeat** [in [Tungsten Clustering [for MySQL] 6.1 Manual]])
   • Recover
   • Switch
   • Failover
7. Locking status text and icon with dropdown menu to allow lock control.
   **Important**
   Under normal circumstances, you should not need to get a lock, since all operations automatically attempt to obtain a lock for efficiency purposes.
8. Refresh button - triggers an AJAX refresh of the parent cluster and all member clusters including all node rows. (no page load)
9. Collapse all in Composite cluster - hide node rows for all member clusters in this Composite.

12.6. Dashboard Composite Member Rows

A composite member row contains controls for all nodes in the member cluster.

Member clusters may have either the Master or Slave role.

There will be only one Master member cluster and any number of slave member clusters.

Figure 12.6. Example Composite Member Rows

1. Cluster type vertical tag (**master** or **slave**), member cluster right-arrow indicator and cluster resource icon
2. Cluster parent service name followed by the cluster service name
3. Composite member cluster status. The color will change based on the status. Status will be one of: Ready, Warning, or Error
4. Cluster Policy. One of: Automatic, Maintenance or Mixed. There is a state-sensitive dropdown menu to allow the Policy to be changed.
5. Cluster type - one of: Standalone, Composite, Master or Slave. Master and Slave both imply Composite membership. Standalone has no composite membership. This field is a duplicate of the vertical tag at the start of field [1], above.

6. Connections - display the total number of active connections from all Connectors to all nodes in the entire Composite cluster. If you hover over the info icon, you can see the full breakdown by node.

7. Coordinator - display the host which currently has the coordinator role for the member cluster. Every cluster designates one of the Tungsten Managers in the cluster as the coordinator and it is this Manager that will be responsible for taking action, if action is required, to recover the cluster’s database resources to the most highly available state possible.

8. Cluster actions dropdown menu - there are three distinct types of choices in this dropdown menu
   - UI-Specific
     - Toggle Details - show or hide the node details for all nodes in the member cluster
   - Cluster-level commands
     These are the same commands available when using `cctrl` [in Tungsten Clustering [for MySQL] 6.1 Manual], i.e.:

     ```
     shell> cctrl
     [LOGICAL] /east > (your_selected_command_here)
     ```

     `Note`
     The cluster service name displayed will be the service name of the node you are logged into.

     - Heartbeat
     - Recover
     - Switch
     - Failover
   - Composite datasource-level commands
     These are the same commands available when using `cctrl -multi` followed by `use {composite_service_name_here}`, i.e.:

     ```
     shell> cctrl -multi
     [LOGICAL] / > use world
     [LOGICAL] /world > datasource {cluster_member_service_here} {your_selected_command_here}
     ```

     Here are some individual examples:

     ```
     [LOGICAL] /world > datasource east recover
     [LOGICAL] /world > datasource west fail
     [LOGICAL] /world > switch to west
     ```

     - Recover
     - Welcome
     - Online
     - Offline
     - Shun
     - Promote - this is the same as doing a switch to {cluster_member_service_here}
     - Fail

9. Locking status text and icon with dropdown menu to allow lock control.
   
   `Important`
   Under normal circumstances, you should not need to get a lock, since all operations automatically attempt to obtain a lock for efficiency purposes.

10. Refresh - triggers an AJAX refresh of that member cluster only [no page load]

11. Collapse - hide the node rows for that member cluster only
12.7. Dashboard Composite Member Node Rows

A node row contains controls for that one specific cluster node.

Cluster nodes may have one of the following roles: Master, Slave, Witness or Standby. Composite member cluster nodes may also have the Relay role.

For any cluster, there will be only one Master/Relay cluster node and any number of Slave nodes.

A Cluster Master node is assigned the special role of Relay when it is part of a Composite Slave cluster.

Active witness nodes do not have a database and therefore do not run a replicator. Passive witness nodes do not appear because they have no Manager process running.

Figure 12.7. Example Composite Member Node Rows

<table>
<thead>
<tr>
<th>Node</th>
<th>Role</th>
<th>DS State</th>
<th>Conns</th>
<th>Archive</th>
<th>Repl. State</th>
<th>applied</th>
<th>relative</th>
<th>Seqno</th>
<th>minStored</th>
<th>maxStored</th>
<th>pipelineSource</th>
<th>Dataserver</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>db4</td>
<td>master</td>
<td>ONLINE</td>
<td>2/2527</td>
<td>ONLINE</td>
<td></td>
<td>0.095</td>
<td>0.105</td>
<td>116394170</td>
<td>114503817</td>
<td>116394171</td>
<td>/var/lib/mysql</td>
<td>ONLINE</td>
<td></td>
</tr>
<tr>
<td>db5</td>
<td>slave</td>
<td>ONLINE</td>
<td>0/1</td>
<td>ONLINE</td>
<td></td>
<td>1.063</td>
<td>1.105</td>
<td>116394167</td>
<td>114503817</td>
<td>116394171</td>
<td>/var/lib/mysql</td>
<td>ONLINE</td>
<td></td>
</tr>
<tr>
<td>db6</td>
<td>witness</td>
<td>ONLINE</td>
<td>0/1</td>
<td>ONLINE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Node** - the hostname of the server
- **Role** - one of Master, Relay, Slave, Standby or Witness
- **DS State** - DataSource state can be **ONLINE** [in [Tungsten Clustering (for MySQL) 6.1 Manual]], **OFFLINE** [in [Tungsten Clustering (for MySQL) 6.1 Manual]], SHUNNED or FAILED. There may be other, less-used values.
- **Conns** - number of active connections / total number of connections created since last restart
- **Archive** - has Archive mode been enabled? See Mark a Datasource as Archive [in [Tungsten Clustering (for MySQL) 6.1 Manual]] for more information.
- **Repl. State** - the state of the Replicator process, one of: **ONLINE** [in [Tungsten Clustering (for MySQL) 6.1 Manual]], **OFFLINE** [in [Tungsten Clustering (for MySQL) 6.1 Manual]] or ERROR
- **applied** - the **appliedLatency** [in [Tungsten Clustering (for MySQL) 6.1 Manual]] value, which is how long it took to actually get the event either extracted from the Master's binary logs or applied into the Slave's target database
- **relative** - the **relativeLatency** [in [Tungsten Clustering (for MySQL) 6.1 Manual]] value, which is how long it has been since we performed an action
- **Seqno** - the **appliedLastSeqno** [in [Tungsten Clustering (for MySQL) 6.1 Manual]] value
- **minStored** - the **minimumStoredSeqNo** [in [Tungsten Clustering (for MySQL) 6.1 Manual]] value, which is the sequence number of the oldest event stored in the THL
- **maxStored** - the **maximumStoredSeqNo** [in [Tungsten Clustering (for MySQL) 6.1 Manual]] value, which is the sequence number of the latest event to be stored in the THL
- **pipelineSource** - [in [Tungsten Clustering (for MySQL) 6.1 Manual]] - the protocol, host and port where the replicator is pulling THL from
- **Dataserver** - the state of the database server, one of **ONLINE** [in [Tungsten Clustering (for MySQL) 6.1 Manual]], **OFFLINE** [in [Tungsten Clustering (for MySQL) 6.1 Manual]] or **UNKNOWN**
- **Actions** - the node-specific commands dropdown menu. There are four distinct types of choices in this dropdown menu.
  - **UI-Specific**
    - **For all nodes that have a running Replicator**, the installed Tungsten version will be the first item visible.
    - **Toggle Details** - show or hide the node details for that specific node
  - **DataSource (Node-level) Commands**
These are the same commands available when using `cctrl` in [Tungsten Clustering (for MySQL) 6.1 Manual], i.e.:

```
shell> cctrl
[LOGICAL] /east > datasource {node_hostname_here} {your_selected_command_here}
```

**Note**

The cluster service name displayed will be the service name of the node you are logged into.

- **Recover**
- **Welcome**
- **Offline** - only appears if the DataSource is in the `ONLINE` [Tungsten Clustering (for MySQL) 6.1 Manual] state
- **Online** - only appears if the DataSource is in the `OFFLINE` [Tungsten Clustering (for MySQL) 6.1 Manual] state
- **Fail**

**Replicator-specific DataSource (Node-level) Commands**

These are the same commands available when using `cctrl` in [Tungsten Clustering (for MySQL) 6.1 Manual], i.e.:

```
shell> cctrl
[LOGICAL] /east > replicator {node_hostname_here} {your_selected_command_here}
```

Here are some individual examples:

```
[LOGICAL] /world > replicator db1 online
[LOGICAL] /world > replicator db3 offline
```

- **Offline** - only appears if the Replicator is in the `ONLINE` [Tungsten Clustering (for MySQL) 6.1 Manual] state
- **Online** - only appears if the Replicator is in the `OFFLINE` [Tungsten Clustering (for MySQL) 6.1 Manual] state

**Slave-specific DataSource (Node-level) Commands**

**Important**

These are commands are ONLY available on a node with the Slave or Standby roles. Nodes with either Master, Relay or Witness roles will not display the Slave-specific menu options.

These are the same commands available when using `cctrl` in [Tungsten Clustering (for MySQL) 6.1 Manual], i.e.:

```
shell> cctrl
[LOGICAL] /east > datasource {node_hostname_here} {your_selected_command_here}
```

Here are some individual examples:

```
[LOGICAL] /world > datasource db1 shun
[LOGICAL] /world > datasource db3 recover
[LOGICAL] /world > switch to db2
```

- **Backup**
- **Restore**
- **Shun**
- **Enable Standby**
- **Disable Standby**
- **Promote** - this is the same as doing a switch to `{node_hostname_here}`

### 12.8. Dashboard Standalone Cluster

All of the controls and information are the same for Standalone clusters and nodes as they are for Composite with the following exceptions:

- A Standalone Cluster is not part of a Composite.
- There will be no Composite commands in the service-level dropdown menu.
Figure 12.8. Example Standalone Cluster

<table>
<thead>
<tr>
<th>Node</th>
<th>State</th>
<th>Type</th>
<th>Connections</th>
<th>Coordinator</th>
<th>Status</th>
<th>Policy</th>
<th>DML</th>
<th>PHYSICAL</th>
<th>DATASTORE</th>
<th>SAS</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>db1</td>
<td>master</td>
<td>Standalone</td>
<td>2/5</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>0.396 0.4</td>
<td>131878022 130023799 131878022</td>
<td>/var/lib/mysql</td>
<td>ONLINE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>db2</td>
<td>slave</td>
<td>Online 0/0</td>
<td>0/0</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>0.398 0.403</td>
<td>131878010 130023799 131878018</td>
<td>th:/db1:2112/</td>
<td>ONLINE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>db3</td>
<td>slave</td>
<td>Online 0/0</td>
<td>0/0</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>0.424 0.445</td>
<td>131878018 130023799 131878028</td>
<td>th:/db1:2112/</td>
<td>ONLINE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix A. Dashboard Frequently Asked Questions (FAQ)

The following details information should be considered when using the Tungsten Dashboard:

- A DS state of **ONLINE** (in [Tungsten Clustering (for MySQL) 6.1 Manual]) when the node role is Witness means that the manager is online only. An Active Witness node will never be a live DataSource because it has no database and no replicator.

- Passive Witness nodes will NOT appear because they have no running Manager/API.

- The Tab Menu Badges for Policy Not Auto and Not Ready auto-refresh via AJAX every 30 seconds independently of the main Auto-refresh Setting.

- The Show All Details button is useful when used with the native browser search.

- All operations will attempt to obtain a lock automatically.

- An auto-lock request will fail if the resource is already locked.

- Composite and Cluster Status may be one of: Ready, Warning or Error.

- For a Composite to be other than Ready, a Member cluster must be **OFFLINE** (in [Tungsten Clustering (for MySQL) 6.1 Manual]) or **FAILED** (in [Tungsten Clustering (for MySQL) 6.1 Manual]) from the Composite view. A single failed node will NOT change the Composite Status.

- There is no impact on the Manager API if security is enabled via **--disable-security-controls=false** (in [Tungsten Clustering (for MySQL) 6.1 Manual]).

- The Manager API calls are not encrypted with SSL by default.

- Filtering is only available with more than one cluster.

- Filtering is case-insensitive with automatic wildcards on both ends.
Appendix B. Release Notes

B.1. Tungsten Dashboard 1.0.7 GA (26 November 2019)

Version End of Life. 26 November 2020

Tungsten Dashboard provides a web-based UI for monitoring and managing Tungsten Clustering deployments.

Tungsten Dashboard v1.0.7 provides a number of new features, improvements and bugfixes.

- Added the feature to allow for cluster service name aliases. You may now add the sub-key `actualName` pointing to the "real" name of the service, and change the top-level cluster service name to some alias that you understand.

  Previously, it was impossible to configure two or more clusters with the same service name. This could be required if clusters were installed into different environments like production, staging or development. While the best practice is to name the cluster services to match the environment (i.e. east_prod and east_staging), in some situations this may not be possible.

- Added a new feature to automatically fade out messages after a delay. The default is 60 seconds. Set `msgFadeOutTimer` to 0 (zero) to disable or to a positive integer to specify the delay in seconds.

  ```msgFadeOutTimer`:60

- Improved the look & feel of the overall layout, including display widths, the location of the timestamp marker and spacing.

- Fixed a bug where the controls to open and close a cluster were STILL not working.

- Fixed a bug where the datasource status details hover was not displaying properly

Tungsten Dashboard is compatible with both the Tungsten Clustering 5.3.x series and 6.x series.

B.2. Tungsten Dashboard 1.0.6 GA (3 September 2019)

Version End of Life. 3 September 2020

Tungsten Dashboard provides a web-based UI for monitoring and managing Tungsten Clustering deployments.

Tungsten Dashboard v1.0.6 is a bugfix and minor feature release.

- Fixed a bug where the controls to open and close a cluster were not working.

- When Auto-refresh is turned on, any issuance of a command will stop the auto-refresh. Simply re-select your desired refresh rate to turn it back on.

Tungsten Dashboard is compatible with both the Tungsten Clustering 5.3.x series and 6.x series.

B.3. Tungsten Dashboard 1.0.5 GA (28 June 2019)

Version End of Life. 28 June 2022

Tungsten Dashboard provides a web-based UI for monitoring and managing Tungsten Clustering deployments.

Tungsten Dashboard v1.0.5 is a bugfix release.

- Fixed CMM cluster bug where clusters other than the first do not show subservices.

- Tweaked cell alignment

Tungsten Dashboard is compatible with both the Tungsten Clustering 5.3.x series and 6.x series.

B.4. Tungsten Dashboard 1.0.4 GA (11 April 2019)

Version End of Life. 11 April 2022

Tungsten Dashboard provides a web-based UI for monitoring and managing Tungsten Clustering deployments.

Tungsten Dashboard v1.0.4 is a bugfix release.

---

27
• Fixed cluster-level open/close regression.
• Tweaked error text and reduced noise in the logs.

Tungsten Dashboard is compatible with both the Tungsten Clustering 5.3.x series and 6.x series.

B.5. Tungsten Dashboard 1.0.3 GA (22 March 2019)

Version End of Life. 22 March 2022
Tungsten Dashboard provides a web-based UI for monitoring and managing Tungsten Clustering deployments.
Tungsten Dashboard v1.0.3 is a feature release for better global controls and customization.
The default for navButtonFormat is Icon if not specified.
• Added modal “Stop Auto-Refresh” button which will turn off the Auto-refresh feature. This button is only visible if auto-refresh is enabled.
• Added ability to set global buttons to icon, text or some combination. Use the setting navButtonFormat and specify one or more of icon or text as a comma-separated string, no spaces. Order counts.

```json
$jsonConfig = <<<EOJ
{
  "settings": {
    "navButtonFormat": "icon",
    ...
  }
EOJ;
```

Currently there are four (4) possible entries:

```
"navButtonFormat": "icon",
"navButtonFormat": "text",
"navButtonFormat": "icon,text",
"navButtonFormat": "text,icon",
```

Tungsten Dashboard is compatible with both the Tungsten Clustering 5.3.x series and 6.x series.

B.6. Tungsten Dashboard 1.0.2 GA (20 September 2018)

Version End of Life. 20 September 2021
Tungsten Dashboard provides a web-based UI for monitoring and managing Tungsten Clustering deployments.
Tungsten Dashboard v1.0.2 is a bug fix release for better API error handling.
• Refactored API calls for better error handling.
• Better error reporting on the front-end.

Tungsten Dashboard is compatible with both the Tungsten Clustering 5.3.x series and 6.x series.

B.7. Tungsten Dashboard 1.0.1 GA (17 September 2018)

Version End of Life. 17 September 2021
Tungsten Dashboard provides a web-based UI for monitoring and managing Tungsten Clustering deployments.
Tungsten Dashboard v1.0.1 is a bug fix release that also contains a few improvements.
• Support for Composite Multimaster topology offered in Continuent Clustering v6.x (requires Continuent Clustering version 6.0.3)
• Improvements to the menu system layout and clarity
• Composite-level cluster commands have been relocated to a new menu to the right of the State field
• Composite clusters now display the actual composite state instead of the Ready/Warning/Error status indicators, and status indicator lights have been moved to the left of the State label
• Improvements to the locking system:
  • Auto-Lock and Auto-Unlock are now both configurable via config.php
• Auto-Lock and Auto-Unlock setting are now both visible at the bottom of the cluster-level locking menu
• Auto-Lock may be configured to attempt a lock for all actions, heartbeats only, or not at all
• Auto-UnLock may be configured to attempt an unlock for all actions, heartbeats only, or not at all
• Additional formatting tweaks, including the reduction in height of the rows
Tungsten Dashboard is compatible with both the Tungsten Clustering 5.3.x series and 6.x series.

B.8. Tungsten Dashboard 1.0.0 GA [10 May 2018]

Version End of Life. 10 May 2021

Tungsten Dashboard provides a web-based UI for monitoring and managing Tungsten Clustering deployments.

It supports the following features:
• Full monitoring information on the status and progress of replication and the status of the cluster
• Monitor multiple clusters through a single page
• Perform switches and failovers
• Shun hosts
• Recover failed hosts

Tungsten Dashboard is compatible with the Tungsten Clustering 5.3.x series.
Appendix C. Upgrade the Tungsten Dashboard

Important

Please change the example values below to match your specific environment.

As user tungsten, download the software using the temporary URL provided by Continuent, or login to the web download portal to obtain the software [https://www.continuent.com/downloads/], then copy the updated application files to the web root directory, overwriting the existing ones:

```
sudo su - tungsten
wget -O tungsten-dashboard-1.0.0-123.tar.gz 'TEMP_URL_PROVIDED_BY_CONTINUENT'
tar xvzf tungsten-dashboard-1.0.0-123.tar.gz
cd tungsten-dashboard-1.0.0-123
rsync -a html/ /volumes/data/www/tungsten/html/
```

Note

Your `config.php` will NOT be overwritten. The software package contains only `config.php.sample`, so there is no risk of affecting your settings during an upgrade.
## Appendix D. UI Operational Scope Table

The following table describes the relationship between the UI elements on screen, their operation and scope, and the equivalent `cctrl` [in [Tungsten Clustering (for MySQL) 6.1 Manual]] command that would be required to achieve the same operation.

<table>
<thead>
<tr>
<th>UI Row Levels</th>
<th>MenuScope</th>
<th>MenuLabel</th>
<th>Scope Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster</td>
<td>Com-Com-use (composite service); data source (composite member) recover</td>
<td>Com-Com-use (composite service); data source (composite member) recover</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Com-Com-use (composite service); data source (composite member) welcome</td>
<td>Com-Com-use (composite service); data source (composite member) welcome</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Com-Com-use (composite service); data source (composite member) online</td>
<td>Com-Com-use (composite service); data source (composite member) online</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Com-Com-use (composite service); data source (composite member) offline</td>
<td>Com-Com-use (composite service); data source (composite member) offline</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Com-Com-use (composite service); data source (composite member) shun</td>
<td>Com-Com-use (composite service); data source (composite member) shun</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Com-Com-use (composite service); switch to (composite member) promote</td>
<td>Com-Com-use (composite service); switch to (composite member) promote</td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>Menu/Scope/Label</td>
<td>Equivalent</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>MenuScopoctrl</td>
<td>Equiva</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Label</td>
<td>lite_mem</td>
<td></td>
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<td></td>
<td>ber}</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Com-Com-use</td>
<td>(compo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pos-posite</td>
<td>site_servi</td>
<td></td>
</tr>
<tr>
<td>Failure</td>
<td>Com-posite</td>
<td>e_rvice);</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Heart-Cluster</td>
<td>data sour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use {cluster</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>heartbeat</td>
<td>ce);</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Recover-Cluster</td>
<td>recover</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use {clus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ter-service};</td>
<td>recover</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Failover-Cluster</td>
<td>use {clus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use {clus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ter-service};</td>
<td>e_rvice};</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>Switch-Cluster</td>
<td>failover</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use {clus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ter-service};</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite</td>
<td>Heart-Composite</td>
<td>switch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use {compo</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>site-service};</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite</td>
<td>Recover-Compo</td>
<td>site_service);</td>
<td></td>
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<td></td>
<td>site-service};</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite</td>
<td>Failover-Compo</td>
<td>Site-service);</td>
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<td>site-service};</td>
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</tr>
<tr>
<td>Composite</td>
<td>Switch-Compo</td>
<td>failover</td>
<td></td>
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<tr>
<td></td>
<td>site-service);</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite,Cluster</td>
<td>Set-Policy-Cluster</td>
<td>site-service); setpolicyautom}</td>
<td></td>
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<td></td>
<td></td>
<td>tic}</td>
<td></td>
</tr>
<tr>
<td>MenuScopectrl Levels</td>
<td>MenuScopectrl Equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite,Cluster Set Policy to Maintenance</td>
<td>Com-use (se-select,Cluster,service); set policy maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node Online</td>
<td>Node Use (cluster,service); data-source (cluster_node) online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node Offline</td>
<td>Node Use (cluster,service); data-source (cluster_node) offline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node Welcome</td>
<td>Node Use (cluster,service); data-source (cluster_node) welcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node Shun</td>
<td>Node Use (cluster,service); data-source (cluster_node) shun</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node Recover</td>
<td>Node Use (cluster,service); data-source (cluster_node) recover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node Enable Archive</td>
<td>Node Use (cluster,service); data-source (cluster_node)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UI Row Levels</td>
<td>MenuScopectrl Label</td>
<td>Equivalentode</td>
<td>set archive</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>NodeBack-up</td>
<td>NodeDisable (clus- ter_service); data- source {cluster_node} clear archive backup</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NodePromote Man- ager</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NodeFail</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NodeRestore Man- ager</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NodeEnable Stand- by er</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NodeDisable Man- ter_service; data- source {cluster_node} standby</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UI Row Levels</td>
<td>MenuScopectrl Label</td>
<td>Equivalent</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>(cluster_node)</td>
<td>clear standby</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node On-line</td>
<td>Node is (cluster_replicator service); replicator (cluster_node) on-line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node Off-line</td>
<td>Node is (cluster_replicator service); replicator (cluster_node) off-line</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E. Included External Packages In Use

Continuent Tungsten Dashboard includes the following software in the distribution package:

- bootstrap-3.3.7
- httpful-0.2.20
- jquery-1.12.4
- jsuri-1.3.1