PlanetLab@EPFL

Center for Global Computing (CGC)

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Our Needs

Validating a distributed application

- Local machine
  - Compiles and runs
- 2-5 instances on a local machine
  - Basic functionalities
- 2-5 remote lab machines
  - Network works
- 50-200 EPFL machines
  - First validation
- 200-400 PlanetLab nodes
## Computers available for students @ EPFL site

<table>
<thead>
<tr>
<th>OS</th>
<th>Nb. of computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Win XP</td>
<td>560</td>
</tr>
<tr>
<td>Linux</td>
<td>280</td>
</tr>
<tr>
<td>Solaris</td>
<td>30</td>
</tr>
</tbody>
</table>
Opportunistic Solution

We can use those machines for our private planetlab.

Retained solution should provide:

1. A small administration overhead.
2. An easy deployment (adding new nodes).
3. A good balance between security v.s. resource accessibility.
Proposed solution

- Run PlanetLab OS in a VMWare
  - Easy installation (work only with ISO)
  - Enforce security
- Automatic node registration (based on Rock project)

Is it feasible?  Is it viable?
Prototype

- 2 nodes:
  1. WinXP with VMWare
  2. A native PlanetLab OS
- A PLC (Fedora Core 2)

Our solution is feasible.
Using VMWare implies an overhead.

What do we get at the end of the day?

<table>
<thead>
<tr>
<th></th>
<th>Real hardware</th>
<th>Seen through VMWare</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>P4 2.8GHz</td>
<td>P4 2.4GHz</td>
</tr>
<tr>
<td>Disk</td>
<td>7200RPM</td>
<td>5400/4200RPM</td>
</tr>
<tr>
<td>Network band.</td>
<td>1 Gb/s</td>
<td>616Mb/s</td>
</tr>
</tbody>
</table>
What about latencies?

Network latency in VMWare is not good. (3x slower)

<table>
<thead>
<tr>
<th>Ping delay</th>
<th>Native</th>
<th>VMWare</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2ms</td>
<td>0.6ms</td>
<td></td>
</tr>
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</table>

Having a PING delay of 100ms inside PlanetLab is not unusual.

Our solution is viable.
Future work (Technical)

- Fully automate installation process
- Upgrade our PLC to MyPLC
Future work (Admin)

- Define usage policies
  - Who will have access to PlanetLab@EPFL
  - When PlanetLab@EPFL will be accessible (always, at night and during the week-end...)
- Long term goal: federate
Conclusion

• Our solution is feasible and viable

• We are currently deploying PL in a student room (10-20 machines)

• Negotiation on deployment with our IT Department will start this month.
Questions?