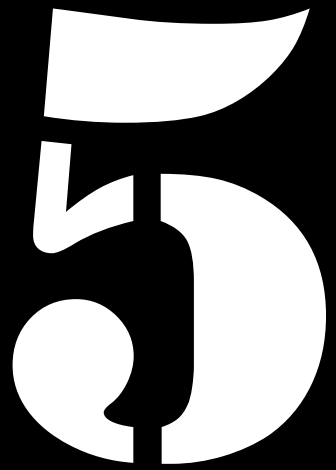
PowerShell Conference Europe 2019

Hannover, Germany

June 4-7, 2019

JOHN O'CONNOR

Enhancing DSC with Puppet



Video operator, did you start the recording?

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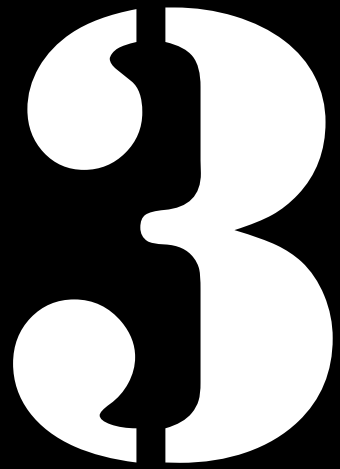

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Enhancing DSC with Puppet

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How would you order a Pizza?

What the MENU Offers

Cheese & Tomato

Mozzarella cheese (tomato, cheese)

Vegetarian (tomato, onions, pepper, black olives)

Pepperoni (tomato, cheese and Spanish sausage)

The Instructions for the Menu

INSTRUCTIONS

I Want a Vegetarian Pizza

➔

EXECUTION

Put a thin layer of sauce on the dough.

Sprinkle some mozzarella cheese

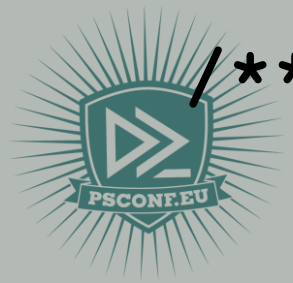
Add a handful of onions

Add a handful of peppers

Add a few black olives

Procedural scripts for a pizza order

```
/********* Begin Procedure Script **********/
    BEGIN
    GOTO cupboard in the stockroom.
    GOTO third shelf from the bottom on left hand side
    facing the back.
    can = Take the can of tomato sauce
    open $can
    sauce = pour ½ $can onto the pizza dough
    END
/********* End Procedure Script **********/
```



Instead – why not say what we want

```
pizza { "John's order":
   sauce => tomato,
   cheese => mozzarella,
   vegetables => [onions,peppers,black olives],
   meat => pepperoni
}
```

Easy for a person to write and understandable for a computer

Consistency/Traceability across Organisation

Top Level Organisational declarations instead of obscure hard to manage procedures

Ability to manage diverse set of distributed services

Regulated environment needing traceability and auditing

The ever present *"Need to do More with Less"*

This Session

What Puppet and DSC have in common

The Puppet value add to DSC

Case Study: Configure Windows Services Update Server (WSUS)

DSC and Puppet - Similarities

Declaritive DSL (Domain Specific Language)

Used to enforce configuration.

Syntax and models are similar

DSC .vs. Puppet DSC Lite

```
# DSC Example

File fruit_file {
  Ensure = 'Present'
  DestinationPath = 'C:\Fruit.txt'
  Type = 'File'
  Contents = 'Apple, Pear'
}
```

```
# Puppet DSC Lite Declaration

dsc {'fruit_file':
  resource name => 'File',
  module => 'PSDesiredStateConfiguration',
  properties => {
    ensure => 'Present',
    destinationpath => 'C:\Fruit.txt',
    type => 'File',
    content => 'Apple, Pear'
  }
}
```

Puppet Value Add

Similar Syntax to DSC, so get up and running quickly

Manage large set of diverse nodes (Windows, Linux, Macos, Solaris, AIX, Cisco)

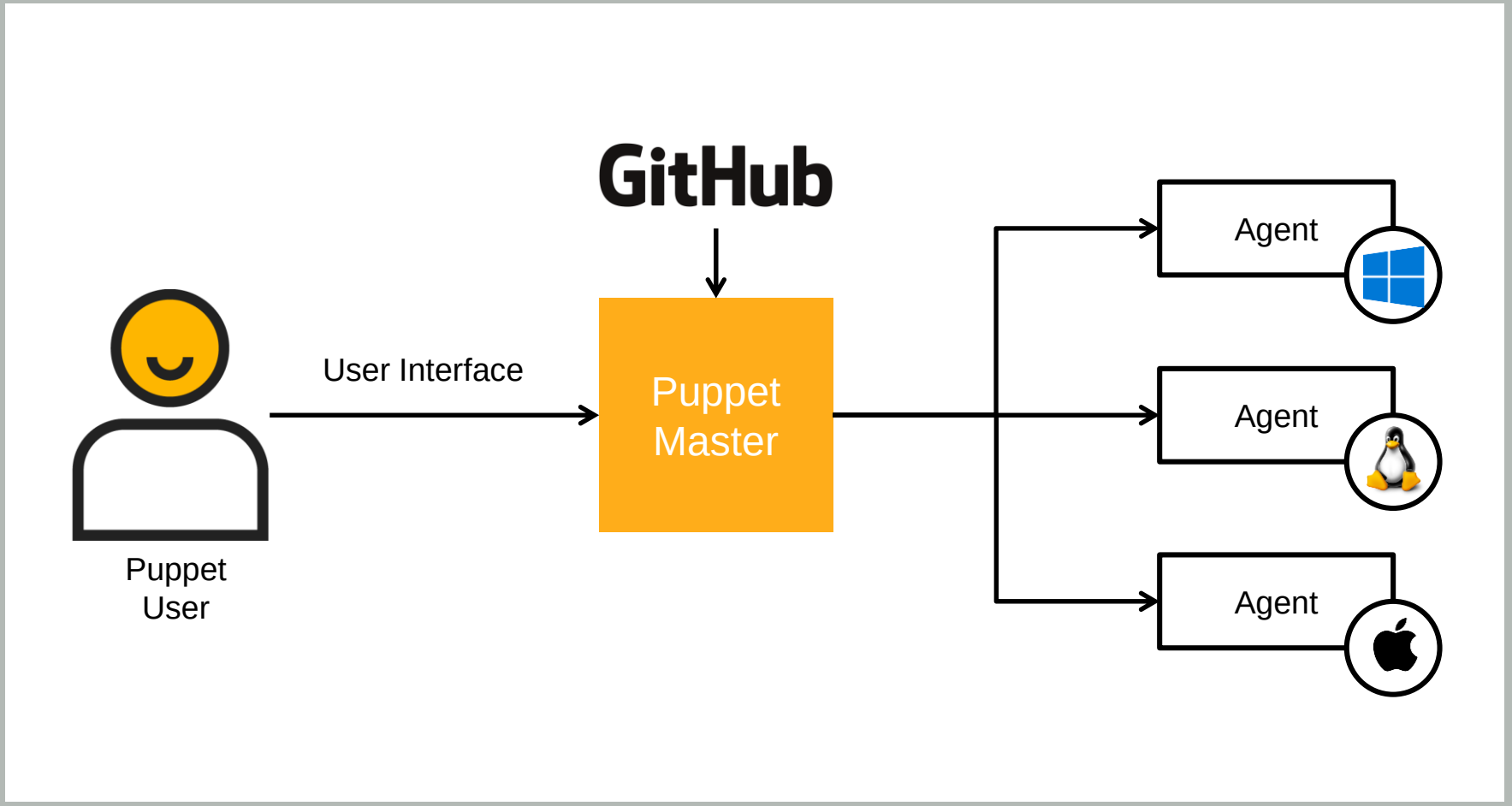
Alternative to Active Directory/GPO for Windows

Puppet has large library of existing resources, modules to aid capturing and managing your configuration.

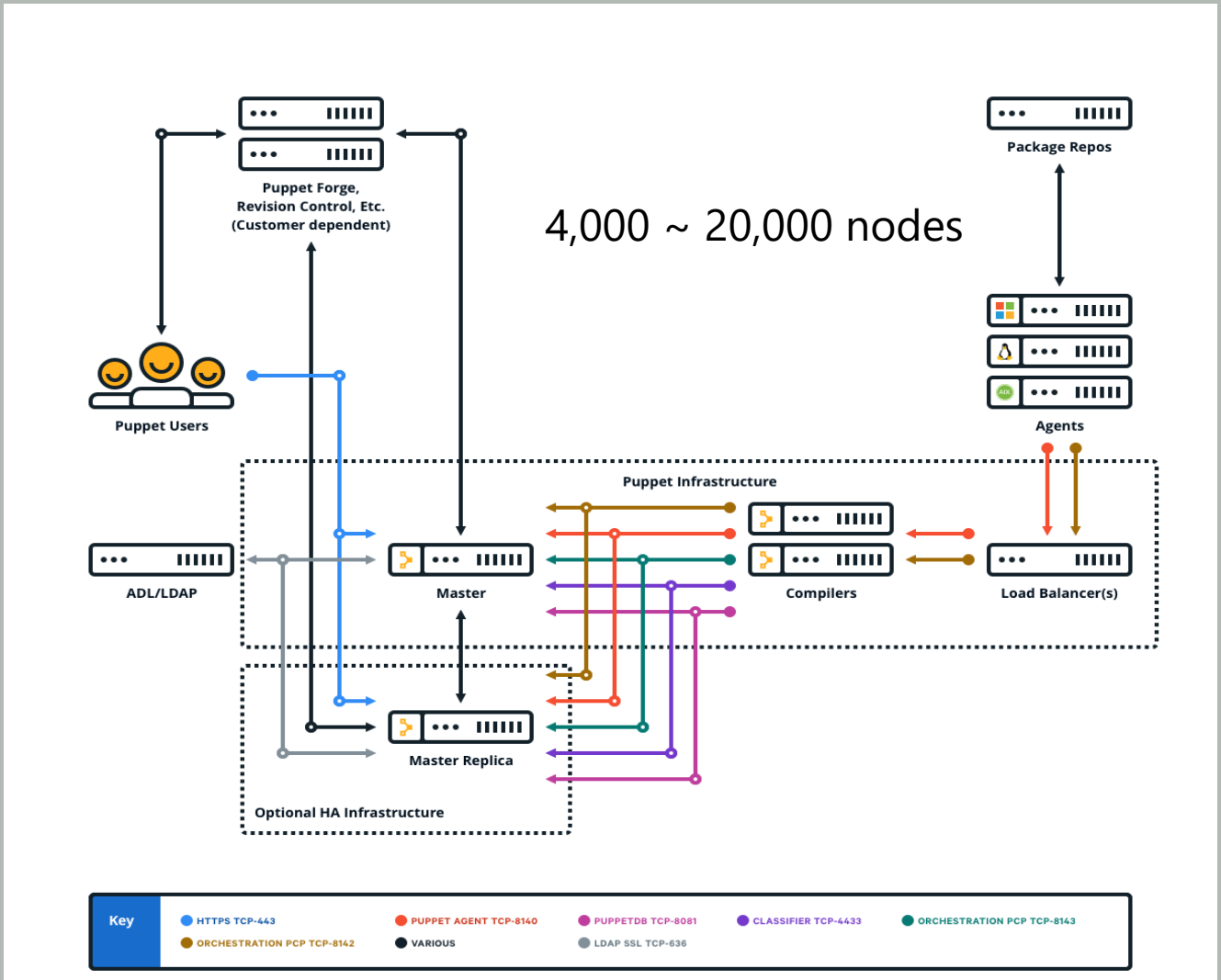
Management tools/Common interface across platforms

Change tracking and auditing

Puppet Architecture outline



Extensible for large distributed system

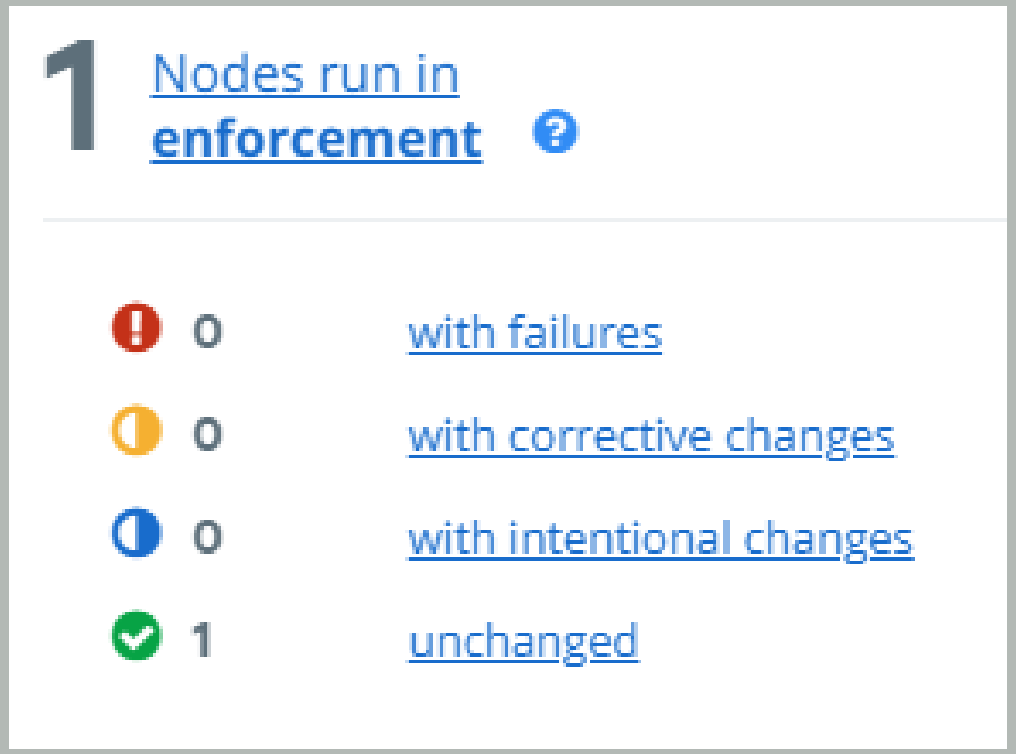


Reporting with Puppet and DSC

Change Reporting is a Must

Changes classified as

- Failures
- Corrective Changes
- Intentional Changes
- Unchanged



DEMO

Case Study – Configuring and monitoring change on Windows Services Update Server (WSUS)

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Tale of an unmanaged WSUS Server

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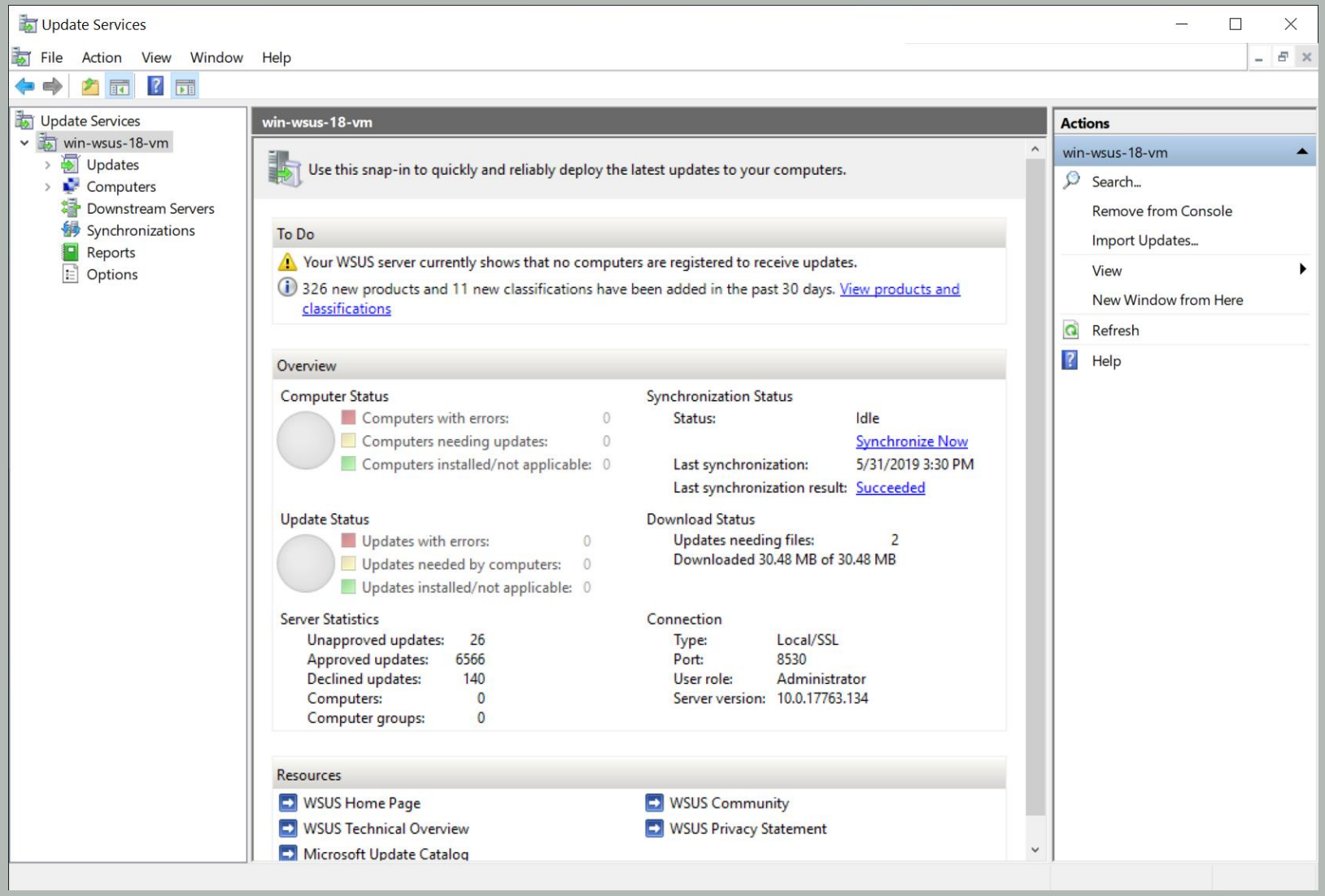
WSUS Console



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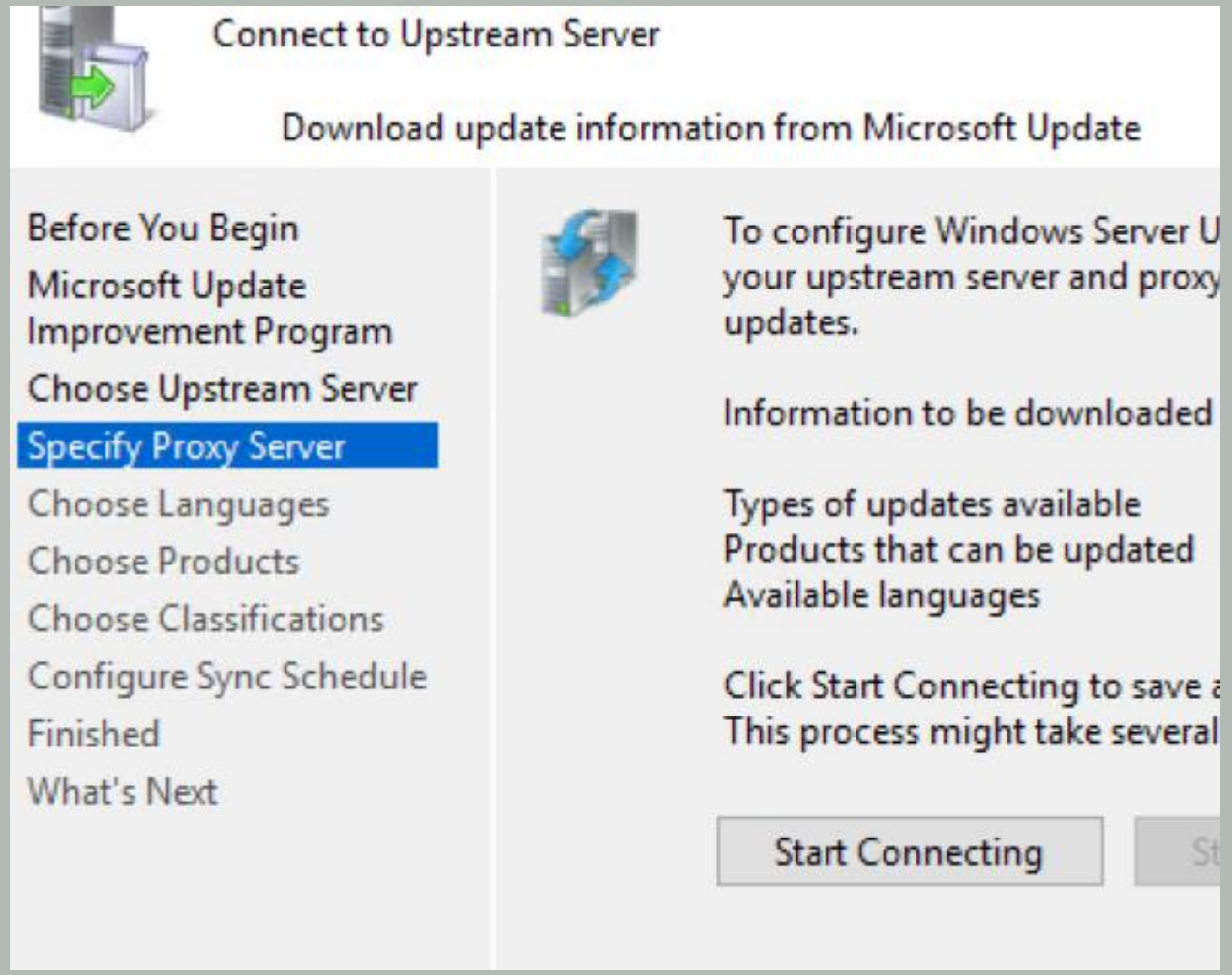
Manual WSUS Install/Configuration

Enable Features

- “UpdateServices-Feature”
- “UpdateServicesRSAT-Feature”

Run Configuration Wizard

Wait for WSUS to Synchronise



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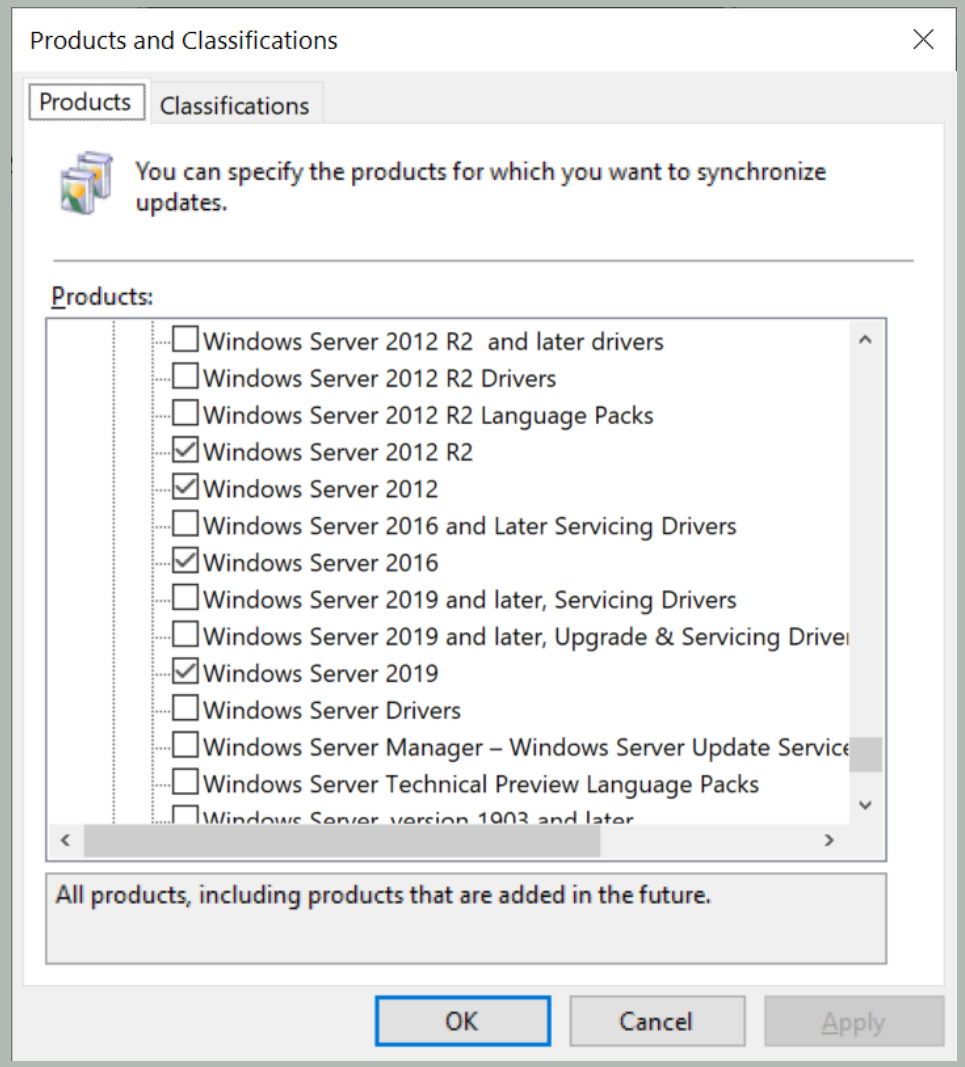
WSUS Products – Code .vs. Gui

```
products => [
    'Windows 10 LTSB',
    'Windows 10',
    'Windows 7',
    'Windows 8.1',
    'Windows 8',
    'Windows Server 2008 R2',
    'Windows Server 2008',
    'Windows Server 2012 R2',
    'Windows Server 2012',
    'Windows Server 2016',
    'Windows Server 2019'
],
```



Demo Repository & DSC Module

github.com/jcoconnor/pscconfeu-dsc

Main File of Interest: site/profile/manifests/wsus/server/wsus_server.pp

Repo also includes some other examples of Puppet code used to configure the Demo Server with some useful Packages.

github.com/mgreenegit/UpdateServicesDsc

www.powershellgallery.com/packages/UpdateServicesDsc

```
# The following GUIDS reference differing type of Updates
# for setting up WSUS and
# its associated approval rules.

$wsus_critical_updates   = 'E6CF1350-C01B-414D-A61F-263D14D133B4'
$wsus_definition_updates = 'E0789628-CE08-4437-BE74-2495B842F43B'
$wsus_security_updates   = '0FA1201D-4330-4FA8-8AE9-B877473B6441'
$wsus_service_packs      = '68C5B0A3-D1A6-4553-AE49-01D3A7827828'
$wsus_update_rollups     = '28BC880E-0592-4CBF-8F95-C79B17911D5F'

Dscfix::Lcm_config { 'disableLCM':
     refresh_mode => 'Disabled'
}
```

```
dsc {'UpdateServices-Feature':

    resource_name => 'WindowsFeature',
    module        => 'PSDesiredStateConfiguration',

    properties => {
        ensure => 'present',
        name   => 'UpdateServices'
    },

    require => Dscfix::Lcm_config['disableLCM'],
}
```

```
dsc {'UpdateServices':

  resource_name => 'UpdateServicesServer',
  module        => 'UpdateServicesDsc',

  properties => {
     ensure       => 'present',
     contentdir   => 'C:\WSUS',
     languages    => ['en'],
     synchronize => true,
     products          => [ … ],
     classifications => [ … ],
     synchronizeautomatically           => true,
     synchronizeautomaticallytimeofday => '15:30:00',
  },

  require => Dsc['UpdateServices-Feature',
                 'UpdateServicesRSAT-Feature'],
}
```

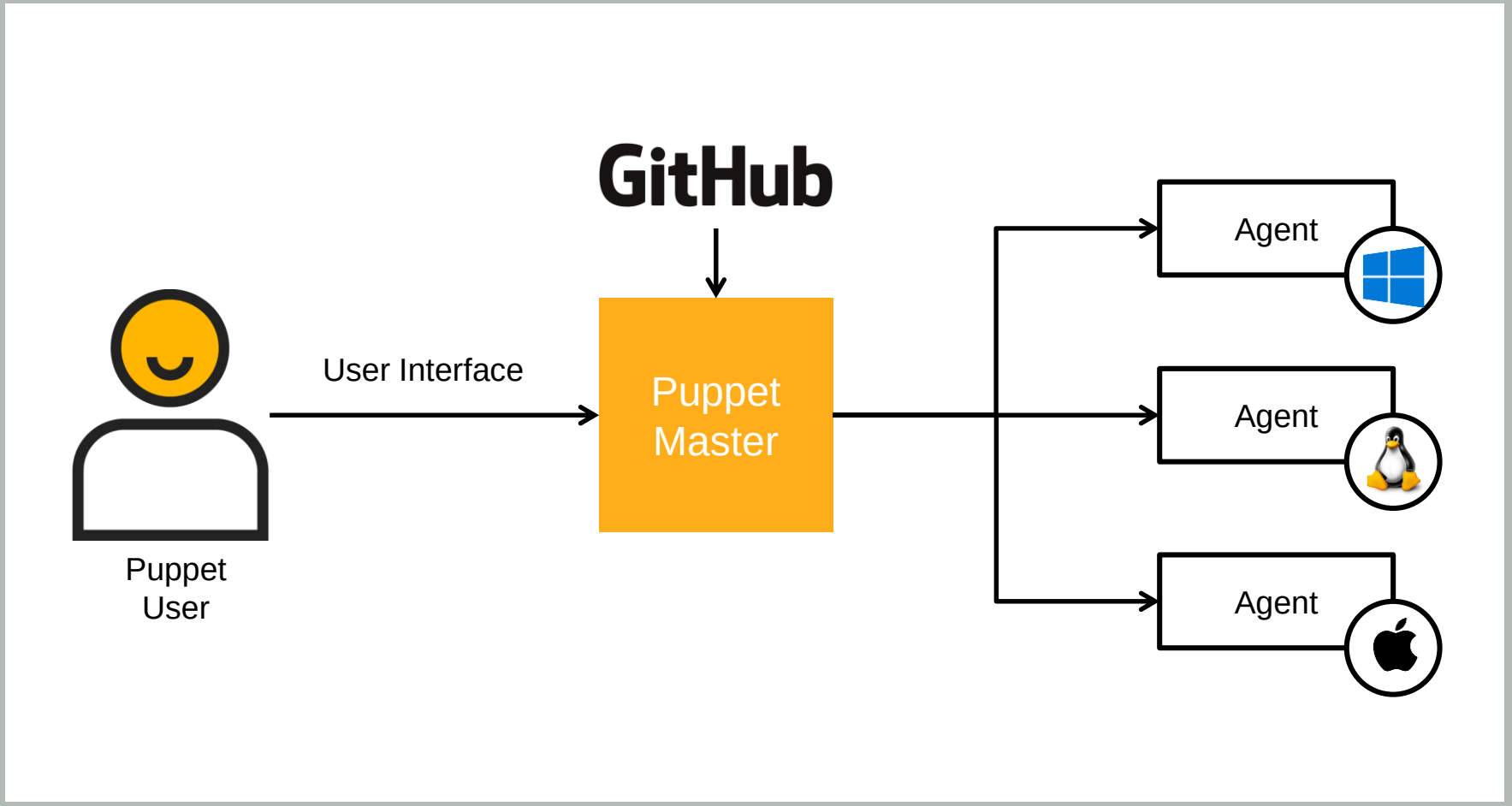
```
# Product List for ‘UpdateServices’
products => [
   'Windows 10 LTSB',
   'Windows 10',
   'Windows 7',
   'Windows 8.1',
   'Windows 8',
   'Windows Server 2008 R2',
   'Windows Server 2008',
   'Windows Server 2012 R2',
   'Windows Server 2012',
   'Windows Server 2016',
   'Windows Server 2019'
],
```

```
# Classification List for ‘UpdateServices’
# and ‘CleanupRules’
classifications => [
   $wsus_critical_updates,
   $wsus_definition_updates,
   $wsus_security_updates,
   $wsus_service_packs,
   $wsus_update_rollups,
],
```

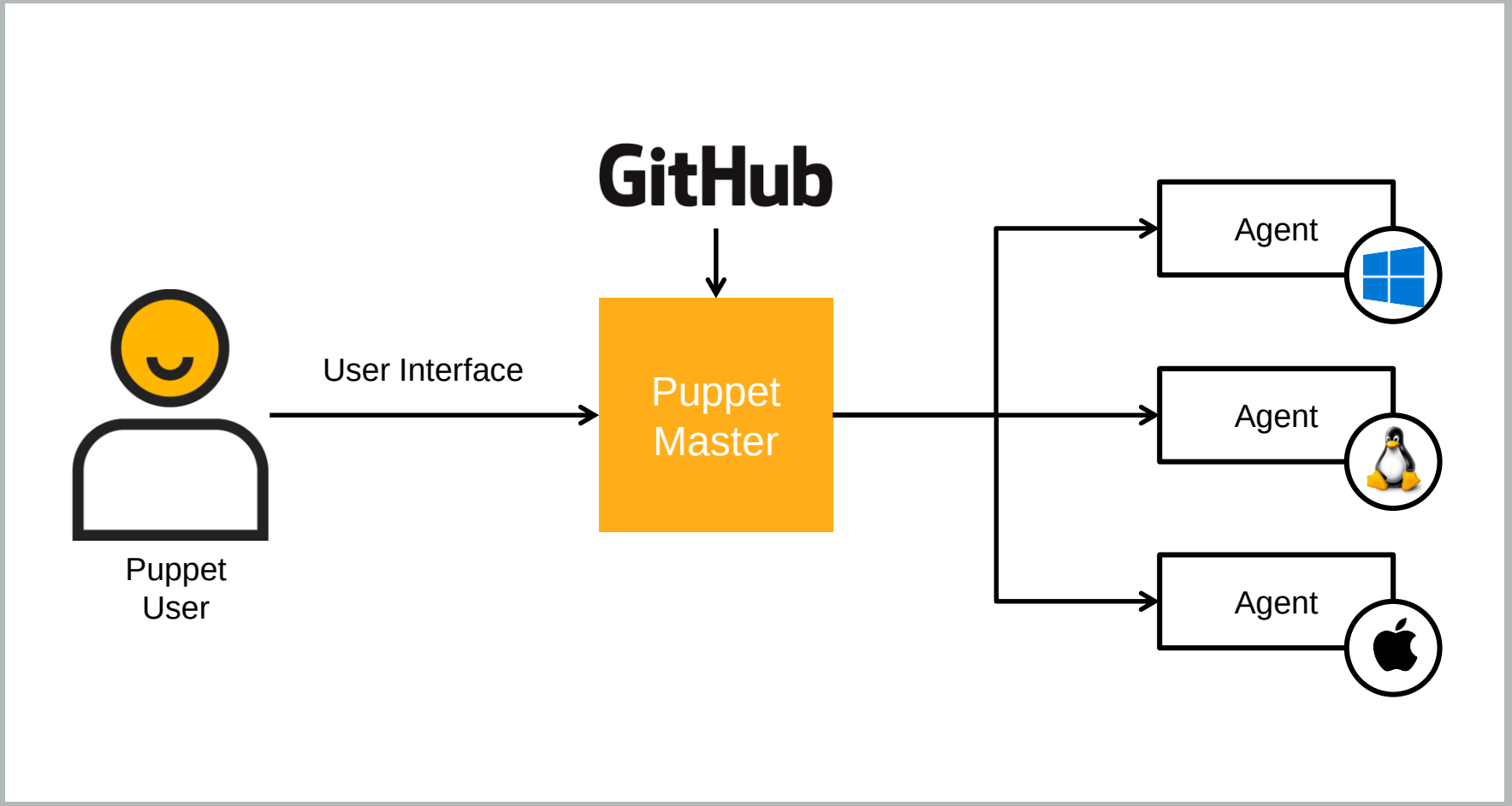
```
dsc {'UpdateServicesCleanup':

   resource_name => 'UpdateServicesCleanup',
   module        => 'UpdateServicesDsc',

   properties => {
      ensure    => 'present',
      declineexpiredupdates        => true,
      declinesupersededupdates     => true,
      cleanupobsoleteupdates       => true,
      cleanupunneededcontentfiles => true,
   },

   require => Dsc['UpdateServices'],
}
```

```
dsc { 'ApprovalRules':

   resource_name => 'UpdateServicesApprovalRule',
   module        => 'UpdateServicesDsc',

   properties => {
      ensure      => 'present',
      name        => 'Definition Updates, … ……',
      enabled     => true,
      synchronize => true,
      runrulenow  => true,
      classifications => [ … ],
   },

   require => Dsc['UpdateServices'],
}
```

Demo (1) – Configuring WSUS on Server



Demo (2) – Correcting/Reporting a change



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DSC and Puppet: best of both worlds

Doing more with less.

Infrastructure as code that all teams can use.

Apply your PowerShell DSC skills with Puppet.

Get going quickly with Puppet

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Questions?

Use the conference app to vote for this session:
https://my.eventraft.com/psconfeu

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Resources (1) – Demo and DSC Repos

github.com/jcoconnor/pscconfeu-dsc

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github.com/mgreenegit/UpdateServicesDsc

www.powershellgallery.com/packages/UpdateServicesDsc

Resources (2) – Puppet DSC Modules

forge.puppet.com/puppetlabs/dsc_lite

forge.puppet.com/puppetlabs/dsc

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Resources (3) – Puppet/DSC Blogs

https://puppet.com/blog/managing-powershell-dsc-puppet

https://puppet.com/blog/dsc-deep-dive-get-up-and-running-dsc-module

https://puppet.com/blog/dsc-deep-dive-installing-and-configuring-iis-using-puppet-and-powershell-dsc

https://puppet.com/blog/james-pogran-on-learning-powershell-dsc

https://puppet.com/blog/introducing-dsclite-new-dsc-module-puppet

Resources (4) - Puppet

puppet.com/products

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Acknowledgements

James Pogran for the original DSC and Puppet Talk

www.youtube.com/watch?v=dR8VJjDmo9c

speakerdeck.com/jpogran/using-puppet-and-dsc-to-report-on-environment-change

Alberta Bosco for the pizza example

Photo by Ben White on Unleash for *"Tale of Unmanaged Server"*
unsplash.com/photos/qDY9ahp0Mto/info

Who am I

With Puppet for 4 years

- Release Engineering
- Puppet Agent and Platform Support
- Automation of Golden Images
- Windows Team

Previous – variety of System Admin, Software engineering roles across Education, Financial, Telecoms and Security sectors.

Classical Music and Opera enthusiast, Walking

Managing PA and AV for my local church

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