



Integrating CRON with ProtoGENI

Status Report

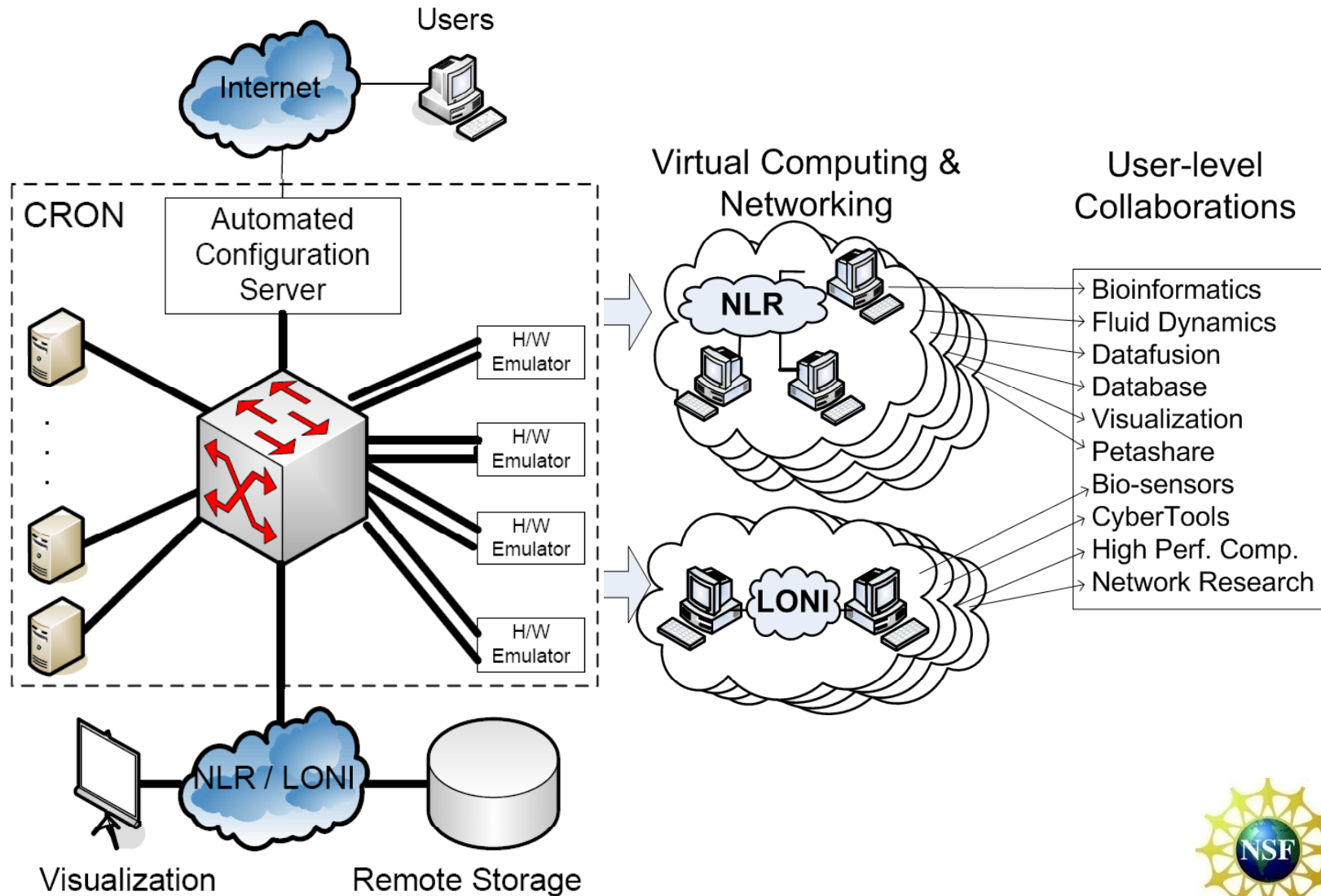
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CRON

Cyber-infrastructure for Reconfigurable Optical Networks





Components

❑ Switches

- Data plane: Cisco Nexus 5020 switch consisting 50 X 10GE ports
- Control plane: Cisco 3560 switch

❑ Emulators

- Hardware Emulators: 4 X Anue 10GE emulators
- Software Emulators: modified NistNet for less than 5Gbps bandwidth

❑ Workstations

- 20 X Sun X4250 servers (two quad cores with 10GE)

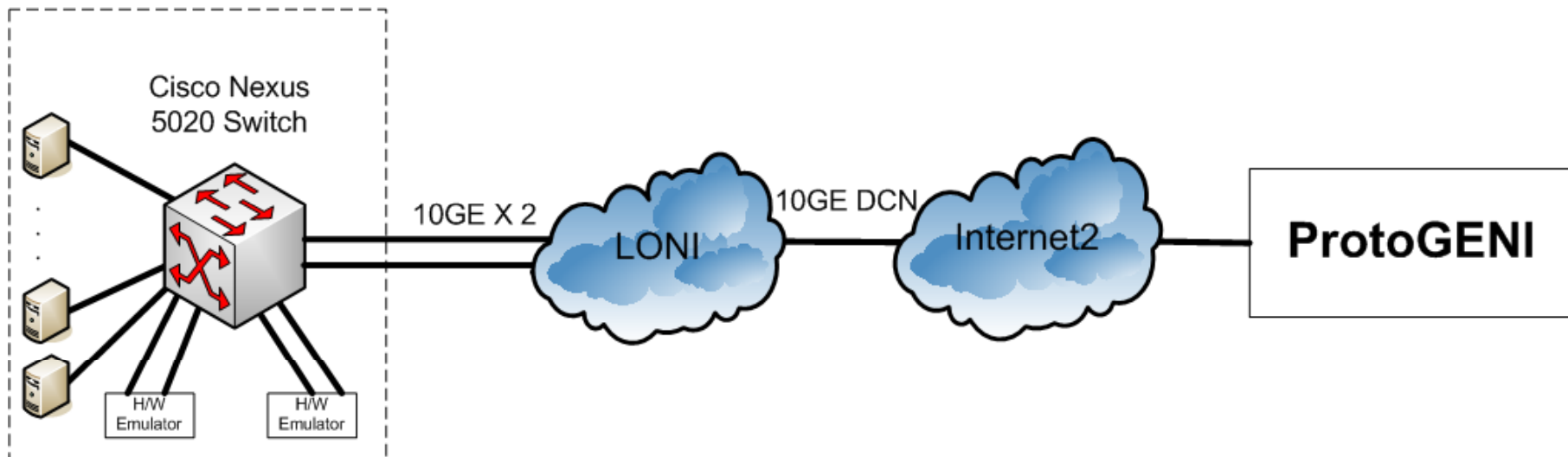


Integration CRON into GENI

□ Connections

- Between CRON and LONI
 - 10GE X 2
- Between LONI and Internet2
 - Internet2 ION (Interoperable On-demand Network) (upto 10GE)
 - LONI : www.loni.bato.dcn.internet2.edu
- Between Internet2 and ProtoGENI: ?

CRON (LSU)





Milestones for Spiral 2

- ❑ Nov 6, 2009
 - Identify POC for GENI Prototype Response and Escalation Group
 - ✓ Done
- ❑ Dec 18, 2009
 - Establish a 10GE connection from CRON to ProtoGENI through Internet 2
 - Done
- ❑ Mar 12, 2010
 - CRON RSpec definition completed and documented
 - In Progress
- ❑ Jun 25, 2010
 - Installing a slice authority and a component manager; and design interfaces for viewing operational resources at the federated CRON testbed
- ❑ Sep 17, 2010
 - Experiment over the federation among CRON, LONI, ProtoGENI sites



Advertisement RSpec for CRON

(Defining 10G Switch: **cisco10G**)

```
<node component_manager_uuid="urn:publicid:IDN+cron.cct.lsu.edu+authority+cm"
  component_name="cisco10G"
  component_uuid="urn:publicid:IDN+cron.cct.lsu.edu+node+cisco10G">
  <node_type type_name="switch" type_slots="1" />
  <available>true</available>
  <exclusive>true</exclusive>
  <interface
    component_id="urn:publicid:IDN+cron.cct.lsu.edu+interface+cisco10G:(null)" />
</node>
```



Advertisement RSpec for CRON

(Defining one pc: **pc1**)

```
.....  
.....  
<node component_manager_uuid="urn:publicid:IDN+cron.cct.lsu.edu+  
  authority+cm" component_name="pc1"  
  component_uuid="urn:publicid:IDN+cron.cct.lsu.edu+node+pc1">  
  <node_type type_name="pc4240" type_slots="1" />  
  <node_type type_name="pc" type_slots="1" />  
  <node_type type_name="delay" type_slots="1" />  
  <node_type type_name="pcvm" type_slots="20" />  
  <available>true</available>  
  <exclusive>true</exclusive>  
  <interface component_id="urn:publicid:IDN+cron.cct.lsu.edu+  
    interface+ pc1:eth4" />  
  <interface component_id="urn:publicid:IDN+cron.cct.lsu.edu+  
    interface+pc1:eth5" />  
</node>
```



Advertisement RSpec for CRON

(Defining another pc: **pc2**)

```
.....  
<node component_manager_uuid="urn:publicid:IDN+cron.cct.lsu.edu+  
  authority+cm" component_name="pc2"  
  component_uuid="urn:publicid:IDN+cron.cct.lsu.edu+node+pc2">  
  <node_type type_name="pc4240" type_slots="1" />  
  <node_type type_name="pc" type_slots="1" />  
  <node_type type_name="delay" type_slots="1" />  
  <node_type type_name="pcvm" type_slots="20" />  
  <available>true</available>  
  <exclusive>true</exclusive>  
  <interface component_id="urn:publicid:IDN+cron.cct.lsu.edu+  
    interface+pc2:eth4" />  
  <interface component_id="urn:publicid:IDN+cron.cct.lsu.edu+  
    interface+pc2:eth5" />  
.....
```




Advertisement RSpec for CRON

(Defining hardware emulator: **em01**)

```
<node component_manager_uuid="urn:publicid:IDN+cron.cct.lsu.edu+
  authority+cm" component_name="em01"
  component_uuid="urn:publicid:IDN+cron.cct.lsu.edu+node+em01">
  <node_type type_name="hwem" type_slots="1" />
  <available>true</available>
  <exclusive>true</exclusive>
  <interface component_id="urn:publicid:IDN+cron.cct.lsu.edu+
    interface+em01:eth0" />
</node>
```



Advertisement RSpec for CRON

(Defining **pc1-switch** link)

```
.....  
<link  
  component_manager_uuid="urn:publicid:IDN+cron.cct.lsu.edu+authority+s  
  a" component_name="link-pc1:eth4-cisco10G:(null)"  
  component_uuid="urn:publicid:IDN+cron.cct.lsu.edu+link+  
  link-pc1:eth4-cisco10G:(null)">  
  <interface_ref  
    component_node_uuid="urn:publicid:IDN+cron.cct.lsu.edu+node+pc1"  
    component_interface_id="urn:publicid:IDN+cron.cct.lsu.edu+  
      interface+pc1:eth4" />  
  
  <interface_ref  
    component_node_uuid="urn:publicid:IDN+cron.cct.lsu.edu+node+  
      cisco10G"  
    component_interface_id="urn:publicid:IDN+cron.cct.lsu.edu+  
      interface+cisco10G:(null)" />  
  
  <bandwidth>10000000</bandwidth>  
  <latency>0</latency>  
  <packet_loss>0</packet_loss>  
  <link_type type_name="ethernet" />  
</link>
```

```
.....
```