FRICTIONLESS IT AUTOMATION
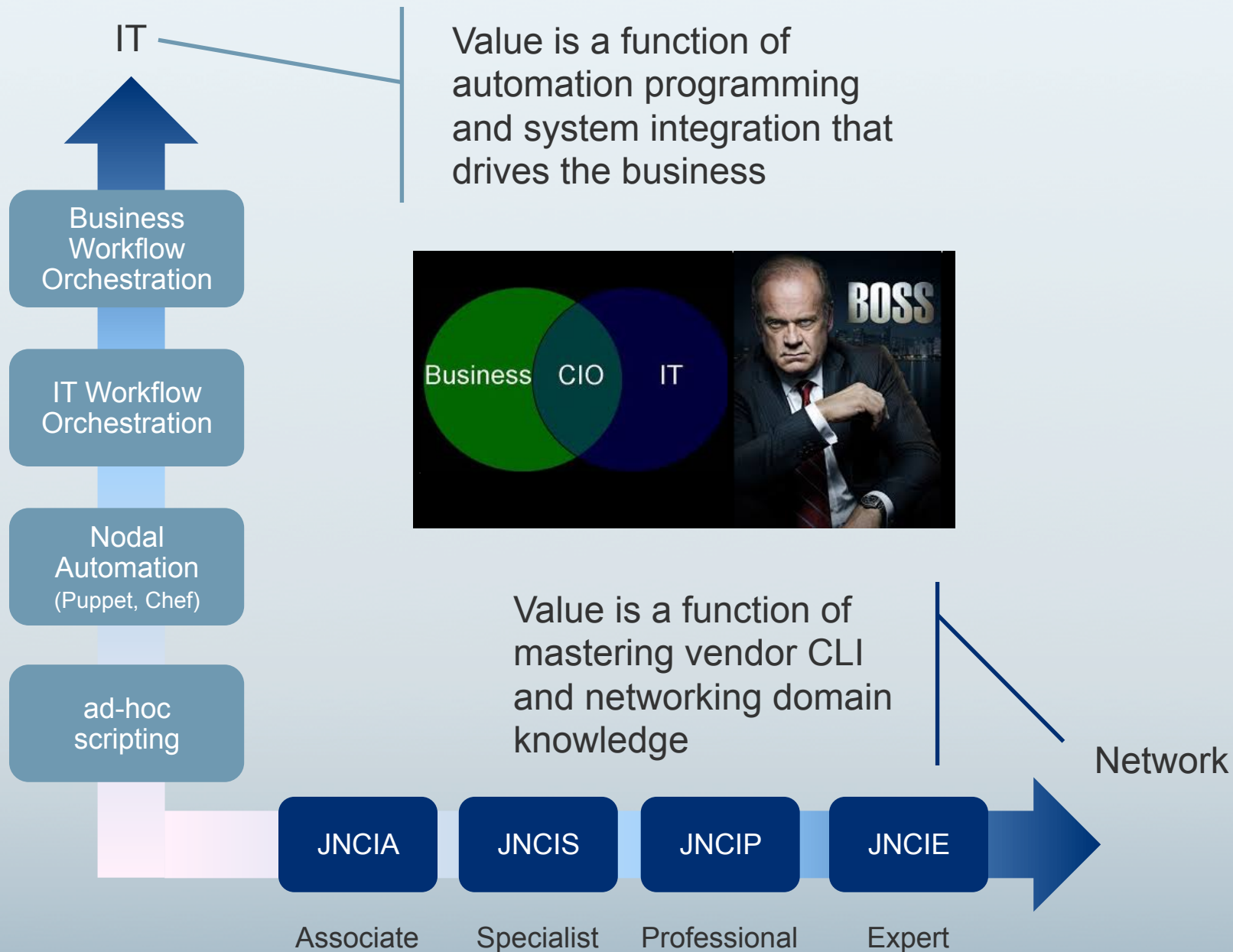
Jeremy Schulman - Director | Infrastructure Automation

@nwkautomaniac
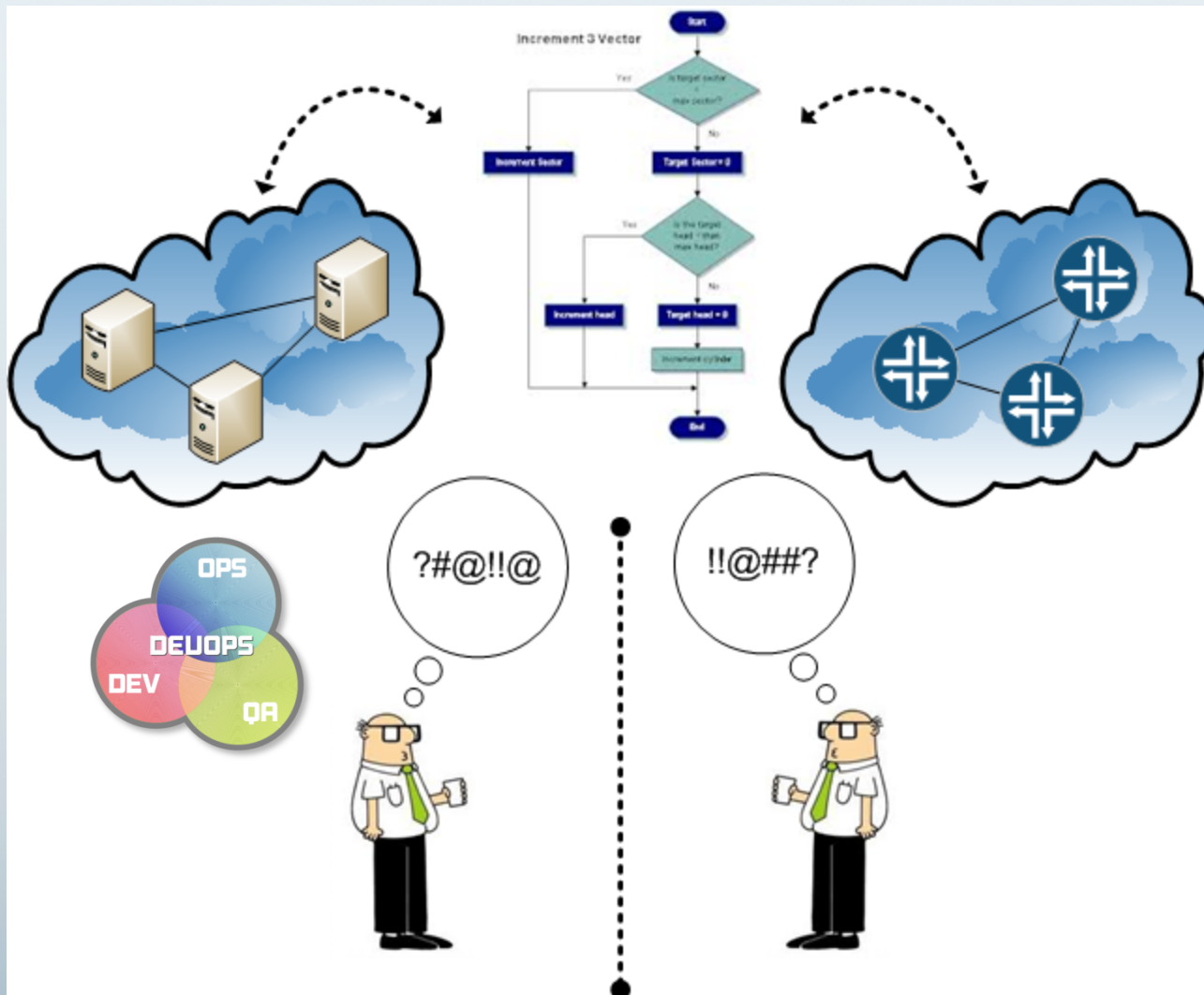
FRICTIONLESS IT AUTOMATION

- ## Lower Costs

  - Costs to manually do the work

  - Costs due to delays and errors

- ## Reduce Risk

  - Manually operated complex systems are fragile

- ## Improve Service

  - Network infrastructure is a "utility" that runs the business

  - Server and application automation is the standard
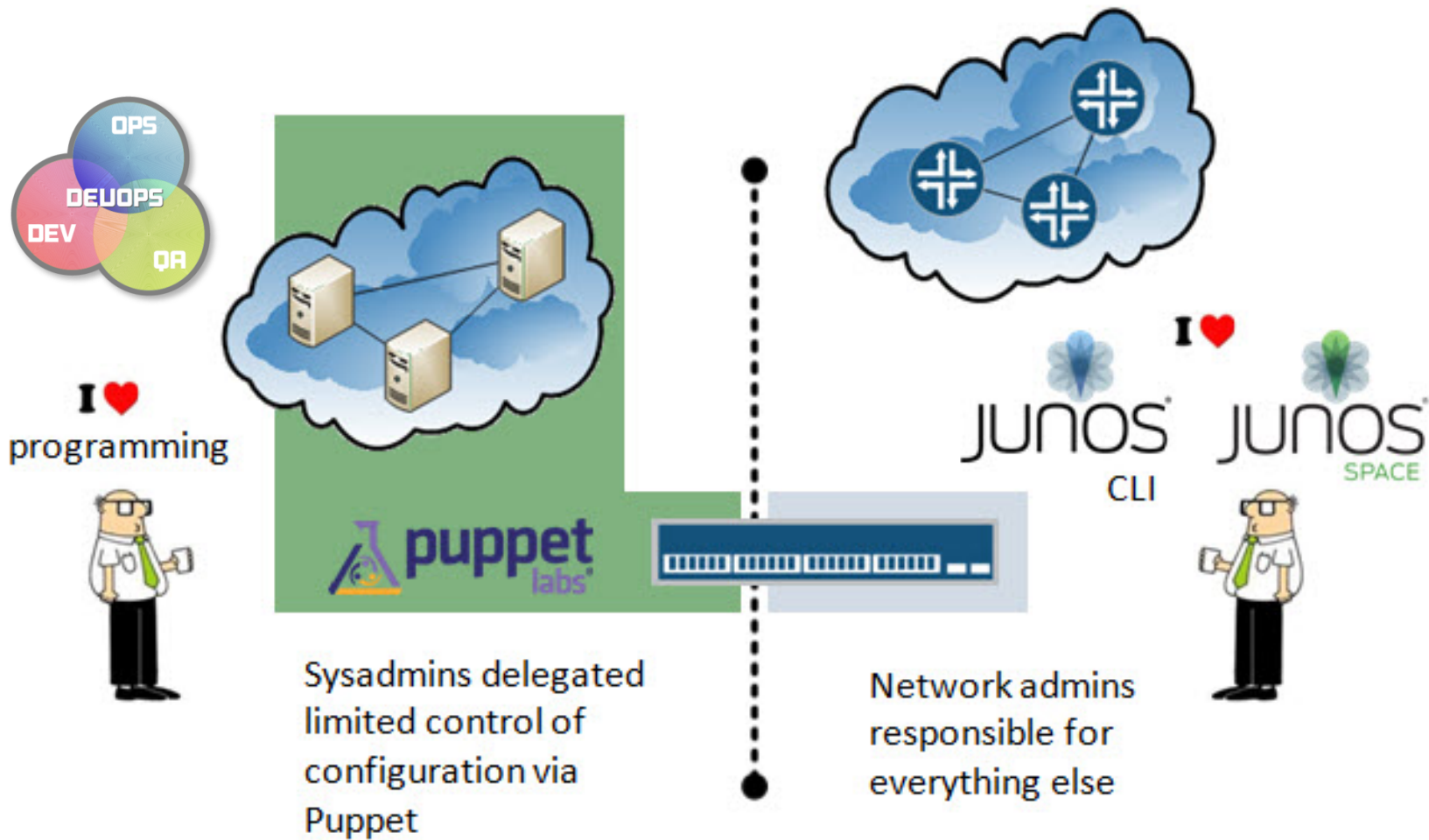
  - Network automation must "level-up"

JUNIPER
NETWORKS

IT

Business Workflow Orchestration

IT Workflow Orchestration

Nodal Automation (Puppet, Chef)

ad-hoc scripting

Value is a function of automation programming and system integration that drives the business

Business · CIO · IT · BOSS

Value is a function of mastering vendor CLI and networking domain knowledge

Network

JNCIA	JNCIS	JNCIP	JNCIE
Associate	Specialist	Professional	Expert

JUNIPER
NETWORKS

FRICTION

FRICTIONLESS

OPS

DEVOPS

DEV

QA

I ♥ programming

puppet labs®

Sysadmins delegated limited control of configuration via Puppet

I ♥

JUNOS® CLI

JUNOS® SPACE

Network admins responsible for everything else

JUNIPER NETWORKS

PUPPET: SOFTWARE-DEFINED INFRASTRUCTURE

1. DEFINE

```
package { ssh: ensure => installed }
service { sshd: ensure => running, }
```

Re-usable infrastructure-as-code
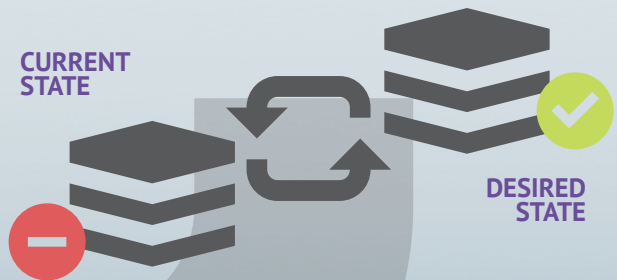
2. SIMULATE

Before deploying changes

4. REPORT

Insight into changes

3. ENFORCE

CURRENT STATE

DESIRED STATE

Automatically and reliably

puppet labs®

JUNIPER NETWORKS

PUPPET "NETDEV" MODULE

NetDev is a **vendor-neutral** network abstraction **framework** developed by Juniper Networks and contributed **freely** to the DevOps community

Juniper has contributed basic layer-1 and layer-2 network abstractions

DevOps can extend the framework to define any abstractions or features they need for their environment

The NetDev framework is open and free; i.e. the "DevOps" way

JUNIPER
NETWORKS

NETDEV
RESOURCES TYPES

| Resource	Description
netdev_vlan	Manages VLAN configuration
netdev_interface	Manages Physical Interface configuration
netdev_l2_interface	Manages VLAN to interface assignments
netdev_lag	Manages Link Aggregation Group configuration

```
class color_switch {

  netdev_vlan { "Pink":  vlan_id => 703 }
  netdev_vlan { "Green": vlan_id => 500 }

  netdev_l2_interface { 'ge-0/0/19':
     untagged_vlan => Pink,
  }

  netdev_l2_interface { 'ge-0/0/20':
     description => "My port, back off!",
     untagged_vlan => Blue,
     tagged_vlans => [ Green, Black, Yellow ],
  }
}
```
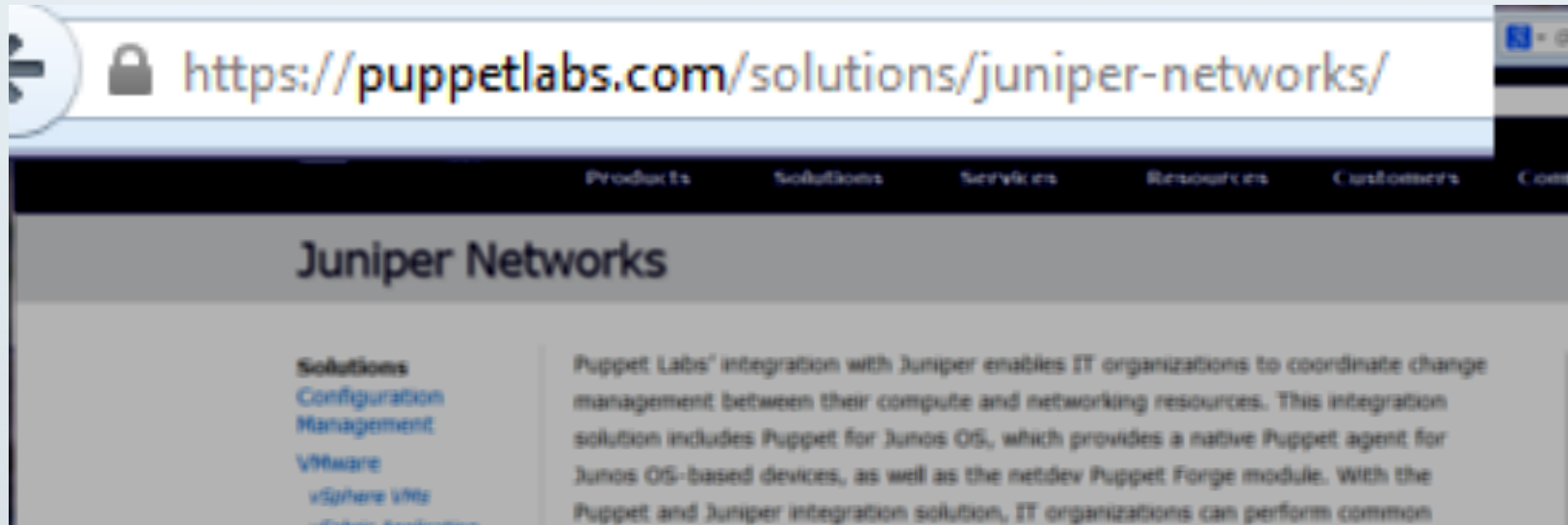
PUPPET FOR JUNOS

"DevOps" Approach:

- NetDev module source code is in Github

- All packages are stored where they should be (Puppet Forge,…)

- Support done on J-Net community forum

- Juniper technical documentation available
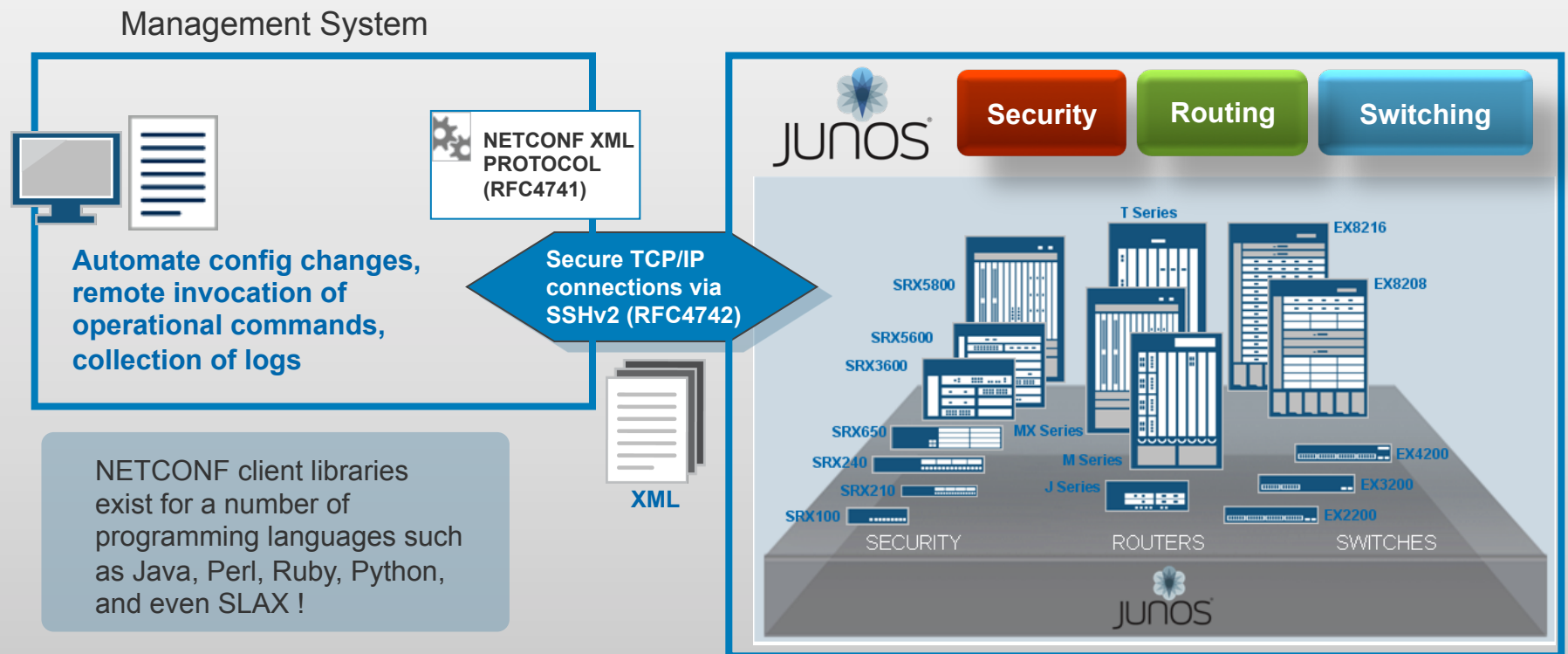
- Free, "BSD-style" license

PUPPET FOR JUNOS
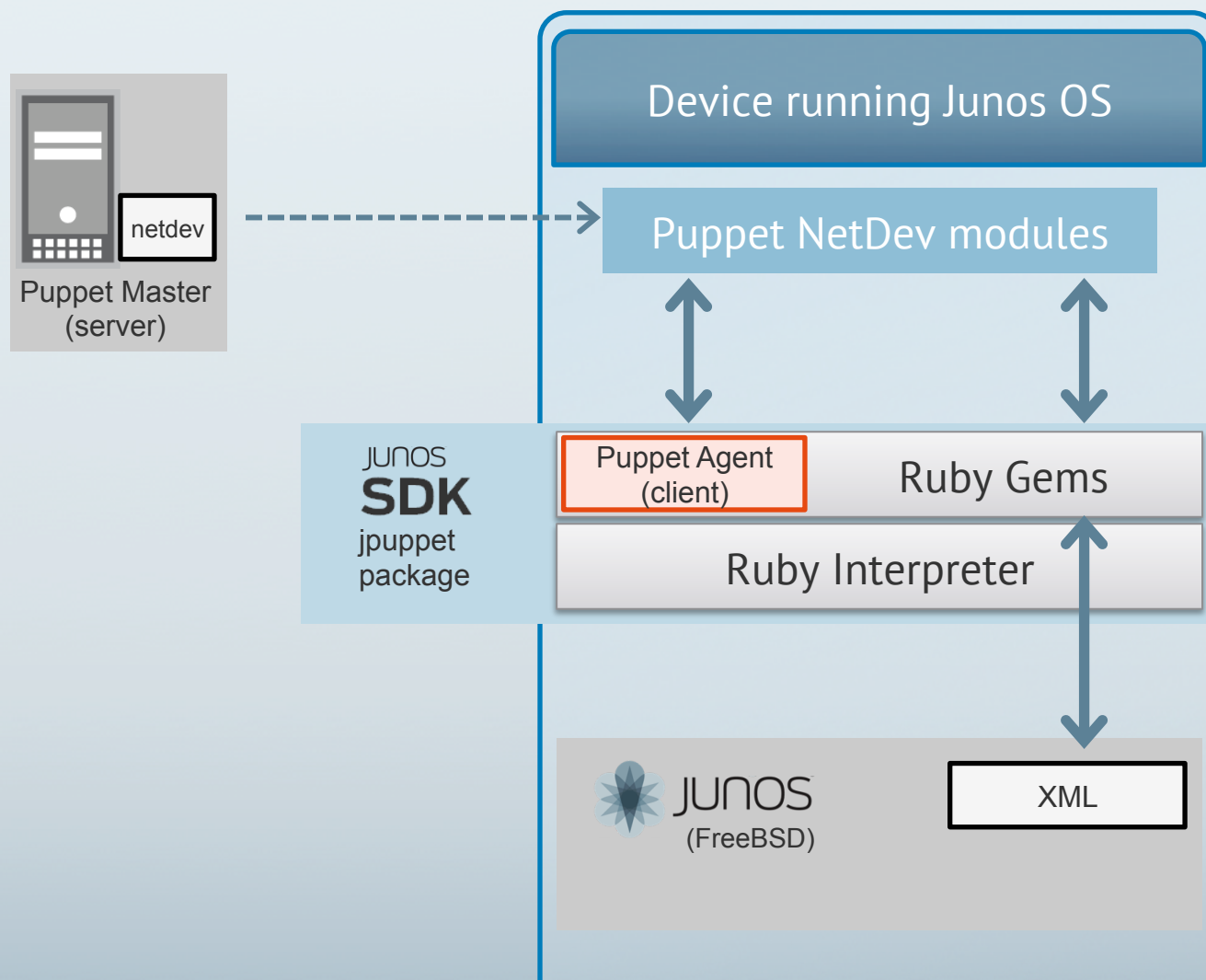
LEARN MORE ABOUT PUPPET FOR JUNOS

JUNOS XML API
FOR SERVER-BASED AUTOMATION

- Secure and connection oriented … SSHv2 as transport
- Structured and transaction based … XML as RPC request / response
- User-class privilege aware … Native to Junos
- Comprehensive & Consistent ... Automate everything

Management System

NETCONF XML PROTOCOL (RFC4741)

Automate config changes, remote invocation of operational commands, collection of logs

Secure TCP/IP connections via SSHv2 (RFC4742)

XML

NETCONF client libraries exist for a number of programming languages such as Java, Perl, Ruby, Python, and even SLAX !

JUNOS

Security   **Routing**   **Switching**

T Series
EX8216
SRX5800
EX8208
SRX5600
SRX3600
SRX650   MX Series   EX4200
SRX240   M Series   EX3200
SRX210   J Series   EX2200
SRX100

SECURITY   ROUTERS   SWITCHES

JUNOS

THANK YOU !