Analysis of Configuration Management Tools

Computer System, Cluster, and Networking Summer Institute

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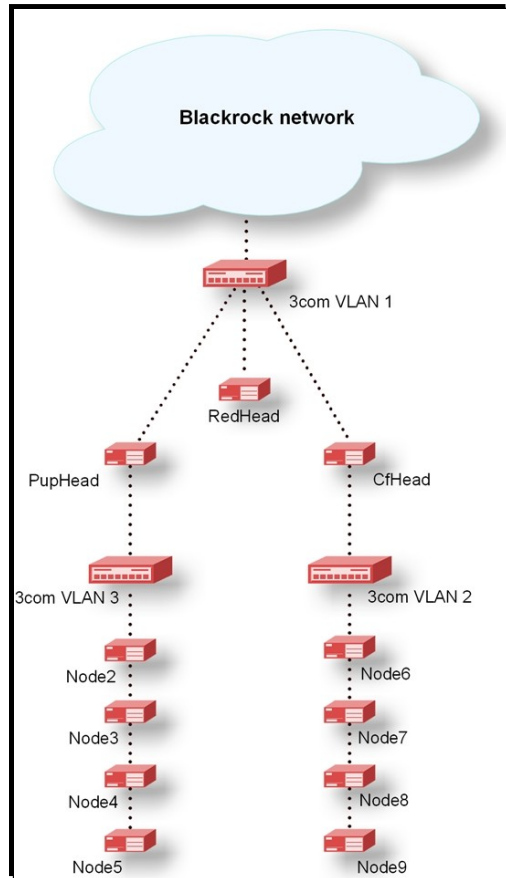
Why Configuration Management?

- System administrators have a limited amount of time to configure individual machines.

- Number of nodes in clusters is increasing.

- Over time systems tend to drift.

- Important to be able to quickly integrate nodes.

- Configuration management tools address these issues.

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Our Project Goals

- Compare Cfengine and Puppet configuration management tools.

- Determine whether Puppet is a viable replacement for Cfengine.

- Implement Cfengine and Puppet to rebuild a node by net booting and installing the configuration management tool.

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Cluster Layout

- RedHead is the overall server with the SVN database and connection to Blackrock.

- Each configuration management tool has a head node.

- Below the CM head nodes are four compute nodes.

- Three VLAN's simulate separate clusters.

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Cfengine

- Cfengine is currently used on many LANL clusters. It is a well-established tool with a large user community.

- With the help of our mentors we were able to install Cfengine on a head node and four compute nodes. Cfagent is called hourly by the cron daemon to check the state of all machines. We are able to rebuild any of the nodes with Cfengine.

- Issues with Cfengine: Cfrun had authentication errors so we used cron to call Cfagent.

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Puppet

- Supported by open development community.

- Puppet is object-oriented in the sense that it allows you to manage resources or "classes".

- Puppet is cross platform. Write once, run everywhere.

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Conclusions

- Test Results

  - able to net boot cluster nodes

  - successfully configured nodes

- Primary Strengths

  - Cfengine: has mature user base and ample documentation

  - Puppet: supported by open development community

- Recommendation

  - Puppet is a viable alternative to Cfengine

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