

#ANSIBLEFEST2019

Minimizing Conflict with Automation

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ANSIBLE

My Automation Story

1. How I got started with Ansible
2. How long I've been using Ansible
3. My favorite thing to do with Ansible

The Conflict

- Third Quarter Patch Window Scheduling
 - This is the third time this year, so it should not be a surprise.
- Background
 - The patching process and schedule was rolled out 2 years ago.
 - Patching has been mandated by Security and the CIO.
 - Nuclear Operations has legitimate outage limitations.

The Setup Email #1

From: Infrastructure Support

To: App Support, DB Support, Plant Tech Support, Stakeholders

Date: June 15

Cycle 3 patching starts **August 24th** and will continue weekly into September.

The Setup Email #2

From: Infrastructure Support

To: App Support, DB Support, Plant Tech Support, Stakeholders

Date: August 16th

This is a reminder that our Cycle 3 patching begins **next** Saturday, August 24th.

The Auto Reply...

From: App Support for “Uber Important App”

To: Infrastructure Support

Date: August 16th

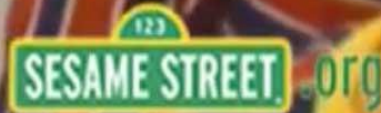
We will be out of the office starting 8/15 until 8/19. If you have an urgent need regarding “Uber Important App” please contact the Tech Center at:
555-5463-whogivesa@#\$%

**BROUGHT TO YOU BY THE
LETTERS**

Being OOTO is fine;
The angst is based on
the previous pattern.

*No communication this cycle, so
expect a last minute
change/cancellation!!*

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W. T. and F

The Back and Forth...

From: Infrastructure Support
To: App Support, DB Support, Plant Tech Support
Date: August 23rd

This is a reminder that there will be a patching outage tomorrow. The servers will be out of service for approximately 30 minutes.

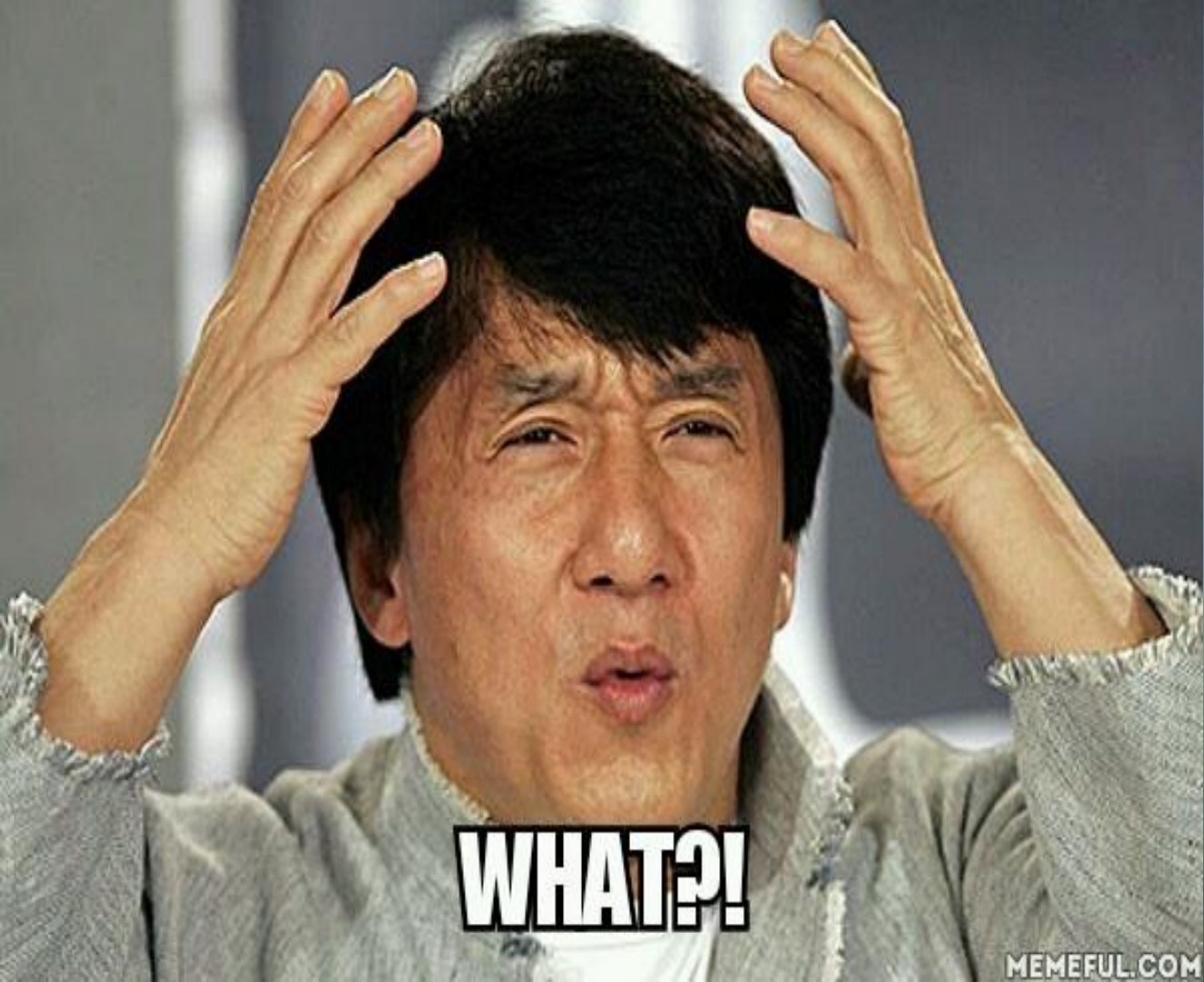
From: Plant Tech Support
To: App Support
Date: August 23rd

Has there been any communication with the plant folks on this outage?

From: App Support
To: All
Date: August 23rd

None of this work has been coordinated yet. This will **NOT** happen tomorrow. The plant servers are not to be touched without explicit approval and coordination with the sites.

So now we must break the automation to move your **three** servers out of the inventory of over 500!!!



The Solution

- Use people skills to analyze the conflict and find points of agreement.
 - Clarify, Communicate, and Capitalize on these points of shared priority.
- Explore and apply modern technical tools and principles to address the priorities.
 - Create and “Easy Button” to address the conflict.
- Success = Tech + Humanity
 - Technology should make life better!!

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The Humanity

- Analyze the conflict, find points of agreement.
- Use basic, but effective people skills to guide you.

Success = Humanity + Tech



EMPATHY



COMPASSION



COMMUNITY



INITIATIVE



LEADERSHIP

Understand and Manage the Conflict

- Timing Conflict – App Team vs. Infrastructure Team
- Lack of trust – Emailing others to confirm
- Lack of respect – Not acknowledging emails
- Priority Conflict – System availability vs. Security
- Lack of a collective vision – Tactical responses

All reinforced by a siloed organization

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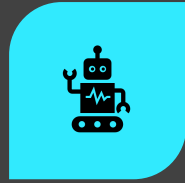
The Tech

- Use modern tech tools and principles to develop simple solutions.

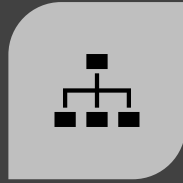
Success = Tech + Humanity



AGILE



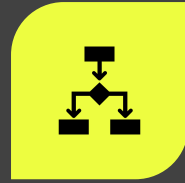
AUTOMATION



DEVOPS



ABSTRACTION



OPTIONS

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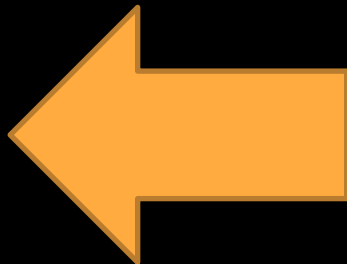
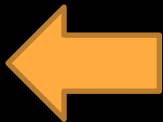
The Easy Button



ANSIBLE

Main Playbook

```
- hosts: "{{ run_hosts }}"
tasks:
  - name: Snapshot VM if required
    import_role:
      name: VMWARE_SNAPSHOT
    when:
      - ansible_local['snapshot'] is defined
        - ansible_local['snapshot']['prepatch_snapshot'] == "True"
  - import_role:
      name: Pre_Patch_RHEL
  - import_role:
      name: Patch_RHEL
  - import_role:
      name: Patch_Reboot
  - import_role:
      name: Post_Patch_RHEL
```



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Pre-Patch Role

```
- name: Check Server's Uptime
  command: /usr/bin/uptime
  register: pre_uptime_output

- name: Create Disable Repo Directory
  file:
    name: /etc/yum.repos.d/disable_repos.d
    state: directory
    mode: 0775

- name: Move 3rd party repos to disable_repos.d directory
  script: disablerepos.sh

- name: Clear the yum cache
  command: /usr/bin/yum clean all
  args:
    warn: no

- name: Enable Tools and ELS Repos (RHEL 5)
  import_tasks: enable_rhel5_repos.yml
  when: ansible_os_family == "RedHat" and ansible_distribution_major_version == "5"

- name: Enable Tools, EUS, and ELS Repos
  import_tasks: enable_repos.yml
  when: ansible_os_family == "RedHat" and ansible_distribution_major_version != "5"
```

~
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```
---
- when: ansible_os_family == "RedHat" and ansible_distribution_major_version == "5"
  block:
    - name: Patch System (RHEL 5)
      shell: yum update -y
      args:
        warn: no
      register: patch_result

    - name: Set system to reboot if needed (RHEL 5)
      set_fact:
        need_reboot: "{{ '0' if (patch_result is changed and patch_result is not failed) else '1' }}"
        patched: "{{ 'yes' if (patch_result is changed and patch_result is not failed) else 'no' }}"

- when: ansible_os_family == "RedHat" and ansible_distribution_major_version >= "6"
  block:
    - name: Patch System
      yum:
        name: '*'
        state: latest
      register: patch_result

    - name: Set system to reboot if needed
      set_fact:
        need_reboot: "{{ '0' if (patch_result is changed and patch_result is not failed) else '1' }}"
        patched: "{{ 'yes' if (patch_result is changed and patch_result is not failed) else 'no' }}"
```

Reboot Role

```
- name: Set reboot timeout
  set_fact:
    boot_tmout: "{{ '1200' if (ansible_virtualization_role == 'host') else '600' }}"

- name: Rebooting...
  reboot:
    reboot_timeout: "{{ boot_tmout }}"
  register: reboot_result
  when: need_reboot == "0"

- name: Set booted variable if system rebooted
  set_fact:
    booted: "{{ '0' if (reboot_result is changed) else '1' }}"
    elapsed_time: "{{ reboot_result.elapsed if (reboot_result.elapsed is defined) else '0' }}"

- name: Elapsed reboot time
  debug:
    msg: "The system rebooted in {{ reboot_result.elapsed }} seconds."
  when: reboot_result.elapsed is defined

- name: No reboot required
  debug:
    msg: "No reboot was required."
  when: need_reboot == "1"
```

~
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Post-Patch Role

```
--
- name: Move 3rd party repos back to yum.repos.d directory
  script: files/enablerepos.sh

- name: Clear the yum cache
  command: /usr/bin/yum clean all
  args:
    warn: no

- name: Check Server's Uptime
  command: /usr/bin/uptime
  register: post_uptime_output

- name: Check Server's O/S Distribution Version
  shell: cat /etc/redhat-release | awk '{ print $7 }'
  register: dist_ver

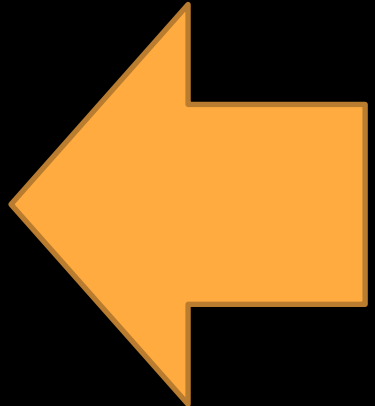
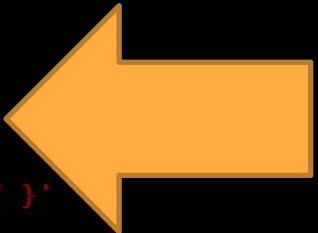
- name: Update custom patching facts
  import_tasks: update_custom_facts.yml

- name: Create Reports
  import_tasks: create_reports.yml

- name: Email Patch Report
  import_role:
    name: email_rprt

- name: Cleanup Dirs on Remote Systems
  import_role:
    name: cleanup_remote_sys

- name: Cleanup Dirs on Local System
  import_role:
    name: cleanup_local_sys
```



```
*****
PATCH REPORT FOR {{ inventory_hostname }}
DATE: {{ ansible_date_time.date }}
TIME: {{ ansible_date_time.time }}
-----
{# Determine boot message #}
{% if booted == "0" %}
    {% set boot_message = "The system rebooted!" %}
    {% set boot_message2 = "" %}
{% else %}
    {% set boot_message = "The system did NOT boot!" %}
    {% set boot_message2 = "Either no reboot was required OR their was an issue." %}
{% endif %}

Vendor:                {{ ansible_system_vendor }}
Server Type:           {{ ansible_product_name }}
BIOS Version:          {{ ansible_bios_version }}
O/S Distribution:      {{ ansible_distribution }}
Previous Dist rev:     {{ ansible_distribution_version }}
Upgraded Dist rev:     {{ dist_ver.stdout|to_nice_json }}
Previous Kernel rev:   {{ ansible_kernel }}
Upgraded Kernel rev:   {{ kernel_ver.stdout|to_nice_json }}
Python Version:        {{ ansible_python_version }}
PrePatch Uptime:       {{ pre_uptime_output.stdout|to_nice_json }}
PostPatch Uptime:      {{ post_uptime_output.stdout|to_nice_json }}

{{ boot_message }}
{{ boot_message2 }}
System took {{ elapsed_time }} seconds to reboot.
-----
***** END REPORT FOR {{ inventory_hostname }} *****
```

PATCH REPORT FOR funhost25

DATE: 2019-09-21

TIME: 09:16:01

Vendor: VMware, Inc.
Server Type: VMware Virtual Platform
BIOS Version: 6.00
O/S Distribution: RedHat
Previous Dist rev: 7.6
Upgraded Dist rev: "7.6"
Previous Kernel rev: 3.10.0-957.5.1.el7.x86_64
Upgraded Kernel rev: "3.10.0-957.12.1.el7.x86_64"
Python Version: 2.7.5
PrePatch Uptime: " 09:16:03 up 91 days, 13 min, 1 user, load average: 0.59, 0.64, 0.66"
PostPatch Uptime: " 09:21:15 up 1 min, 1 user, load average: 0.88, 0.32, 0.11"

The system rebooted!

System took 53 seconds to reboot.

***** END REPORT FOR funhost25 *****

- VIEWES
 - Dashboard
 - Jobs
 - Schedules
 - My View
- RESOURCES
 - Templates**
 - Credentials
 - Projects
 - Inventories
 - Inventory Scripts
- ACCESS
 - Organizations
 - Users
 - Teams
- ADMINISTRATION
 - Notifications
 - Instance Groups
 - Applications

TEMPLATES

TEMPLATES 1

SEARCH [KEY]

- RHEL x
- System x
- Patching x
- CLEAR ALL

RHEL System Patching Job Template

ACTIVITY

PROJECT Patching Project

CREDENTIALS asnell vSphere root

LAST MODIFIED 8/24/2019 2:37:08 PM by a-asnell

LAST RAN 8/24/2019 2:37:08 PM

The Easy Button

ITEMS 1 - 1

The Conclusion:

We resolve business conflict with automation by:

1. Identifying structural, cultural, and operational gaps and their root cause. These are also likely points of conflict.
2. Creating simple, reliable, and flexible solutions to fill those gaps.
3. Remembering that technology should make life better.

As techies, that is OUR job!!

So, go create an “Easy Button” for someone!!

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THANK YOU



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