



Shared IT Services for Higher Education & Research

Conference 2017



From Hand-Crafted to Fully-Automated

Configuration Management at UVic

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- UNIX System Administrator at UVic
- Built our in-house CMDB app, ConfigManager
- Huge nerd for automation

HIGH RISK LIVE DEMO

Background to History

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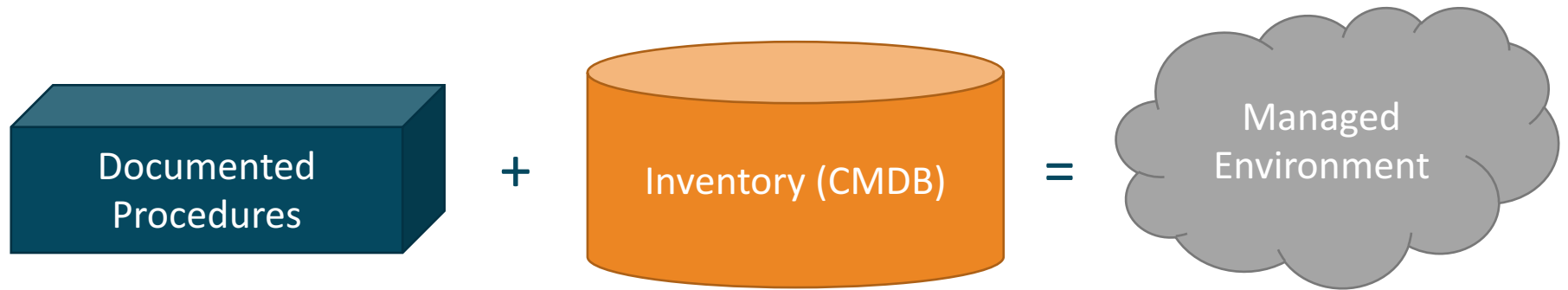
...and then virtualization
happened.

Well, I've got 1200 firewalls to
configure by hand!

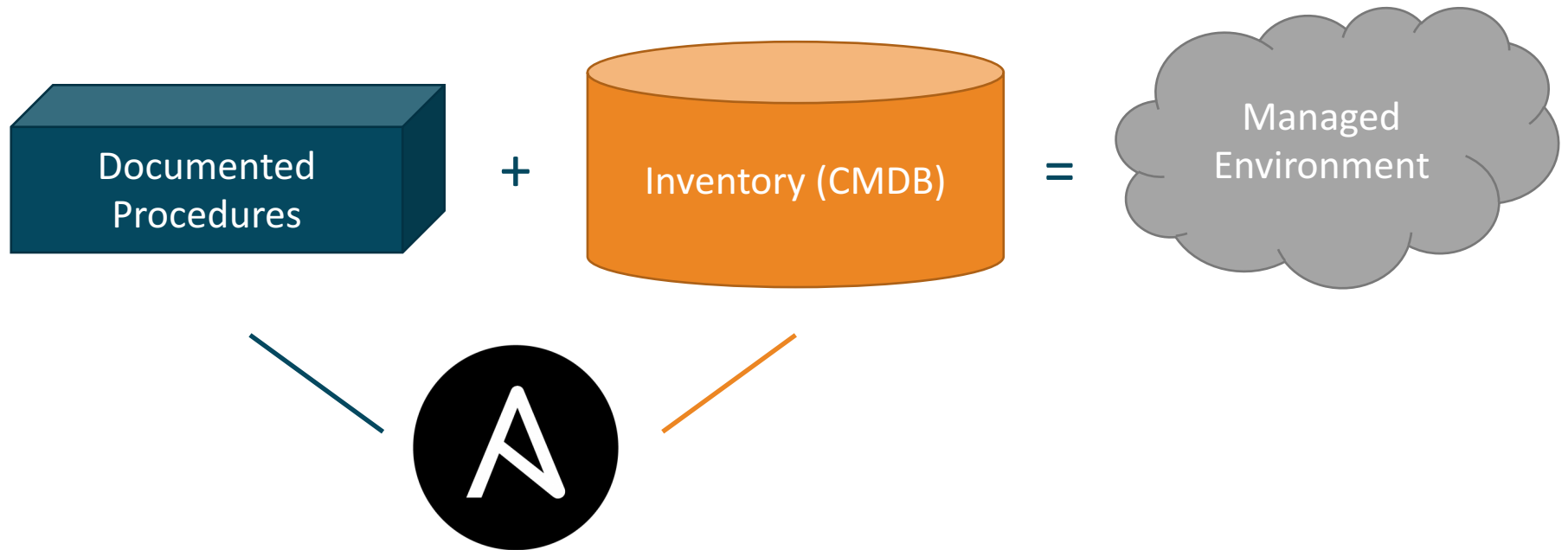


I wonder how long I
can hide under the
data centre floor
before somebody
finds me...

Configuration Management!



Configuration Management!

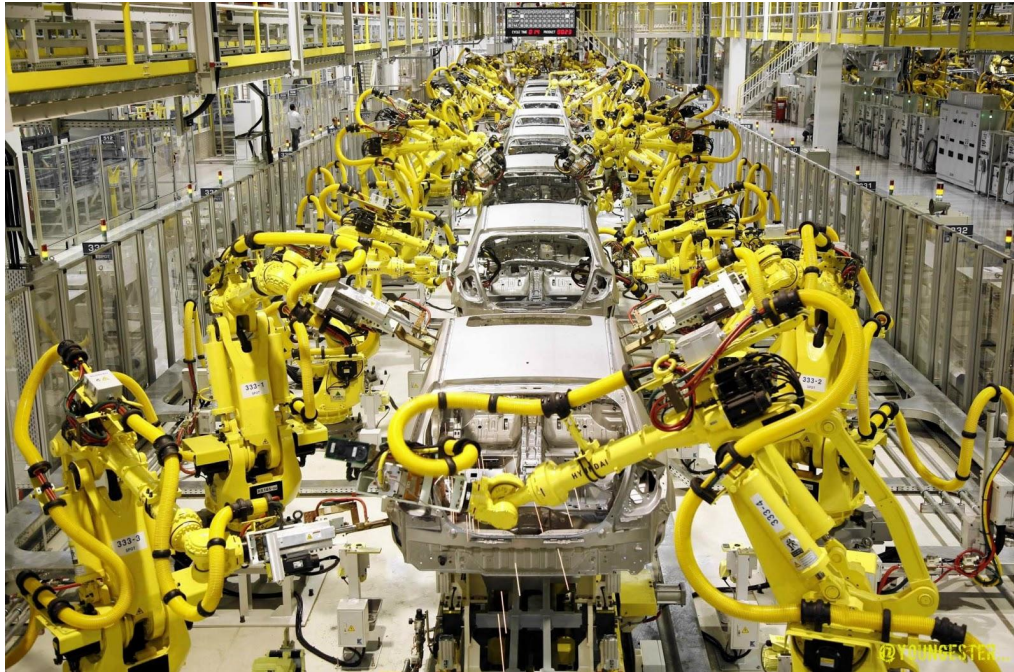


Why Configuration Management?

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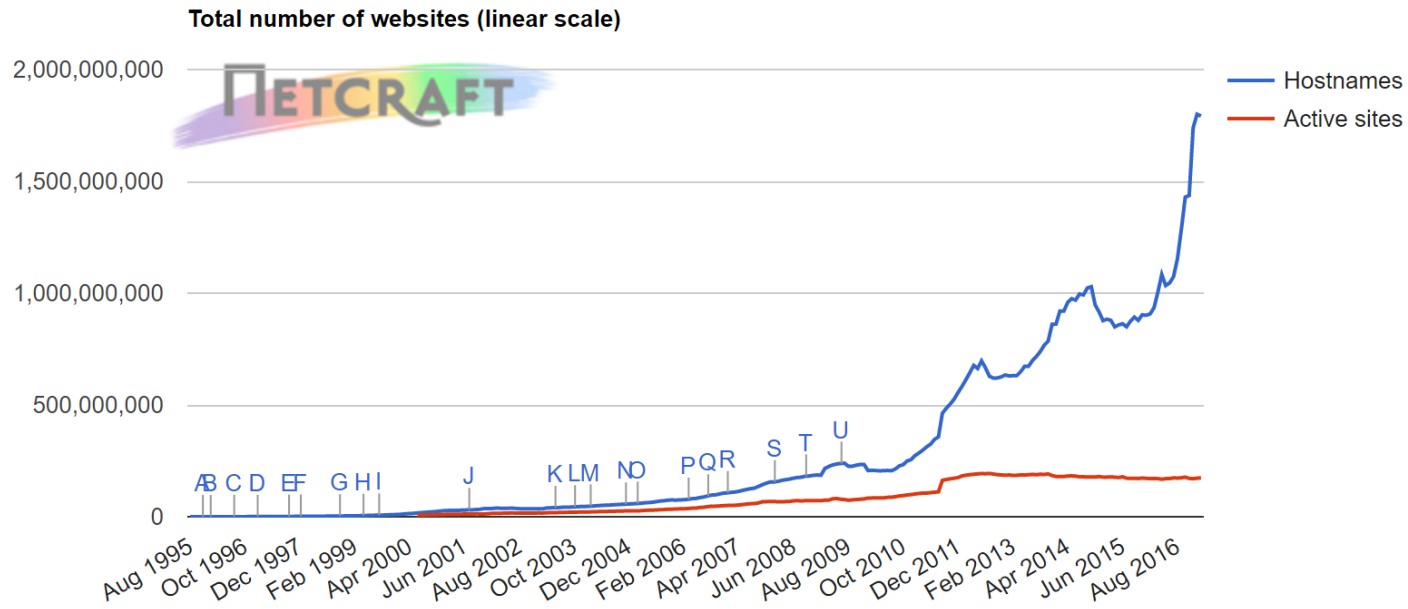
Configuration
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Is
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Why Configuration Management?



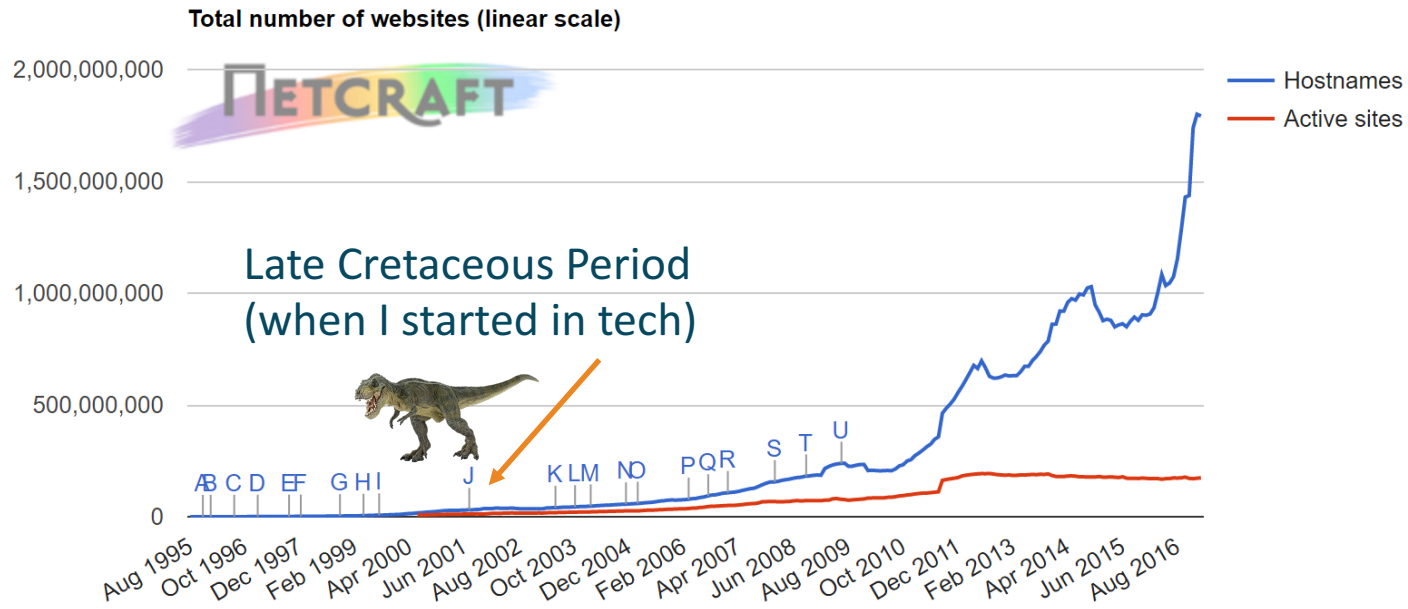
Yep, THAT kind of automation.

Scale



Automation can allow smaller teams to offer services and capabilities recently considered possible only with huge resources and costs.

Scale



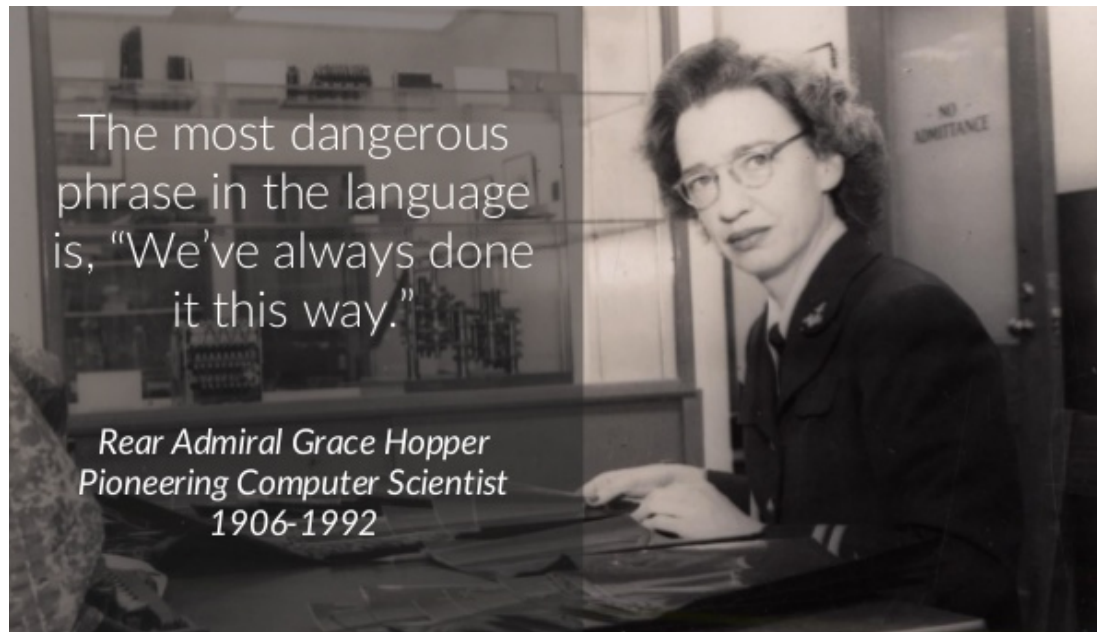
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Staff Development



Automation frees up senior staff to focus on architectural and project work, and provides an on-ramp to junior staff through operationalization of tasks that used to be “unknowable magic”

Process Improvement

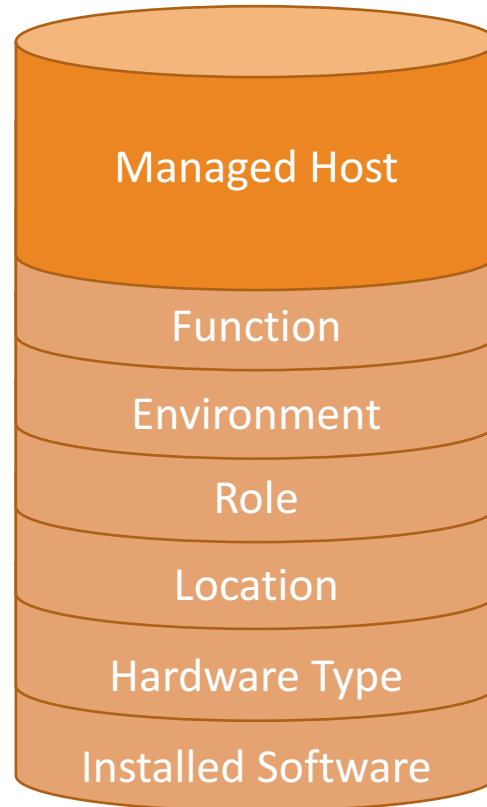


Automating a procedure forces objective consideration - a curative for “nobody knows why, we’ve just always done it that way”

Okay, sounds great!

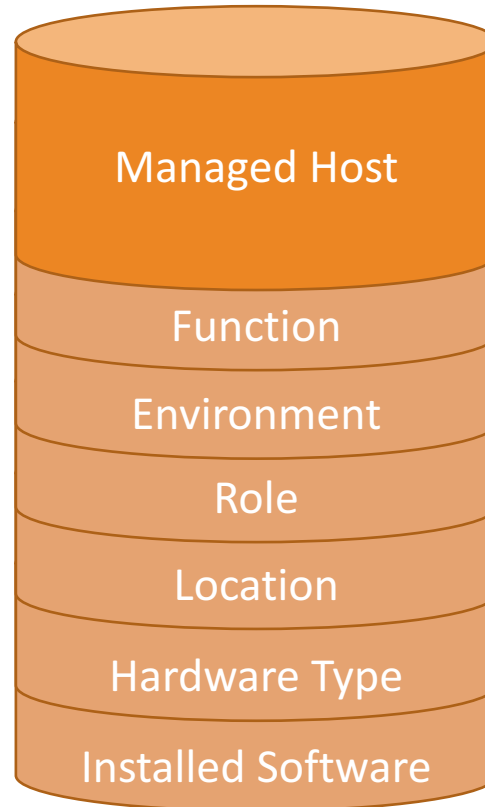
How do we get started?

You Need Detailed Inventory



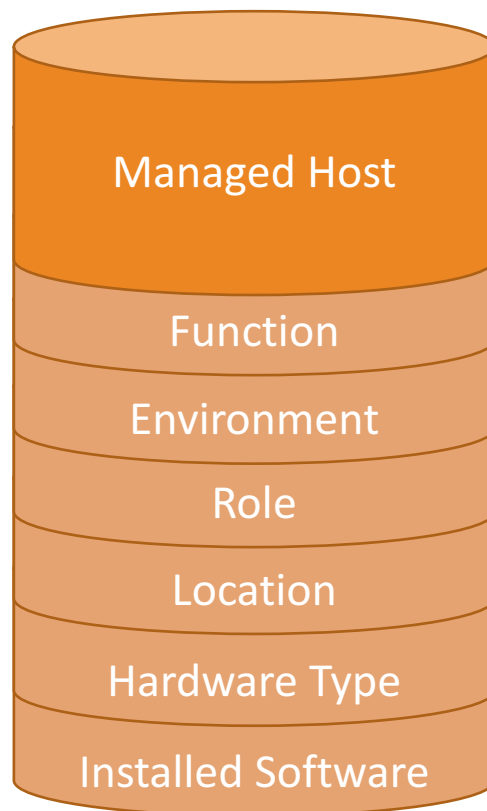
You Need Detailed Inventory

Hosts with the “www.uvic.ca”
function get a stack of
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deployment



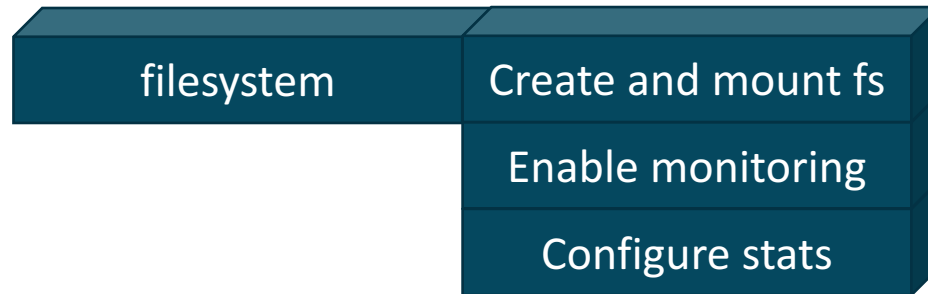
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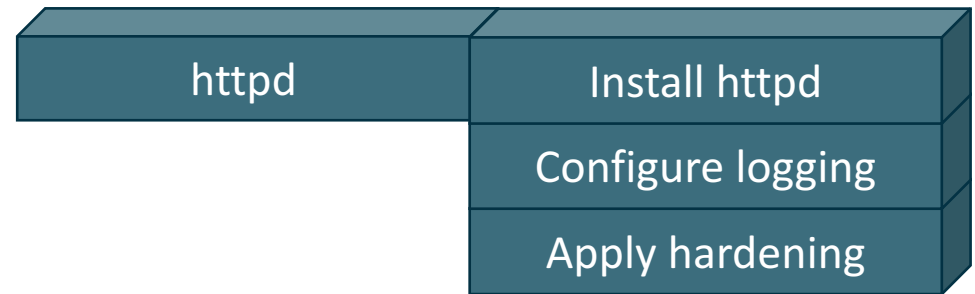
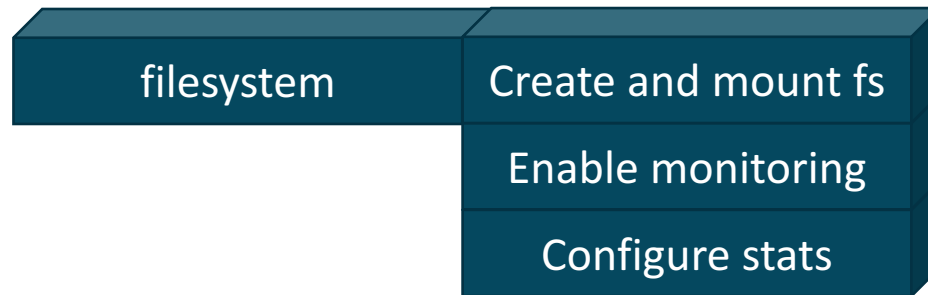


Hosts in the “Prod”
environment get a modified
version of the “www.uvic.ca”
configuration stack that makes
them members of the
production cluster

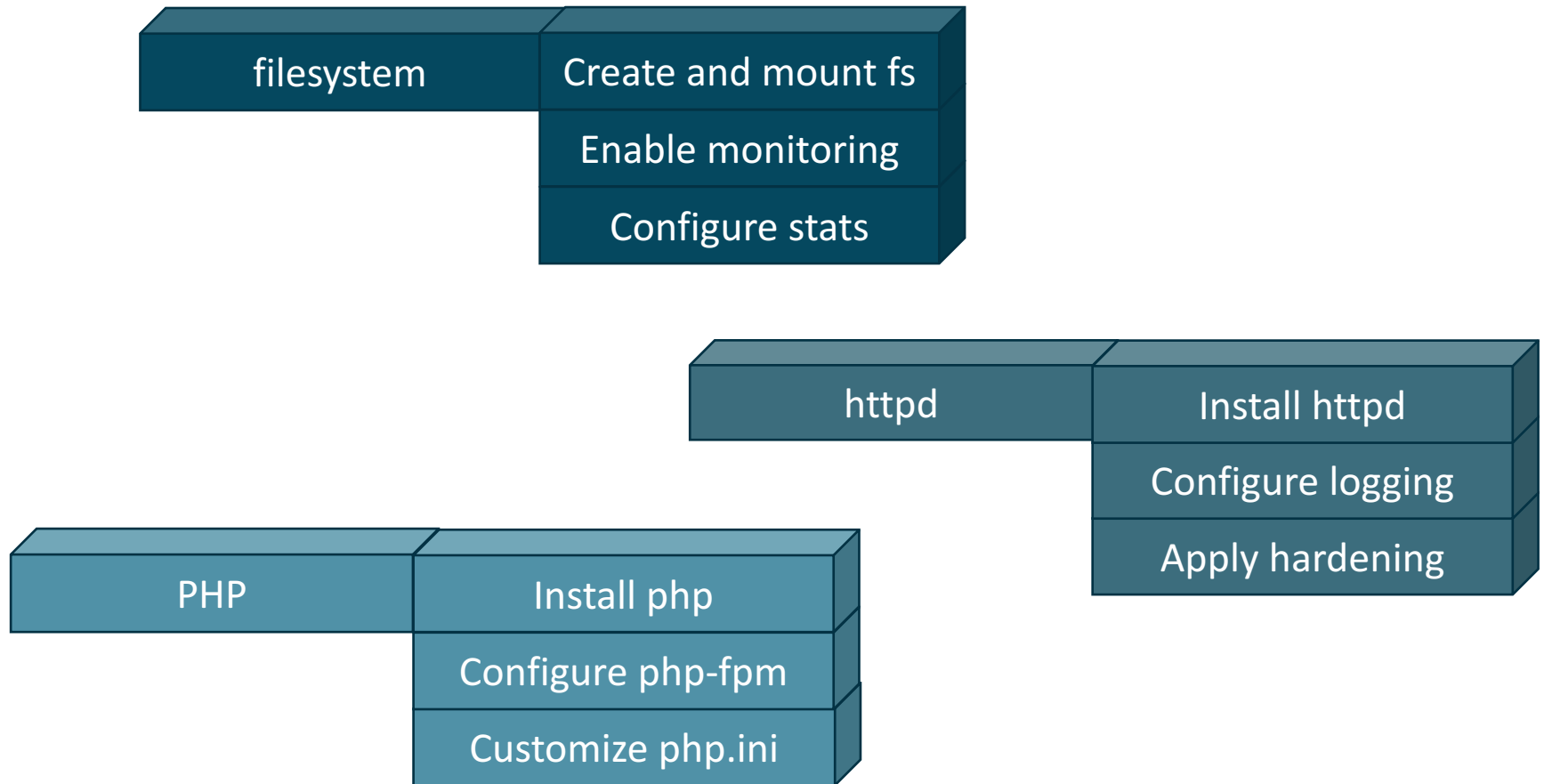
You Need Composable Procedures



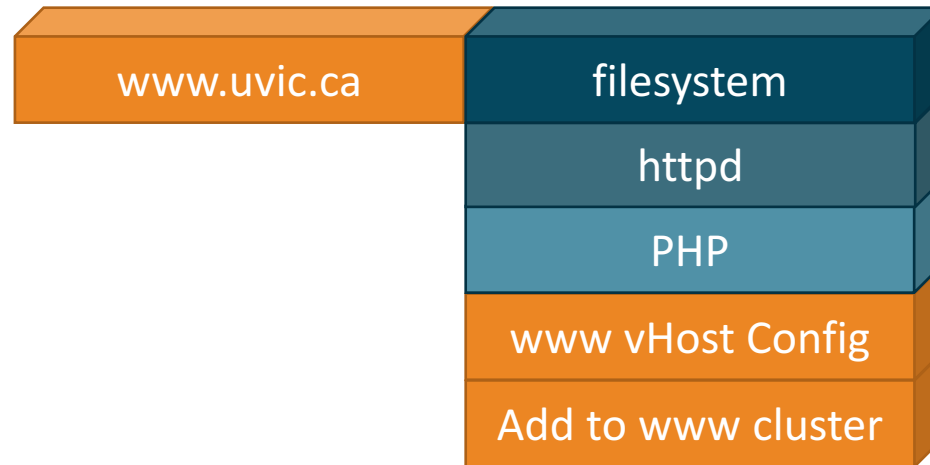
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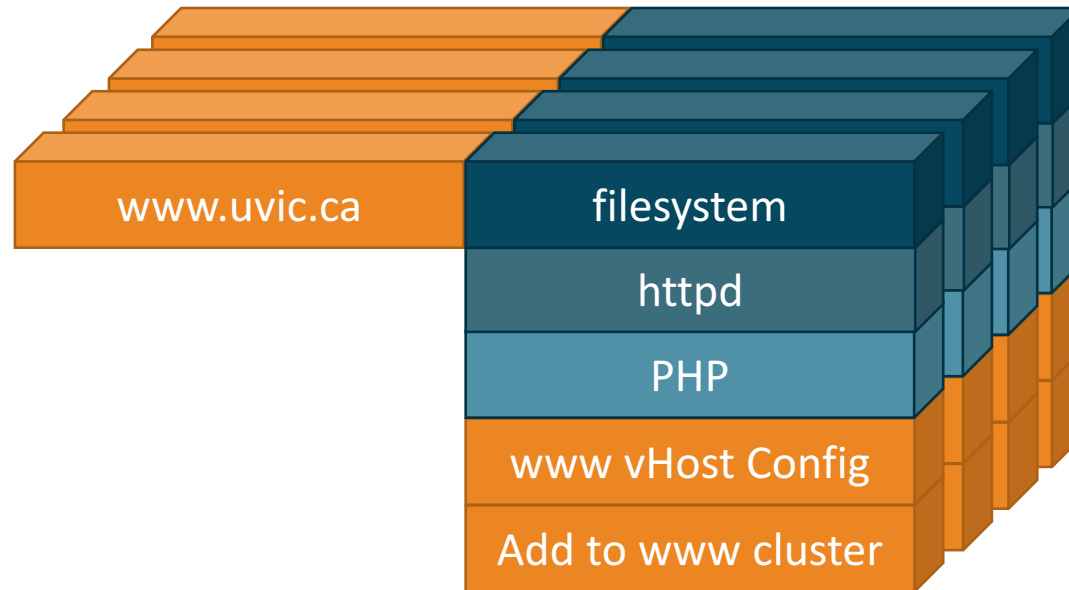
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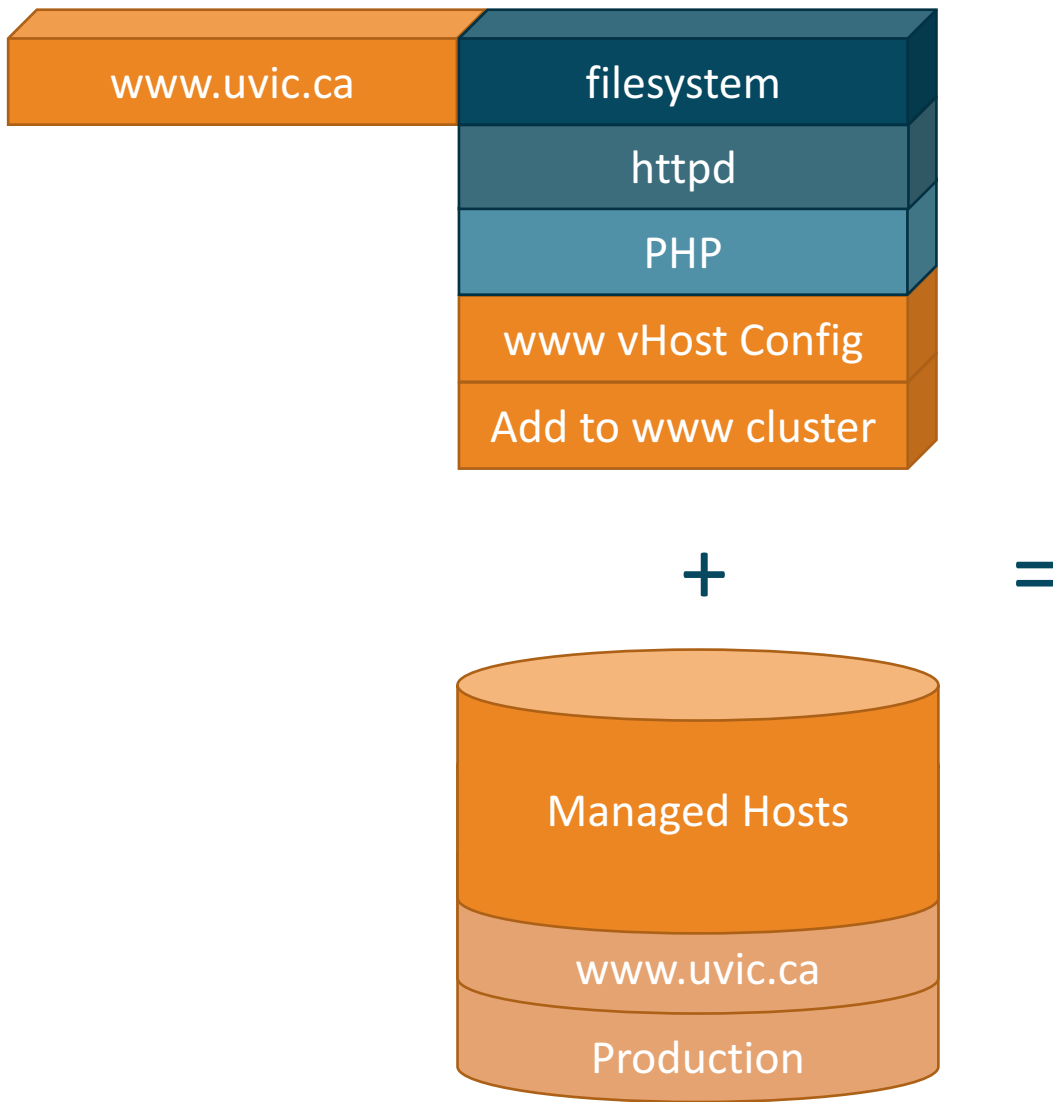


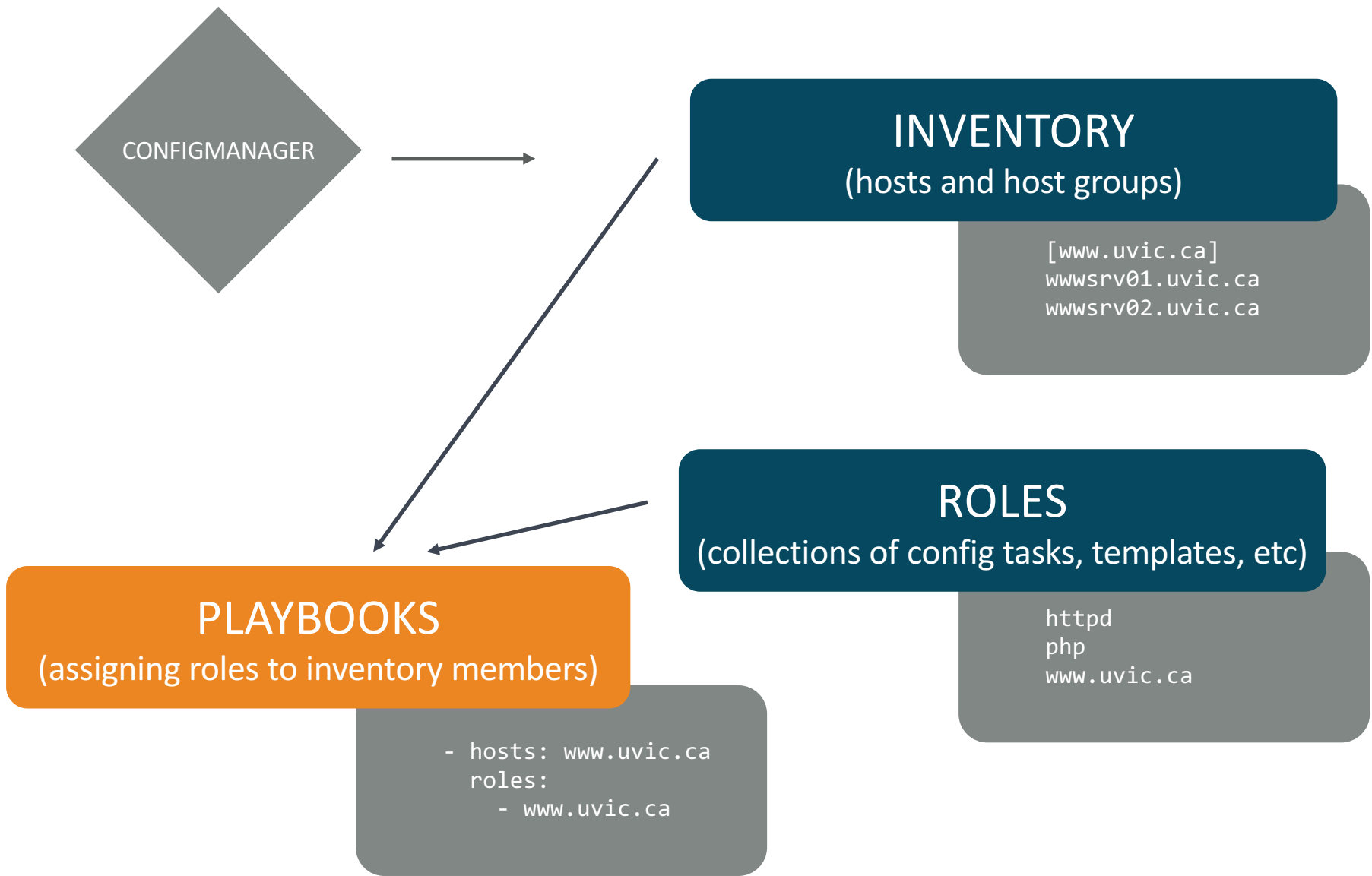
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Nerdery Alert: Ansible Show-and-Tell

Somewhat Unorthodox Uses

- Provisioning
 - We tied together Ansible with vSphere and some custom code to allow on-the-fly provisioning of new VMs from inventory definitions
- System Updates
 - Ansible can be used to remotely trigger updates on a host, schedule a reboot if necessary, and check to ensure the host comes back up
- Closing the Inventory Loop
 - Our CMDB app has a REST API, and Ansible has a module that can drive those APIs, so Ansible can now source data from inventory as well as updating it!

Benefits: Speed!

- Building a new VM used to take about 4 hours of real person time. Now it takes about 20 minutes.
- Rolling out new tiers of an Ansible-managed application is as simple as adding new hosts to the appropriate inventory group
- Our once-arduous weekly update cycle is more or less cron-able now

Benefits: Consistency!

- Specialists can build roles for their software that other admins can use without having to learn or implement all the details.
- Composed roles means a lot less duplication of procedures, which means a lot less forgetting to update a procedure in every place it appears
- Building from a re-usable role means that improvements can be relatively simply applied back to deployments that are out in the environment, limiting configuration drift.

Benefits: Collaborative Culture!

- Specialists consider their work in terms of its place in the overall environment, because designing collaboratively means getting the benefits of other specialists' composed roles
- Procedural changes become documented by default – you literally can't make a change without writing it down
- Unification of deployments to a standard promotes a sense of ownership for specialists

Challenges: Change Required!

- Significant changes in workflow require significant buy-in – start with manageable increments
- Some tools and systems may require a bit of effort to make them accessible to automation
- Rolling out configuration management will likely highlight gaps in your procedures and inventory that you'll have to be prepared to address

Challenges: Mindset Shift!

- Configuration Management broadens a specialist's role, from designing individual deployments to designing environment-wide architecture
- Old habits – “I’ll just log into the app server and make this one change by hand” – are hard to break, but really dangerous in a managed environment
- Like all automation, CM lets you make mistakes at huge scale. A rigorous culture of communicating, testing and verifying changes is vital

Lessons Learned



Communicate

Lessons Learned



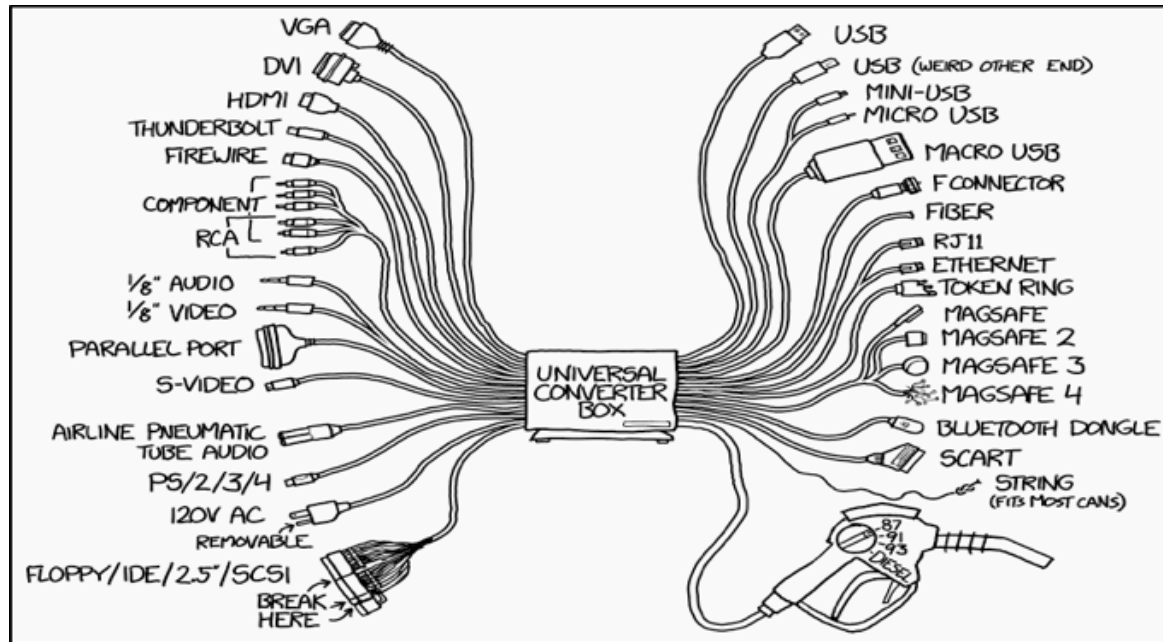
Collaborate

Lessons Learned



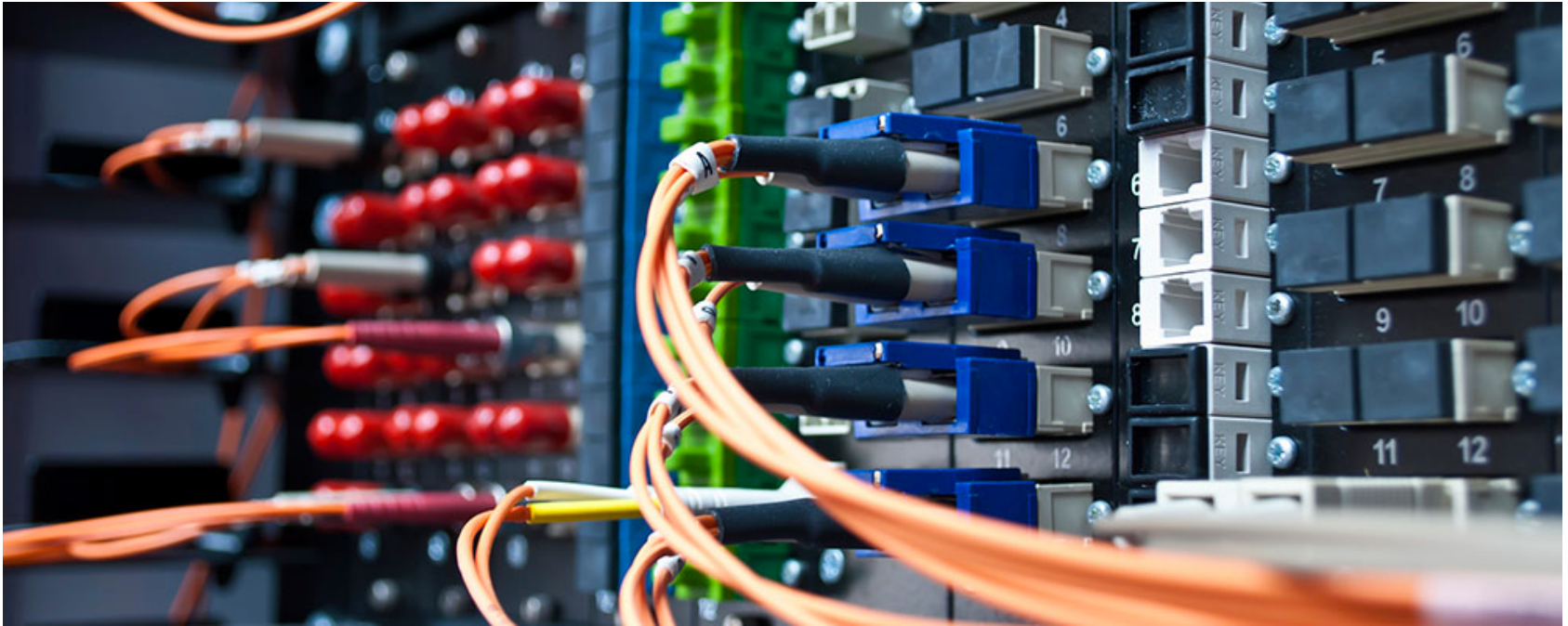
Build From the Foundation Up

Lessons Learned



Build and Buy Automation-Friendly Tools

Lessons Learned



Automation is an
Infrastructure Service

High-Risk Live Demo Check-In

Thanks for Listening!

Questions?