Automation Options for Interconnecting Internet, Content and Cloud

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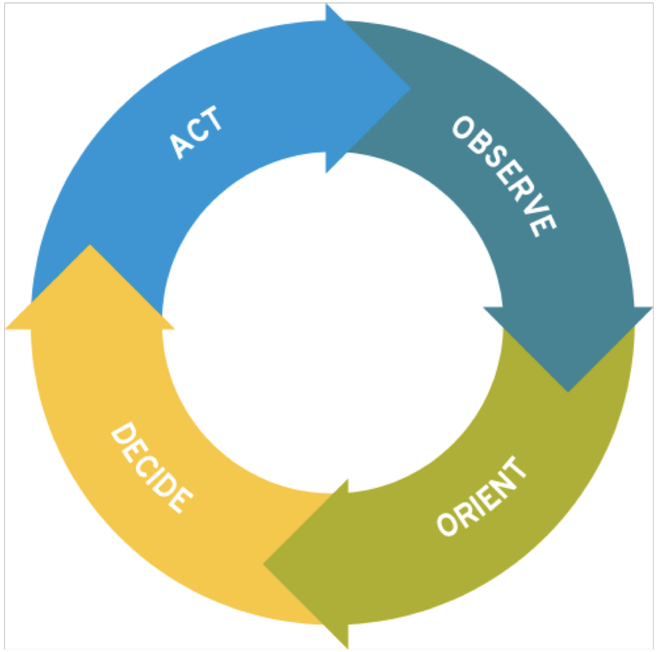
Extreme™
Customer-Driven Networking

sensu
moogsoft
kubernetes
amazon web services
heroku
Jenkins
CROWBAR
New Relic.
puppet labs
SALTSTACK
openstack
CLOUD FOUNDRY
git
splunk>
docker
CoreOS
mesosphere
JIRA
PAGERDUTY
vmware vSphere
Microsoft
VictorOps

Manual operations
Custom scripts….

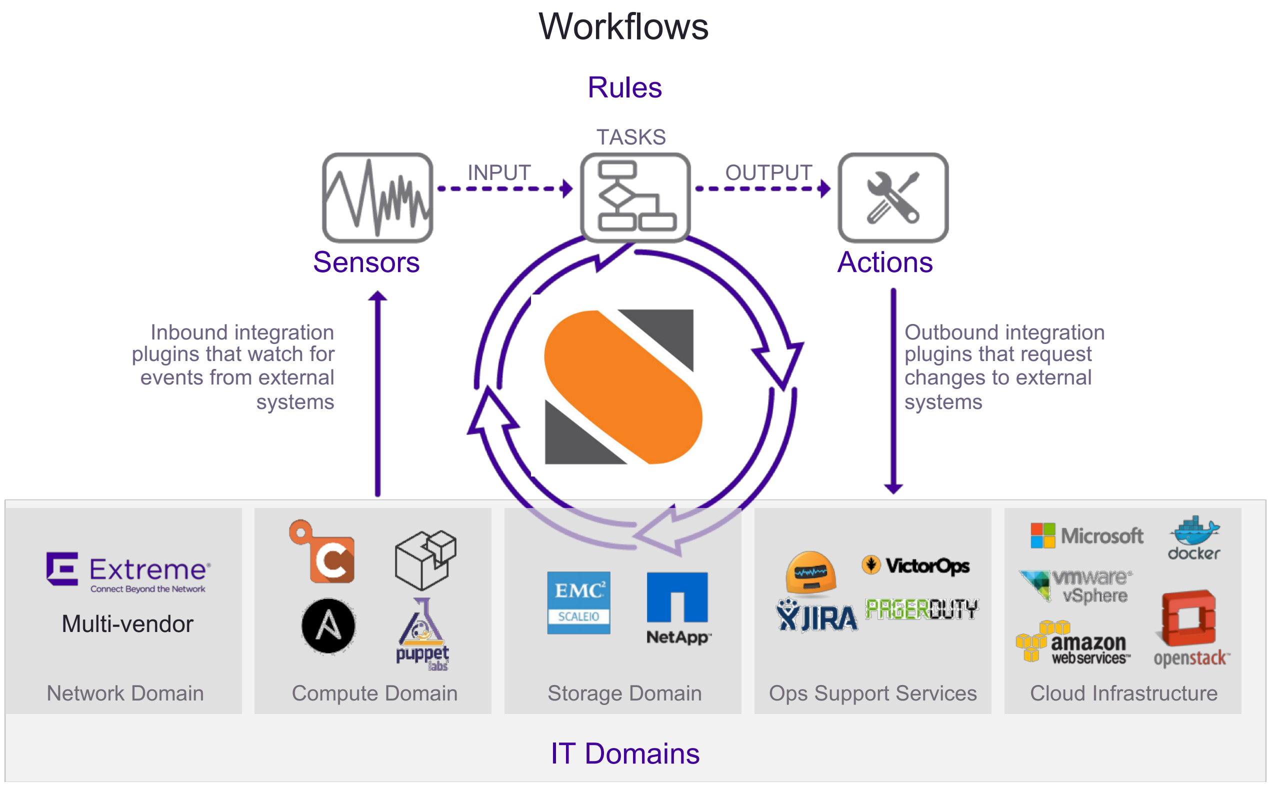


Event Driven Automation

StackStorm

OpenSource Event Automation Platform

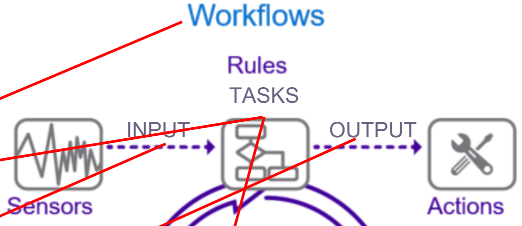
Event Driven Automation



Sensors : Listen for Events like outage in an area

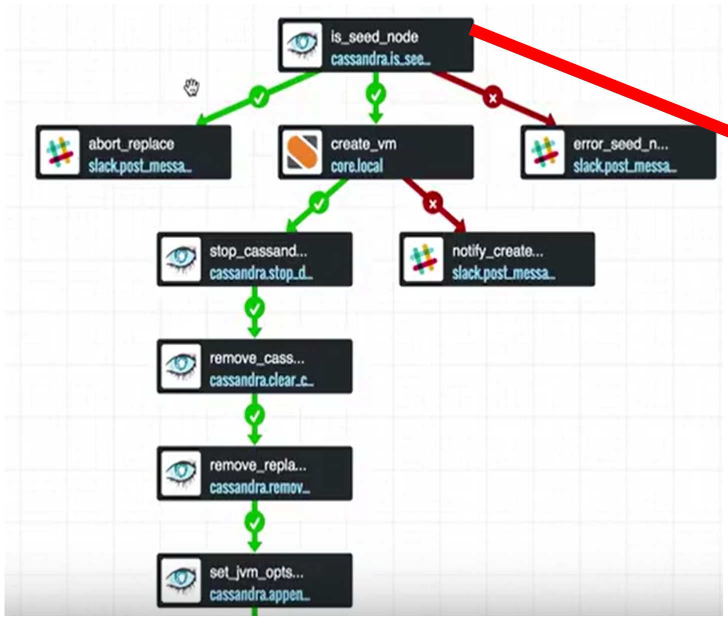
Actions: How to make the change via tools or Stacktorm

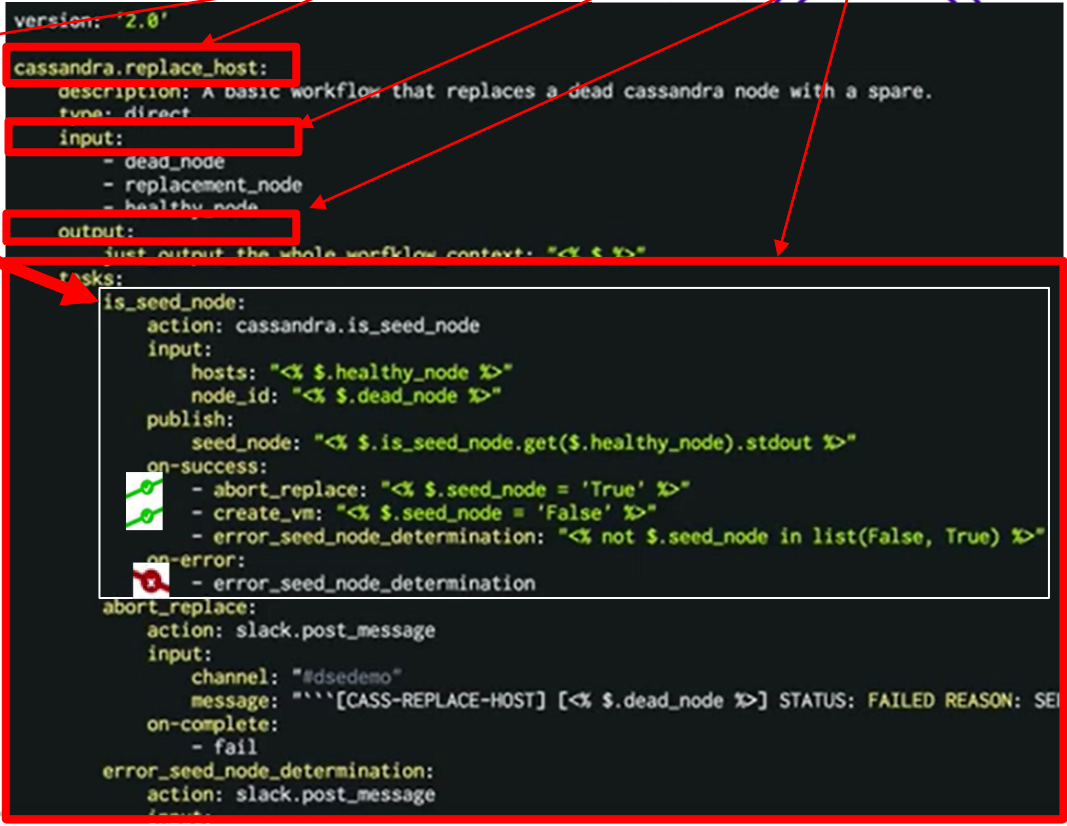
Workflow anatomy



Workflow : Cassandra.replace_host

Tasks

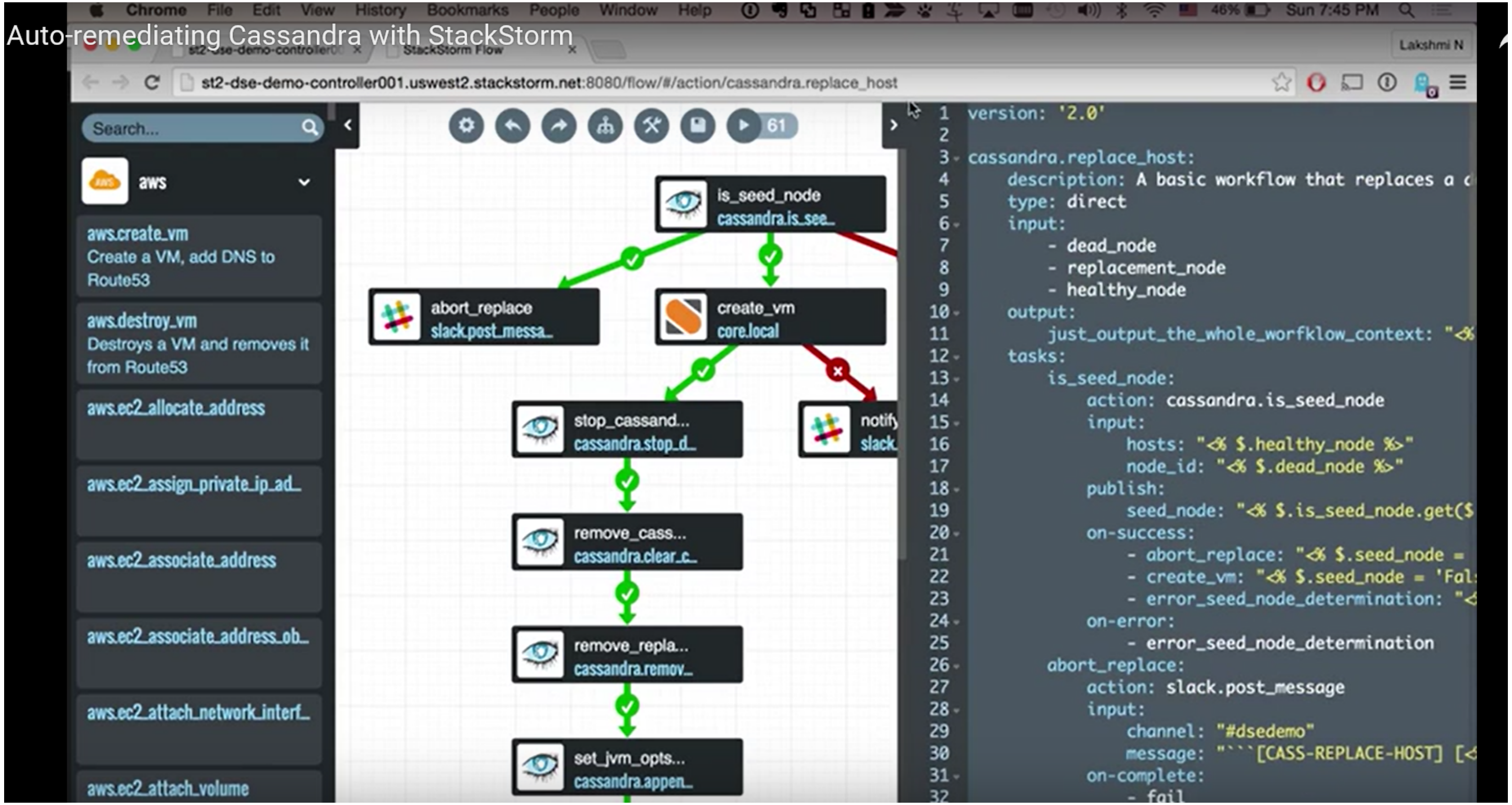




```
version: '2.0'

cassandra.replace_host:
    description: A basic workflow that replaces a dead cassandra node with a spare.
    type: direct
    input:
        - dead_node
        - replacement_node
        - healthy_node
    output:
        just_output_the_whole_worfklow_context: "<% $ %>"
    tasks:
        is_seed_node:
            action: cassandra.is_seed_node
            input:
                hosts: "<% $.healthy_node %>"
                node_id: "<% $.dead_node %>"
            publish:
                seed_node: "<% $.is_seed_node.get($.healthy_node).stdout %>"
            on-success:
                - abort_replace: "<% $.seed_node = 'True' %>"
                - create_vm: "<% $.seed_node = 'False' %>"
                - error_seed_node_determination: "<% not $.seed_node in list(False, True) %>"
            on-error:
                - error_seed_node_determination
        abort_replace:
            action: slack.post_message
            input:
                channel: "#dsedemo"
                message: "```[CASS-REPLACE-HOST] [<% $.dead_node %>] STATUS: FAILED REASON: SE
            on-complete:
                - fail
        error_seed_node_determination:
            action: slack.post_message
            input:
```

Workflow representation and code side by side


Auto-remediating Cassandra with StackStorm
Chrome File Edit View History Bookmarks People Window Help
Sun 7:45 PM
st2-dse-demo-controller0
StackStorm Flow
Lakshmi N
st2-dse-demo-controller001.uswest2.stackstorm.net:8080/flow/#/action/cassandra.replace_host
Search...
aws
aws.create_vm
Create a VM, add DNS to Route53
aws.destroy_vm
Destroys a VM and removes it from Route53
aws.ec2_allocate_address
aws.ec2_assign_private_ip_ad...
aws.ec2_associate_address
aws.ec2_associate_address_ob...
aws.ec2_attach_network_interf...
aws.ec2_attach_volume
61
is_seed_node
cassandra.is_see...
abort_replace
slack.post_messa...
create_vm
core.local
stop_cassand...
cassandra.stop_d...
notify
slack
remove_cass...
cassandra.clear_c...
remove_repla...
cassandra.remov...
set_jvm_opts...
cassandra.appen...

```
version: '2.0'

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        - healthy_node
    output:
        just_output_the_whole_worfklow_context: "<%
    tasks:
        is_seed_node:
            action: cassandra.is_seed_node
            input:
                hosts: "<% $.healthy_node %>"
                node_id: "<% $.dead_node %>"
            publish:
                seed_node: "<% $.is_seed_node.get($
            on-success:
                - abort_replace: "<% $.seed_node =
                - create_vm: "<% $.seed_node = 'Fal
                - error_seed_node_determination: "<
            on-error:
                - error_seed_node_determination
        abort_replace:
            action: slack.post_message
            input:
                channel: "#dsedemo"
                message: "```[CASS-REPLACE-HOST] [<
            on-complete:
                - fail
```
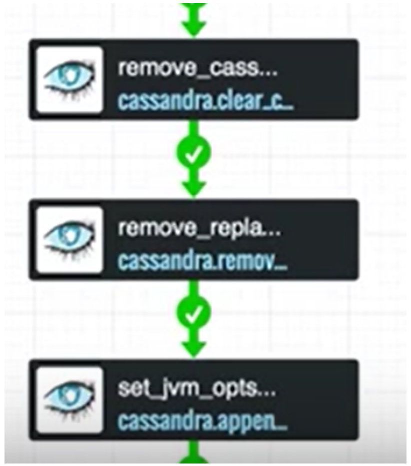
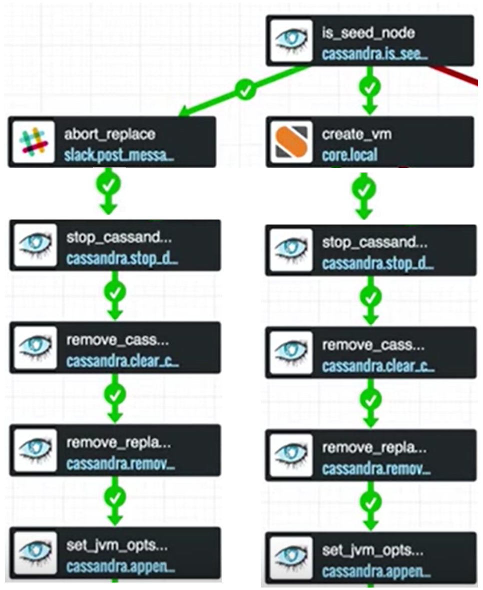

Tasks in Workflow: Linear , semi parallel or parallel

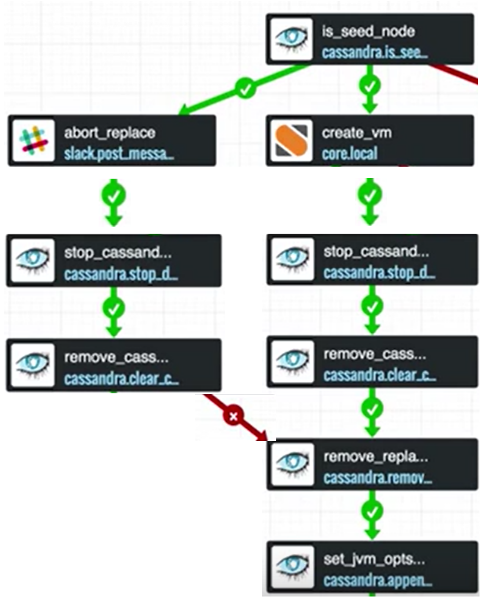
Linear



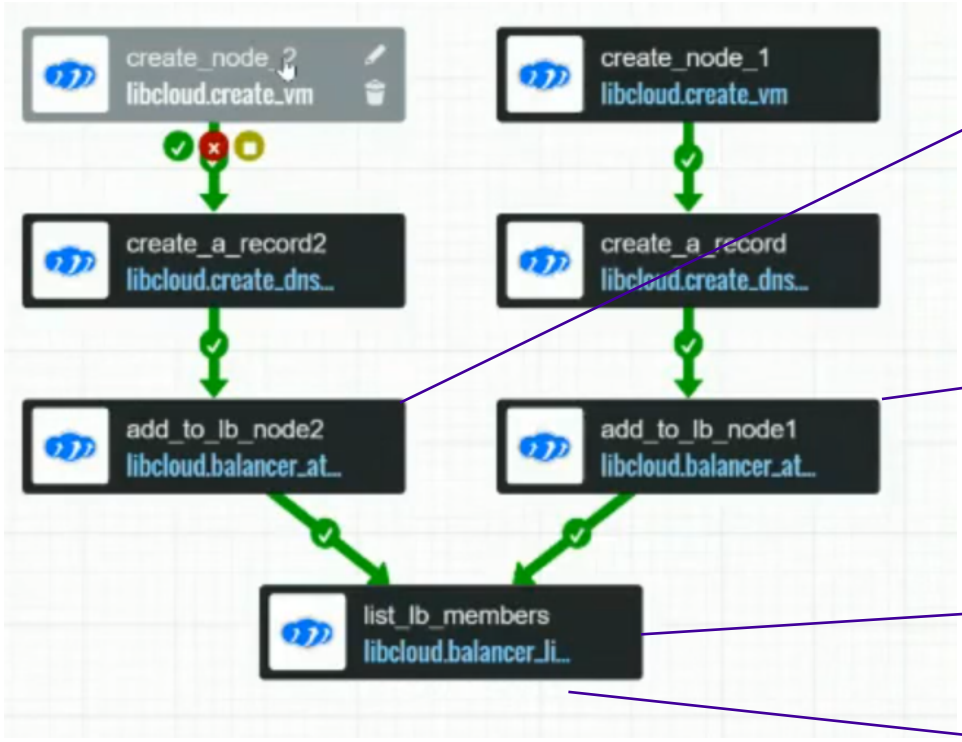
Parallel



Semi-parallel



Tasks can collapse with "Joins"

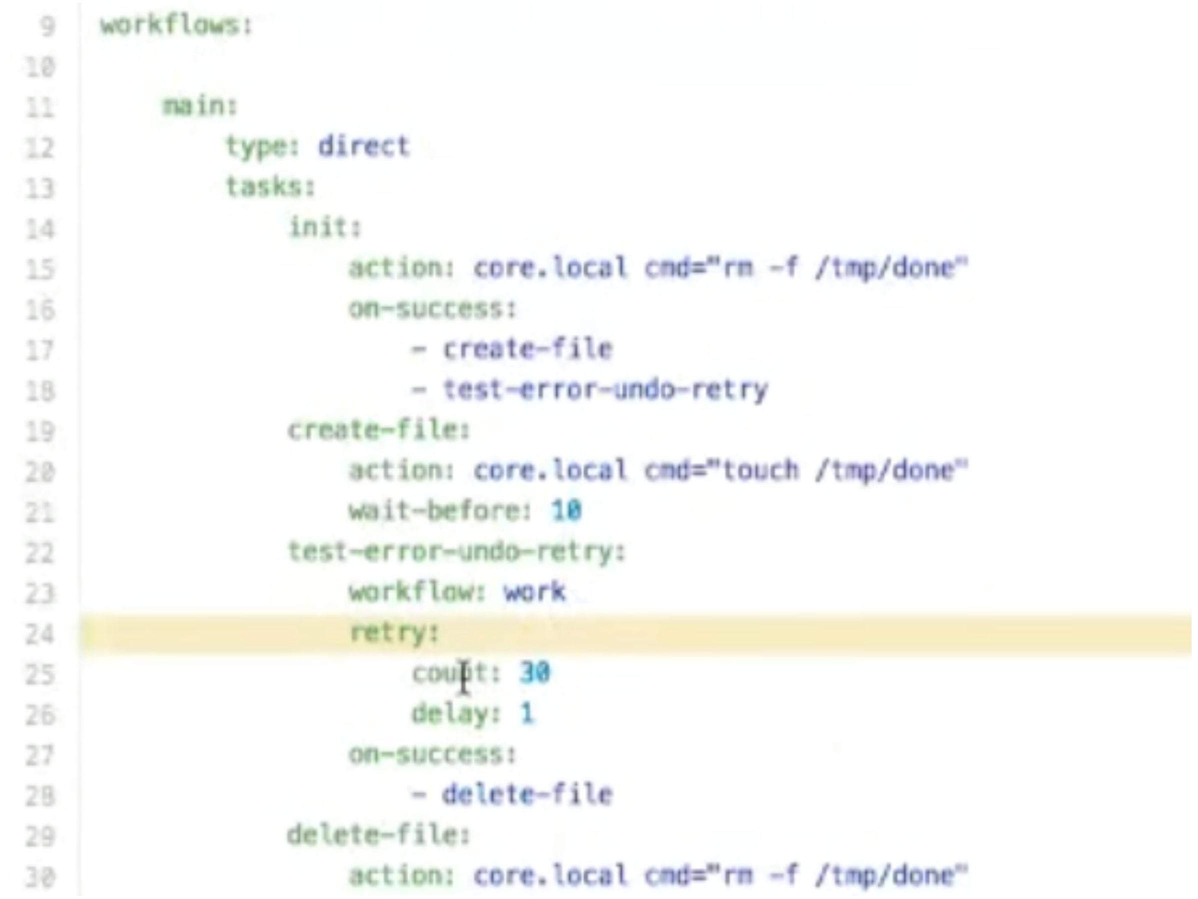


tasks:

.....

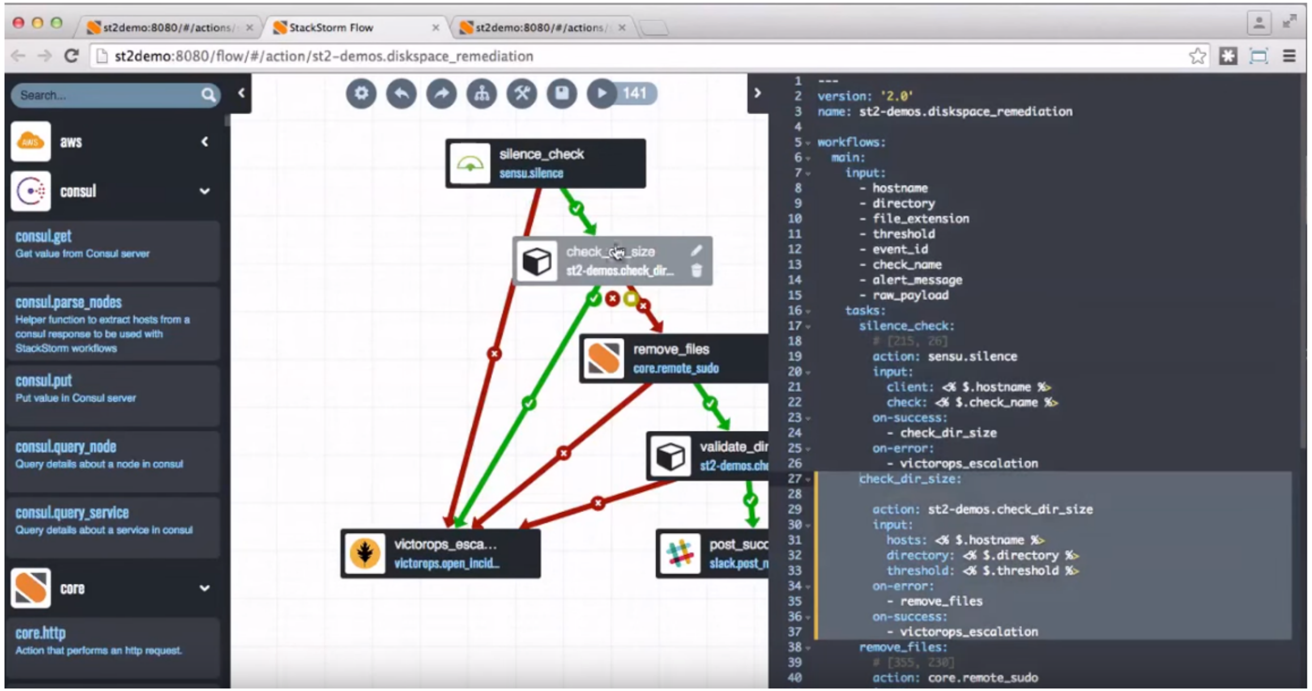
```
add_to_lb_node2
        action: ….
        input: ….
        publish:…
        on-success:
                - list_lb_members
                - notify

add_to_lb_node1
        action: ….
        input: ….
        publish:…
        on-success:
                - list_lb_members
                - notify

list_lb_members
        join: all
        input: …
        publish:…
        on-success:
                -close_request
                - notify
```

Retry policies : for example reboot vm and wait for node to reboot



```
workflows:

    main:
        type: direct
        tasks:
            init:
                action: core.local cmd="rm -f /tmp/done"
                on-success:
                    - create-file
                    - test-error-undo-retry
            create-file:
                action: core.local cmd="touch /tmp/done"
                wait-before: 10
            test-error-undo-retry:
                workflow: work
                retry:
                    count: 30
                    delay: 1
                on-success:
                    - delete-file
            delete-file:
                action: core.local cmd="rm -f /tmp/done"
```

If you like writing visual code…



consul.get
Get value from Consul server

consul.parse_nodes
Helper function to extract hosts from a consul response to be used with StackStorm workflows

consul.put
Put value in Consul server

consul.query_node
Query details about a node in consul

consul.query_service
Query details about a service in consul

core.http
Action that performs an http request.

```yaml
---
version: '2.0'
name: st2-demos.diskspace_remediation

workflows:
  main:
    input:
      - hostname
      - directory
      - file_extension
      - threshold
      - event_id
      - check_name
      - alert_message
      - raw_payload
    tasks:
      silence_check:
        # [215, 26]
        action: sensu.silence
        input:
          client: <% $.hostname %>
          check: <% $.check_name %>
        on-success:
          - check_dir_size
        on-error:
          - victorops_escalation
      check_dir_size:

        action: st2-demos.check_dir_size
        input:
          hosts: <% $.hostname %>
          directory: <% $.directory %>
          threshold: <% $.threshold %>
        on-error:
          - remove_files
        on-success:
          - victorops_escalation
      remove_files:
        # [355, 230]
        action: core.remote_sudo
```

Select the workflow

Click on the task you want to edit

Write only that portion of the highlighted code

Stackstorm Integration Packs …

Integration packs:
https://exchange.stackstorm.org/

Cloud Providers

- aws
- azure
- dimensiondata
- libcloud
- rackspace

Automations and Monitoring

- EXOS
- Network Essentials
- servicenow
- datadog
- sensu
- newrelic
- mmonit
- icinga2
- dripstat

Essentials

- ansible
- napalm
- slack
- chef
- splunk
- cloudflare
- email
- elasticsearch
- docker
- excel

Curiosities

- astral
- cubesensors
- hue
- nest
- powerpoint
- urbandict
- save_kittens
- tesla

Working with Integration Packs

Managing Packs

```
# List all installed packs
st2 pack list

# Get detailed information about an installed pack
st2 pack get core
```

Discovering Packs

```
# Search query is applied across all pack parameters.

# It will search through pack names:
st2 pack search sensu
# And keywords:
st2 pack search monitoring
# And description (use quotes for multi-word search):
st2 pack search "Amazon Web Services"
# And even pack author:
st2 pack search "Jon Middleton"

# Show an index entry for the pack
# with the exact name match
st2 pack show sensu
```

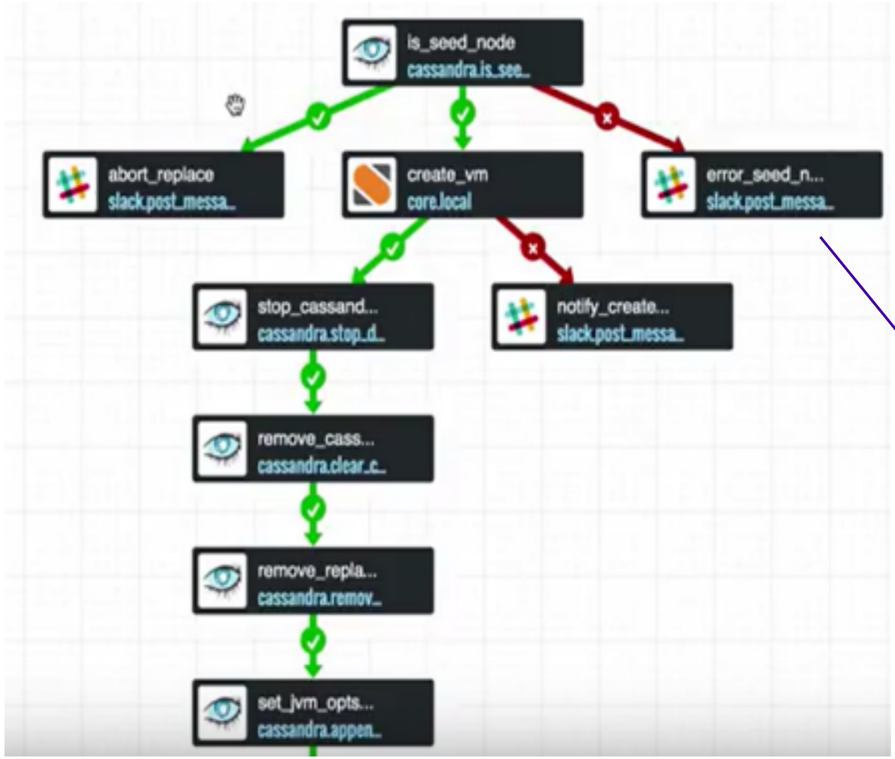
Installing a Pack

```
# Fetch a specific commit
st2 pack install cloudflare=776b9a4

# Or a version tag
st2 pack install cloudflare=0.1.0

# Or a branch
st2 pack install https://github.com/emedvedev/chatops_tutorial=testing
```

Configuring a Pack

```
st2 pack config cloudflare
```

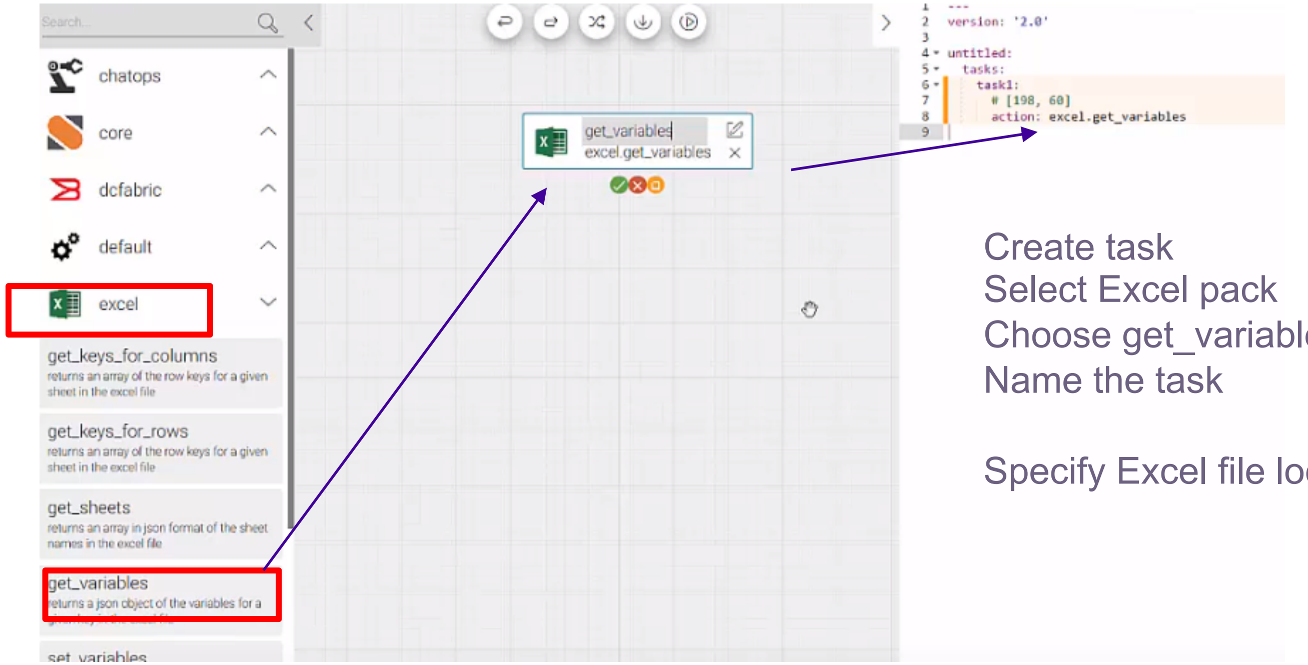
Example #1 ChatOps Pack : Notify others on job status



cassandra.replace.host:
  type:direct
  input:…
  output:…
  tasks:
    is_seed_node:
      action: ….
      input: ….
      publish:…
      on-success:
        - **error_seed_notify: …..**
        - create_vm: …..
      on-error:
        - error_seed_node_determination:…

error_seed_notify:
  action: slack.post.message
  input:
    channel: “#NOCOperations”
    message: “…Error: Cassandra replace host...

Example #2 Excel Pack : Load Information in workflow


Search...
chatops
core
dcfabric
default
excel
get_keys_for_columns
returns an array of the row keys for a given sheet in the excel file
get_keys_for_rows
returns an array of the row keys for a given sheet in the excel file
get_sheets
returns an array in json format of the sheet names in the excel file
get_variables
returns a json object of the variables for a
set_variables
get_variables
excel.get_variables

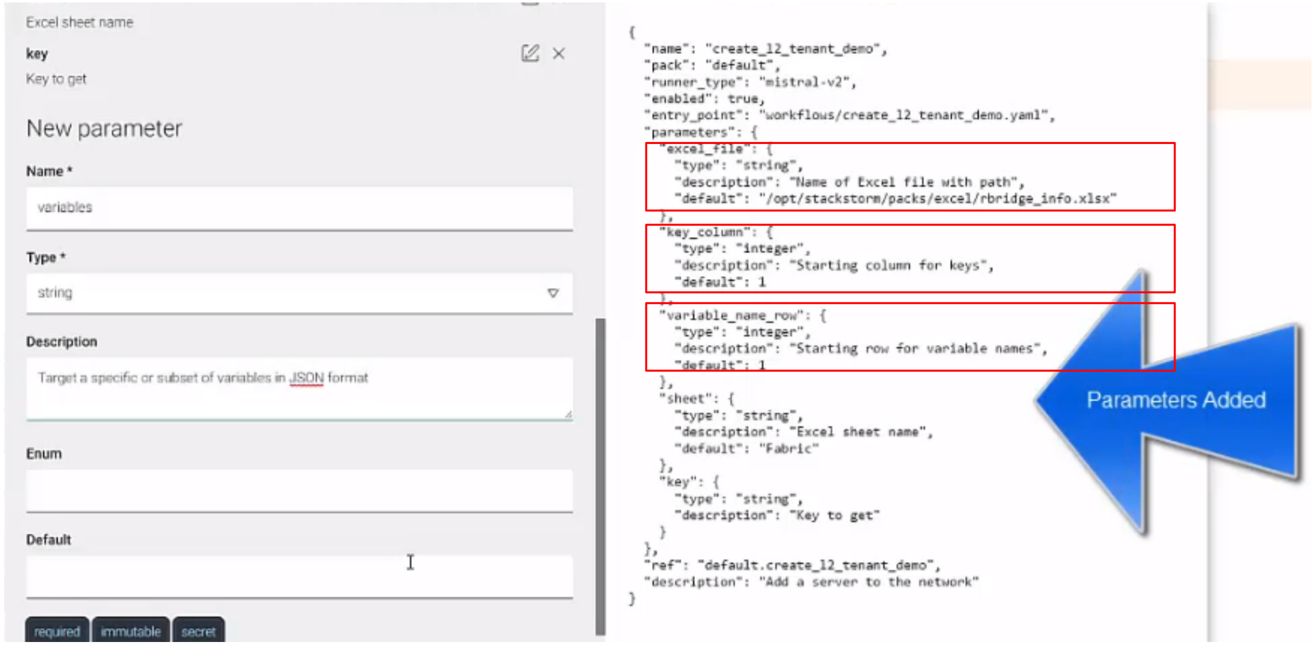
```
---
version: '2.0'

untitled:
  tasks:
    task1:
      # [198, 60]
      action: excel.get_variables
```

Create task
Select Excel pack
Choose get_variables
Name the task

Specify Excel file location in Add Metadata

Example #2 Excel Pack : Load Information in workflow

Add Excel Parameters for **inputs**



Excel sheet name

key

Key to get

New parameter

Name *

variables

Type *

string

Description

Target a specific or subset of variables in JSON format

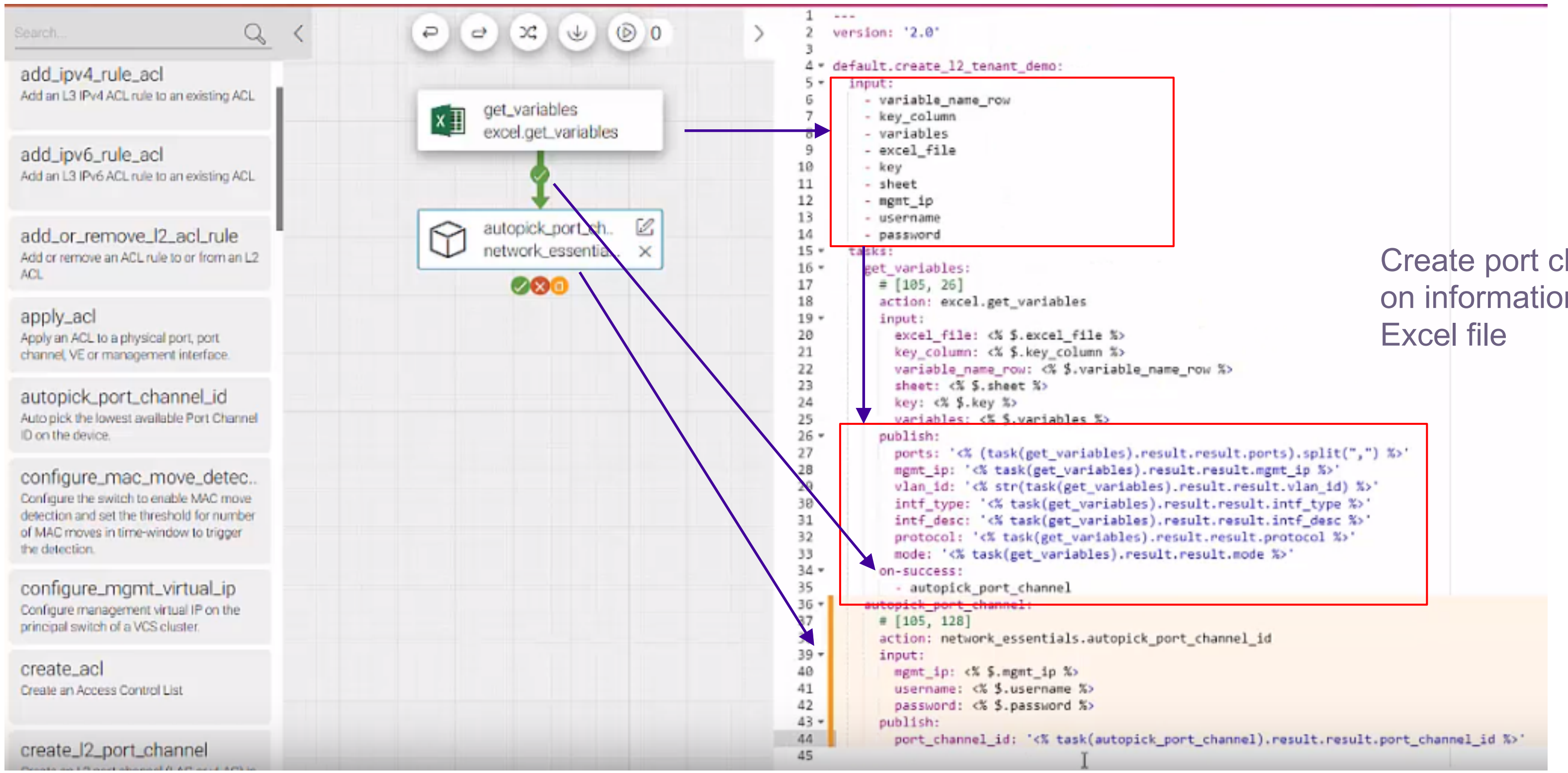
Enum

Default

required immutable secret

```
{
  "name": "create_l2_tenant_demo",
  "pack": "default",
  "runner_type": "mistral-v2",
  "enabled": true,
  "entry_point": "workflows/create_l2_tenant_demo.yaml",
  "parameters": {
    "excel_file": {
      "type": "string",
      "description": "Name of Excel file with path",
      "default": "/opt/stackstorm/packs/excel/rbridge_info.xlsx"
    },
    "key_column": {
      "type": "integer",
      "description": "Starting column for keys",
      "default": 1
    },
    "variable_name_row": {
      "type": "integer",
      "description": "Starting row for variable names",
      "default": 1
    },
    "sheet": {
      "type": "string",
      "description": "Excel sheet name",
      "default": "Fabric"
    },
    "key": {
      "type": "string",
      "description": "Key to get"
    }
  },
  "ref": "default.create_l2_tenant_demo",
  "description": "Add a server to the network"
}
```

Example #2 Excel Pack : Create Workflow

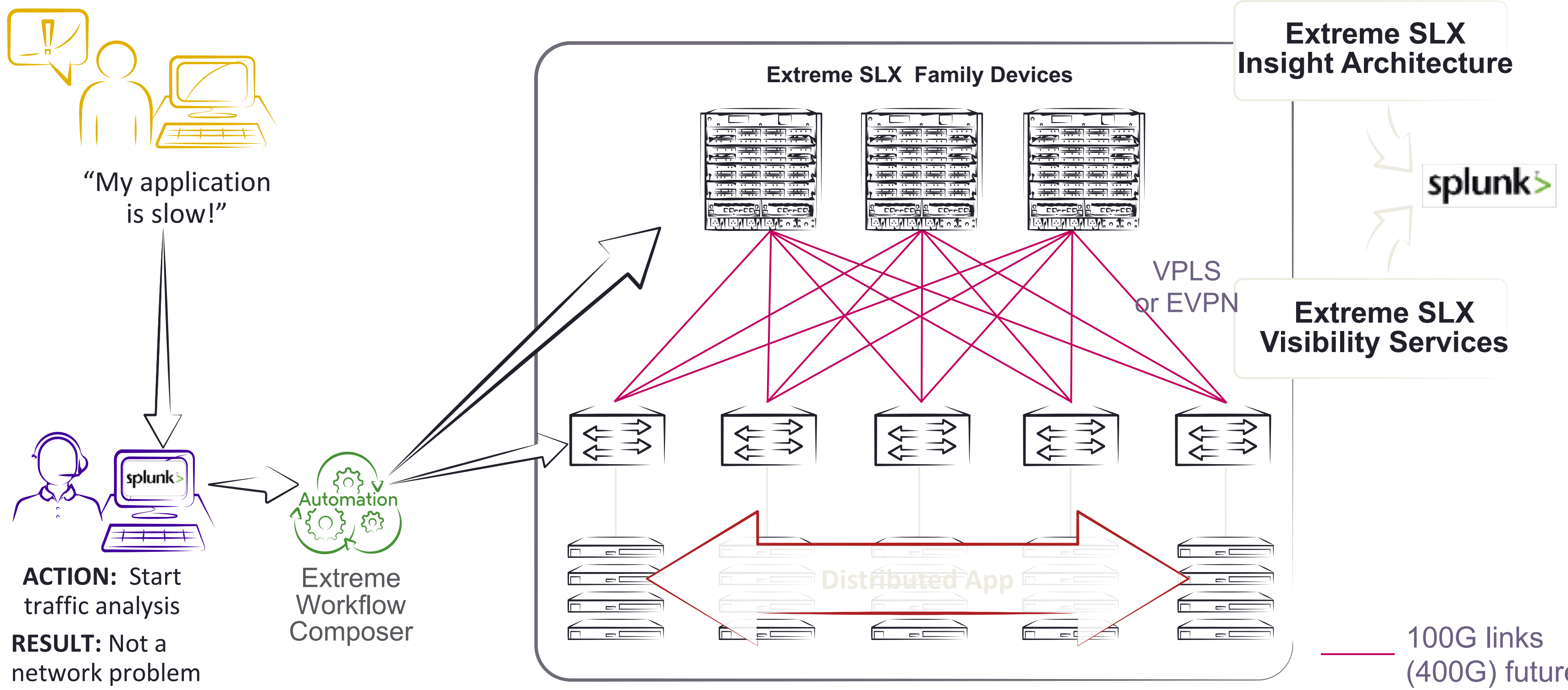

Search...
add_ipv4_rule_acl
Add an L3 IPv4 ACL rule to an existing ACL
add_ipv6_rule_acl
Add an L3 IPv6 ACL rule to an existing ACL
add_or_remove_l2_acl_rule
Add or remove an ACL rule to or from an L2 ACL
apply_acl
Apply an ACL to a physical port, port channel, VE or management interface
autopick_port_channel_id
Auto pick the lowest available Port Channel ID on the device.
configure_mac_move_detec..
Configure the switch to enable MAC move detection and set the threshold for number of MAC moves in time-window to trigger the detection.
configure_mgmt_virtual_ip
Configure management virtual IP on the principal switch of a VCS cluster.
create_acl
Create an Access Control List
create_l2_port_channel
0
get_variables
excel.get_variables
autopick_port_ch..
network_essentia..

```yaml
---
version: '2.0'

default.create_l2_tenant_demo:
  input:
    - variable_name_row
    - key_column
    - variables
    - excel_file
    - key
    - sheet
    - mgmt_ip
    - username
    - password
  tasks:
    get_variables:
      # [105, 26]
      action: excel.get_variables
      input:
        excel_file: <% $.excel_file %>
        key_column: <% $.key_column %>
        variable_name_row: <% $.variable_name_row %>
        sheet: <% $.sheet %>
        key: <% $.key %>
        variables: <% $.variables %>
      publish:
        ports: '<% (task(get_variables).result.result.ports).split(",") %>'
        mgmt_ip: '<% task(get_variables).result.result.mgmt_ip %>'
        vlan_id: '<% str(task(get_variables).result.result.vlan_id) %>'
        intf_type: '<% task(get_variables).result.result.intf_type %>'
        intf_desc: '<% task(get_variables).result.result.intf_desc %>'
        protocol: '<% task(get_variables).result.result.protocol %>'
        mode: '<% task(get_variables).result.result.mode %>'
      on-success:
        - autopick_port_channel
    autopick_port_channel:
      # [105, 128]
      action: network_essentials.autopick_port_channel_id
      input:
        mgmt_ip: <% $.mgmt_ip %>
        username: <% $.username %>
        password: <% $.password %>
      publish:
        port_channel_id: '<% task(autopick_port_channel).result.result.port_channel_id %>'

```

Create port channel based on information of ports from Excel file

Agility through Automation and Visibility

Accelerating mean-time-to-innocence through automation

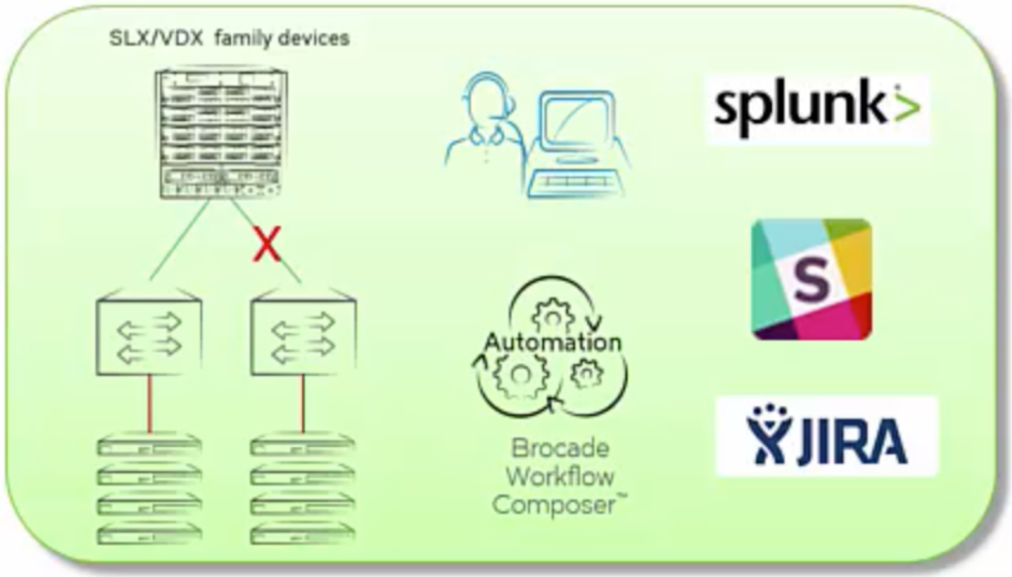

"My application is slow!"
splunk>
Automation
Extreme SLX Family Devices
Extreme SLX Insight Architecture
splunk>
VPLS or EVPN
Extreme SLX Visibility Services
Distributed App
100G links (400G) future

ACTION: Start traffic analysis

RESULT: Not a network problem

Extreme Workflow Composer

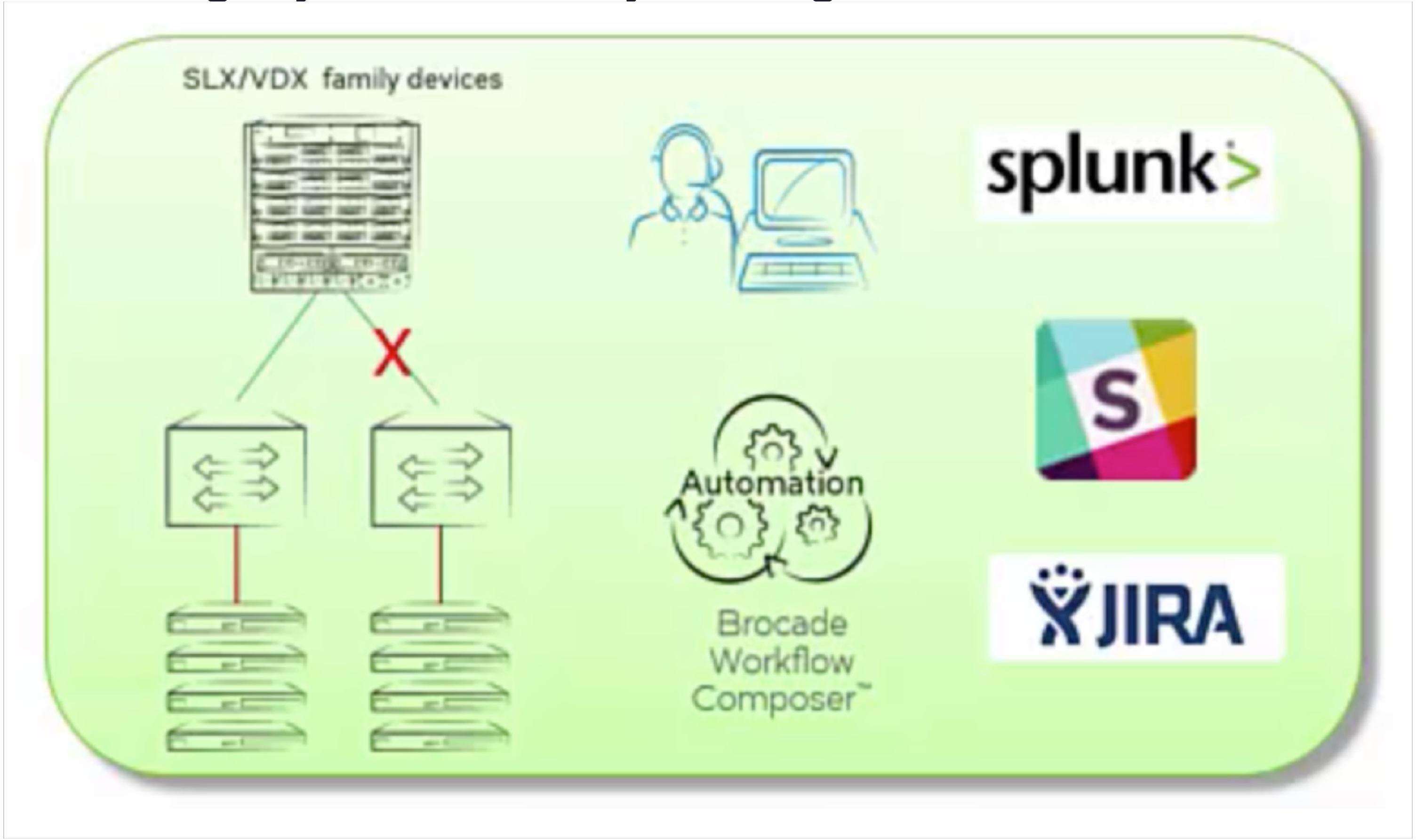
DEMO: Agility & Efficiency through Automation



This demo will simulate:

- A network link failing
- Splunk alert ("NSM-1003"), triggers a troubleshooting / remediation workflow in Workflow Composer
- As part of that workflow EWC will:
  - Post a message to Slack to inform on-duty staff that an issue has just occurred
  - Attempt to restore the link
  - Post another message to Slack with the results of that effort
  - Create a ticket in Jira and insert relevant information

DEMO: Agility & Efficiency through Automation



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