Mconf: a global web conferencing network based on open source and collaborative work

http://mconf.org

Valter Roesler – presenter
Felipe Cecagno
Leonardo Crauss Daronco
André Marins

TIP 2013
January 2013
Honolulu, USA
What is Mconf?

• A global scalable opensource multiconference system for web and mobile devices

• The project is sponsored by:
  – RNP, the brazilian NREN (National Research and Education Network) – main sponsor
  – CLARA (Cooperación Latino Americana de Redes Avanzadas)
  – UFRGS (Federal University of Rio Grande do Sul)

What is the Mconf Global Network?

• A world-wide cooperation effort among different countries to provide a global webconference infrastructure to their users and to the world

• Support is performed by Mconf team in Federal University of Rio Grande do Sul
Mconf general view

Flexible access  Scalable infrastructure

Desktop and mobile clients

Users

Mconf-Mobile (Android client)

Web Portal

Mconf-Web

Other web portals can also be used

Monitoring and load balancing

Mconf Load Balancers (LBs)

Mconf Monitoring Servers

Web conference servers

Mconf-Live  Mconf-Live  ...  Mconf-Live
Welcome to **Mconf**

A global scalable open source multiconference system for web and mobile devices

mconf.org
Mconf Web portal: [http://mconf.org](http://mconf.org)

- **Permanent room**
  - User
  - Community

Approximately **1300** users and **400** communities
Mconf Android application

Galaxy Tab app

Galaxy Tab web

Galaxy S
And so what?

OK, yet another webconference system

Why it has potential to reach a global scale?
Mconf architecture

1. User clicks in a link to start a web conference
   - Triggers an HTTP call to a load balancer

2. Load Balancers (LBs)
   - LB periodically gets information about the web conference servers
   - Web conference servers periodically send their information to the monitoring servers

3. Redirects the user to the web conference server selected

4. User joins the web conference

Front ends

Back end

Anyone

Open access, anyone can create an account and use mconf.org

Restricted access controlled by Institution A

Web Portal Institution A

Mconf.org

Mconf Load Balancers (LBs)

Mconf Monitoring Servers

Mconf-Live Server
Advantages of Mconf approach

- **Scalable solution:** allow thousands of users (and servers) spread in different regions (cities, countries, continents)
- **Institutions can keep their own use policies and visual identity:** users access the webconference rooms through their institutions portal
- On the top of that, it is *open source*
Example of visual identity
Belnet – Belgium

This website is part of the project Mconf, currently being developed in the research group PRAV from UFRGS in partnership with RNP. It was developed based on Global Plaza and is being integrated with the webconference system BigBlueButton. For more information, access the project website clicking here.
Contact us: mconf@mconf.org

Current statistics: 6 users, 3 spaces, 0 active meetings

Popular public spaces
No public spaces found.

Last active spaces
No meetings in progress right now.
Example of visual identity
Hololsoft – Egypt
**Mconf today (11 servers after 9 months)**

- **Latin America**: Brazil (5), Colombia
- **North America**: USA: California and somewhere (Cloud Amazon)
- **Europe**: Belgium – Belnet (2)
- **Central America**: Costa Rica
Dashboard – load test in Jan 2013 (lb.mconf.org)

- Balancing method: Geoposition and CPU load
- 709 users in 7 servers
Dashboard Load Balancer example – 10 VMs

- **Balancing method**: CPU load
- **216 users**

---

![Dashboard Load Balancer](image)

<table>
<thead>
<tr>
<th>Map</th>
<th>Name</th>
<th>Users</th>
<th>Meetings</th>
<th>CPU load (%)</th>
<th>Average</th>
<th>RAM used and maximum (MB)</th>
<th>Bandwidth received and sent (Kbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td>216</td>
<td>56</td>
<td>35.3</td>
<td></td>
<td>39170</td>
<td>9858.3</td>
</tr>
<tr>
<td>143.54.31.10</td>
<td>24</td>
<td>6</td>
<td>39.84</td>
<td></td>
<td>8746.27</td>
<td>3917</td>
<td>253.09</td>
</tr>
<tr>
<td>143.54.31.86</td>
<td>23</td>
<td>6</td>
<td>39.73</td>
<td></td>
<td>855.08</td>
<td>3917</td>
<td>265.59</td>
</tr>
<tr>
<td>143.54.31.84</td>
<td>26</td>
<td>8</td>
<td>38.32</td>
<td></td>
<td>940.08</td>
<td>3917</td>
<td>356.78</td>
</tr>
<tr>
<td>143.54.31.91</td>
<td>24</td>
<td>6</td>
<td>26.28</td>
<td></td>
<td>104.74</td>
<td>3917</td>
<td>277.64</td>
</tr>
<tr>
<td>143.54.31.88</td>
<td>22</td>
<td>6</td>
<td>35.52</td>
<td></td>
<td>890.33</td>
<td>3917</td>
<td>283.22</td>
</tr>
<tr>
<td>143.54.31.85</td>
<td>22</td>
<td>5</td>
<td>34.92</td>
<td></td>
<td>878.19</td>
<td>3917</td>
<td>263.19</td>
</tr>
<tr>
<td>143.54.31.92</td>
<td>20</td>
<td>4</td>
<td>33.34</td>
<td></td>
<td>838.53</td>
<td>3917</td>
<td>239.25</td>
</tr>
<tr>
<td>143.54.31.87</td>
<td>20</td>
<td>5</td>
<td>32.91</td>
<td></td>
<td>846.07</td>
<td>3917</td>
<td>388.88</td>
</tr>
<tr>
<td>143.54.31.89</td>
<td>18</td>
<td>5</td>
<td>31.63</td>
<td></td>
<td>838.24</td>
<td>3917</td>
<td>245.69</td>
</tr>
<tr>
<td>143.54.31.83</td>
<td>17</td>
<td>5</td>
<td>30.71</td>
<td></td>
<td>900.92</td>
<td>3917</td>
<td>166.41</td>
</tr>
</tbody>
</table>

---
Dashboard Load Balancer example – 10 VMs

- Balancing method: CPU load
- 608 users
Mconf usage reports

- Filtering by institution, group of institutions, entire network
- Filtering by period of time (month, week, ...)

<table>
<thead>
<tr>
<th>Table</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of meetings</td>
<td>265</td>
</tr>
<tr>
<td>Average meeting duration</td>
<td>23.83 minutes</td>
</tr>
<tr>
<td>Average maximum number of users</td>
<td>1.2516</td>
</tr>
<tr>
<td>Maximum number of simultaneous users</td>
<td>16</td>
</tr>
</tbody>
</table>

Room size (number of users) | Number of meetings | Percentage |
1                           | 190           | 71.6981 %  |
2                           | 52            | 19.6226 %  |
3                           | 12            | 4.5283 %   |
5                           | 5             | 1.8868 %   |
6                           | 2             | 0.7547 %   |
4                           | 1             | 0.3774 %   |
7                           | 1             | 0.3774 %   |
10                          | 1             | 0.3774 %   |
15                          | 1             | 0.3774 %   |
Mconf statistics and usage reports

- Distribution of meetings per server: helps to find out the usage of each server.

<table>
<thead>
<tr>
<th>Server name</th>
<th>Number of meetings</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>mconf1.ufrgs.br</td>
<td>163</td>
<td>47.5219 %</td>
</tr>
<tr>
<td>150.164.192.113</td>
<td>56</td>
<td>16.3265 %</td>
</tr>
<tr>
<td>mp-bsb.mconf.org</td>
<td>37</td>
<td>10.7872 %</td>
</tr>
<tr>
<td>mconf.org</td>
<td>31</td>
<td>9.0379 %</td>
</tr>
<tr>
<td>mconf2-bbb.belnet.be</td>
<td>24</td>
<td>6.9971 %</td>
</tr>
<tr>
<td>mconf1-bbb.belnet.be</td>
<td>19</td>
<td>5.5394 %</td>
</tr>
<tr>
<td>mconf1.hostbbb.net</td>
<td>13</td>
<td>3.7901 %</td>
</tr>
</tbody>
</table>
Mconf is ready for Federation
Implementation for shibboleth is operational
Demo session
Proposal of global integration

So, in short!!!

Mconf today is an open source global webconference network with a pool of servers globally distributed.

The network must grow to reach all the globe

HOW?
Proposal of global integration: example scenario
Proposal of global integration

- How to integrate (terms of use): [http://mconf.org/m/about/network](http://mconf.org/m/about/network)

- The “fee” to enter the global webconference network is to offer one server

- The new versions are updated automatically through Opscode Chef

- Cost is practically zero
Advantages of global integration

- **High availability**: even if a server fails, there would be many others worldwide to host the room.
- **Optimization of resources**: the idle servers during the night in one country could be used by other countries, and vice-versa.
- **Low maintenance cost**: the maintenance of the load balancers is performed by the Mconf team. For the partner institution, it’s practically zero cost.
- **Monitoring / statistics / usage reports**: Dashboard and statistics available for everyone.
- **Global collaborative environment**: more programmers improving the same *open source* tool.
If it is so simple... why not?

A global scalable opensource multiconference system for web and mobile devices

http://mconf.org

Valter Roesler: roesler@inf.ufrgs.br
mconf@mconf.org