Chocolatey

The **package manager** for Windows

Software Management with DSC and Chocolatey

Rob Reynolds

@ferventcoder

PowerShell + DevOps Global Summit

Rob Reynolds

- Creator and Founder of Chocolatey
- Enjoys long walks on the beach and designing solutions that make hard things easy
- Co-wrote infrastructure framework known as the Chuck Norris Framework
- Over 10 years experience in infrastructure automation
- Obsesses over user experience
- Microsoft MVP for whatever they are calling .NET area now

Agenda

- The Story of Windows Automation
- Windows Software Ecosystem
- Chocolatey
- Chocolatey + DSC

Let’s talk about a story… possibly your story

The Story of Modern Automation for Windows

AUTOMATE
WINDOWS!

You probably use or have used traditional tools

Traditional Tools

- Manual Configuration
- Golden Images
- Endpoint management tools

- Not necessarily bad, just are harder to fit into modern automation approaches

Modern Automation

- Feature-Rich
- Infrastructure as Code (IaC)
- Source Control
- Testable Infrastructure
- Reporting
- Centralized Management

PowerShell DSC

- Microsoft
- Building on PowerShell
- Desired State
- Modern Approaches
- Framework - couple it with full Configuration Management Platforms like Puppet / Chef when appropriate

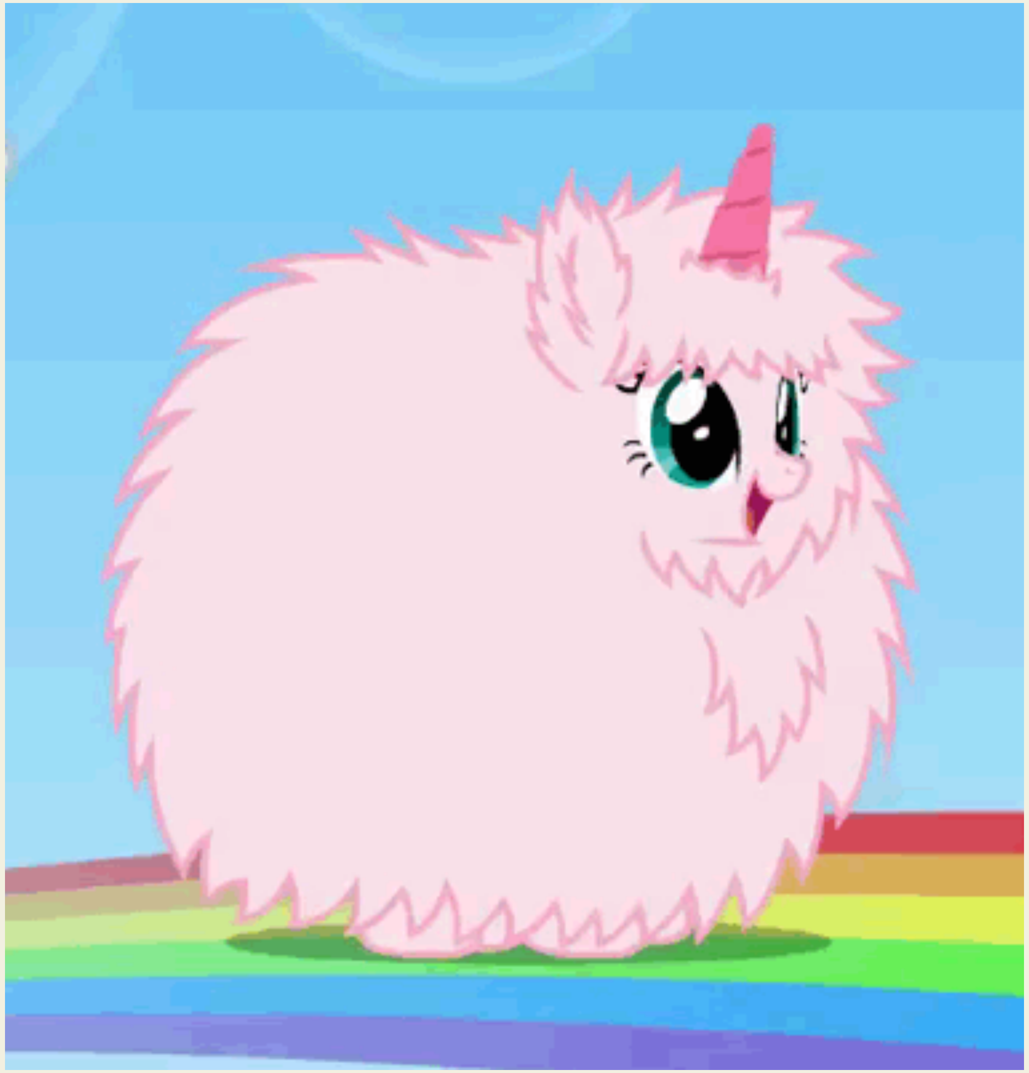
So you modernized your Windows automation

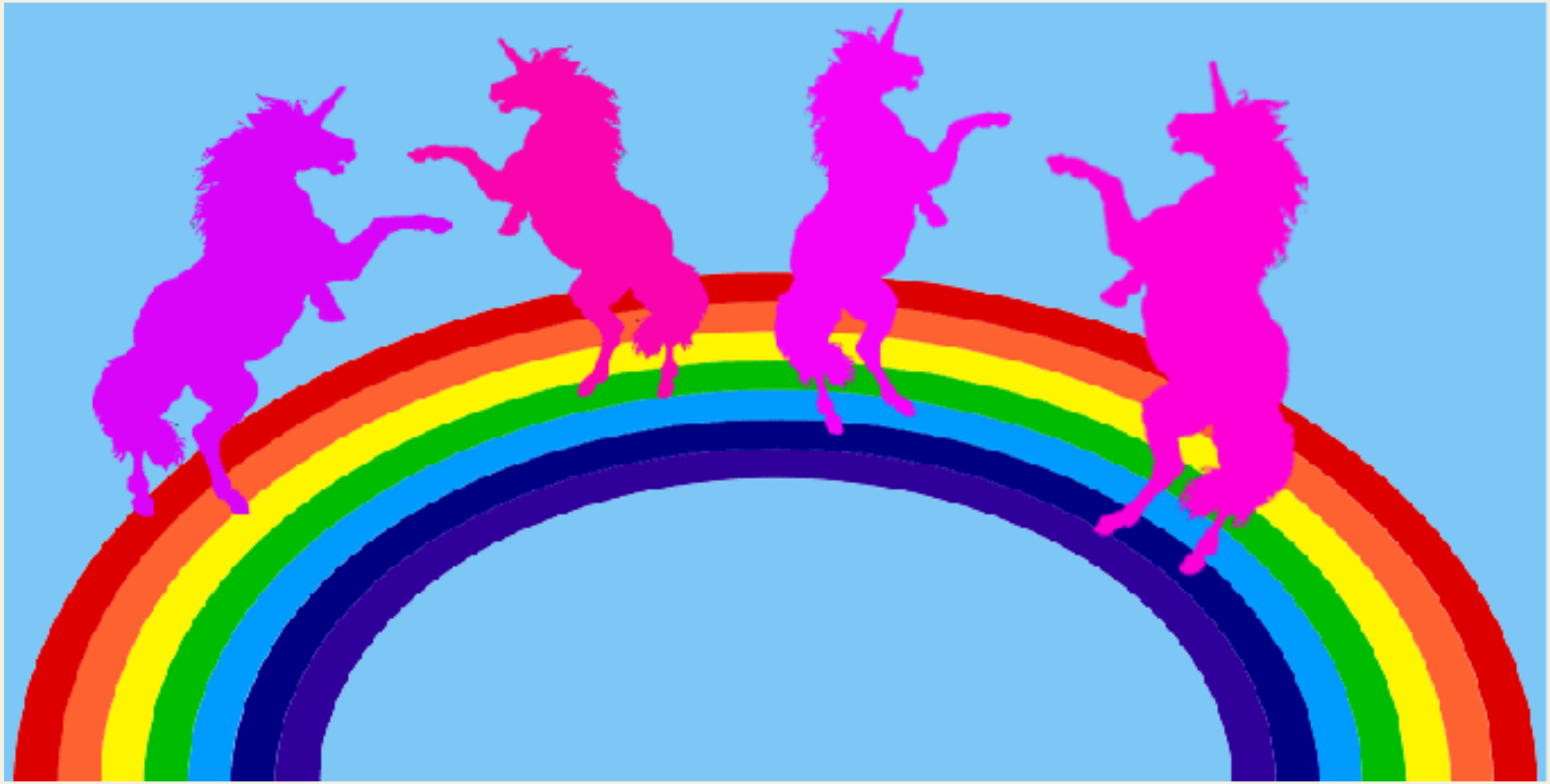
DevOps == Rainbows and Unicorns

“Umm…”

Rainbows and Unicorns

“Just go with it…”





Something was not quite right...

Configuration Management alone is missing something

Software Management / Package Management is necessary for great Configuration Management

Software management may account for 50-90% of your automation

Windows Software Ecosystem

- Over 20 installer formats and thousands of installers in the wild
- Zips and other archive formats
- Software installers are messy
- It’s like the Wild West

PowerShell DSC - Package Resource

- You may have used Package Resource
- Finding the PackageID (MSI Product Code GUID)
- Non-MSI?
- Upgrades?

“Fortunately there is a better way”

So you knew about Chocolatey

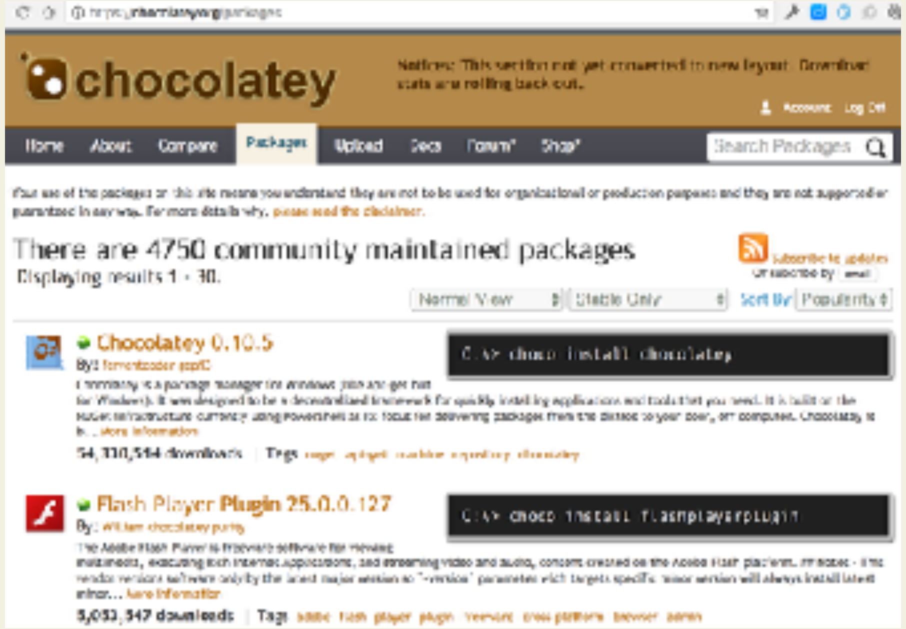
But does it work well in organizational sense?

Recognize this?

That’s an iceberg

Well, obviously - what does it represent though?

Here’s a hint



Notice: This section not yet converted to new layout. Download stats are rolling back out.

Your use of the packages on this site means you understand they are not to be used for organizational or production purposes and they are not supported or guaranteed in any way. For more details why, please read the disclaimer.

There are 4750 community maintained packages

Displaying results 1 - 30.

Chocolatey 0.10.5

By: ferventcoder gep13

Chocolatey is a package manager for Windows (like apt-get but for Windows). It was designed to be a decentralized framework for quickly installing applications and tools that you need. It is built on the NuGet infrastructure currently using PowerShell as its focus for delivering packages from the distros to your door, err computer. Chocolatey is b... More Information

54,330,514 downloads | Tags nuget apt-get machine repository chocolatey

```
C:\> choco install chocolatey
```

Flash Player Plugin 25.0.0.127

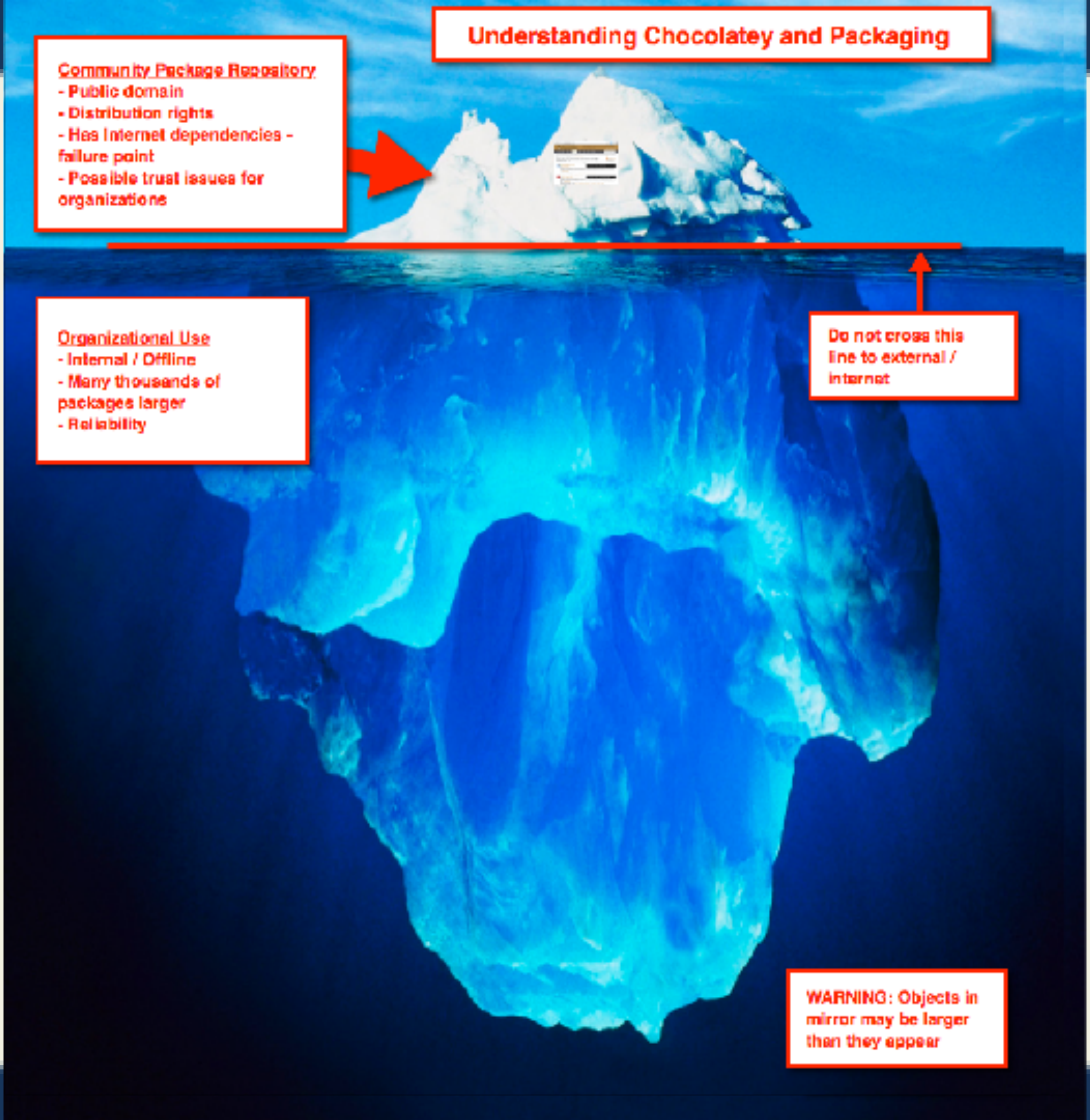
By: William chocolatey purity

The Adobe Flash Player is freeware software for viewing multimedia, executing rich Internet applications, and streaming video and audio, content created on the Adobe Flash platform. [illegible] vendor versions software only by the latest major version so "--version" parameter which targets specific minor version will always install latest minor... More Information

5,053,547 downloads | Tags adobe flash player plugin freeware cross-platform browser admin

```
C:\> choco install flashplayerplugin
```

Understanding Chocolatey and Packaging



Community Package Repository
- Public domain
- Distribution rights
- Has Internet dependencies - failure point
- Possible trust issues for organizations

Organizational Use
- Internal / Offline
- Many thousands of packages larger
- Reliability

Do not cross this line to external / internet

WARNING: Objects in mirror may be larger than they appear

Let’s take a step back and evaluate what’s possible

Chocolatey - Sane Software Management

- Easily manage the software lifecycle
- Native installers, zips, binaries
- PowerShell module simplifies work
- Packages are independent building blocks
- Integrates with configuration management
- Business friendly features

Chocolatey - The Approach

6+ years - proven technology

- Single, unifying interface - control the chaos
- Decentralized - multiple places to get packages, including internal
- PowerShell
- Flexible
- Secure
- Reliable

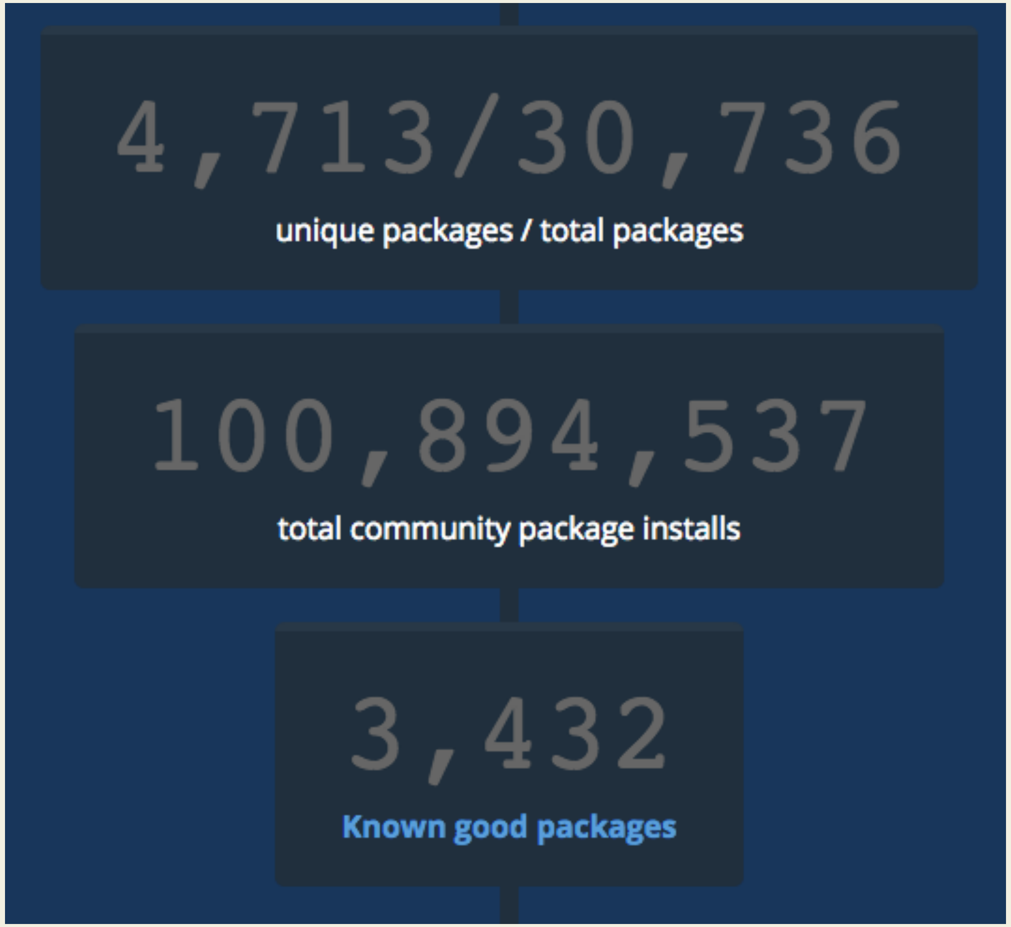
CHOCOLATEY.IO

Chocolatey

SOFTWARE MANAGEMENT AUTOMATION

Community Package Repository

- https://chocolatey.org/packages
- Community Feed / Community Maintained
- Moderated as of October 2014
- Everything goes through VirusTotal
- **Organizations Should Not Depend b/c Trust and Control**



4,713/30,736

unique packages / total packages

100,894,537

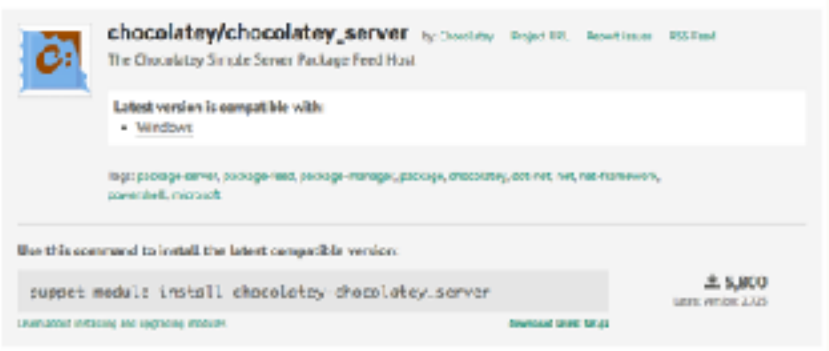
total community package installs

3,432

Known good packages

Hosting Your Own Package Server

- https://chocolatey.org/docs/how-to-host-feed
- Non-Windows Hosting
  - Artifactory
  - Sonatype Nexus
- NuGet Gallery proper
- ProGet / MyGet
- NuGet.Server / Chocolatey.Server
- Puppet - chocolatey/chocolatey_server module
- Visual Studio Team Services



chocolatey/chocolatey_server by: Chocolatey Project URL Report Issues RSS Feed

The Chocolatey Simple Server Package Feed Host

Latest version is compatible with:
- Windows

Tags: package-server, package-feed, package-manager, package, chocolatey, dot-net, .net, net-framework, powershell, microsoft

Use this command to install the latest compatible version:

```
puppet module install chocolatey-chocolatey_server
```

5,800

Latest version: [illegible]

Learn about installing and upgrading modules

Download latest tar.gz

Chocolatey Packages

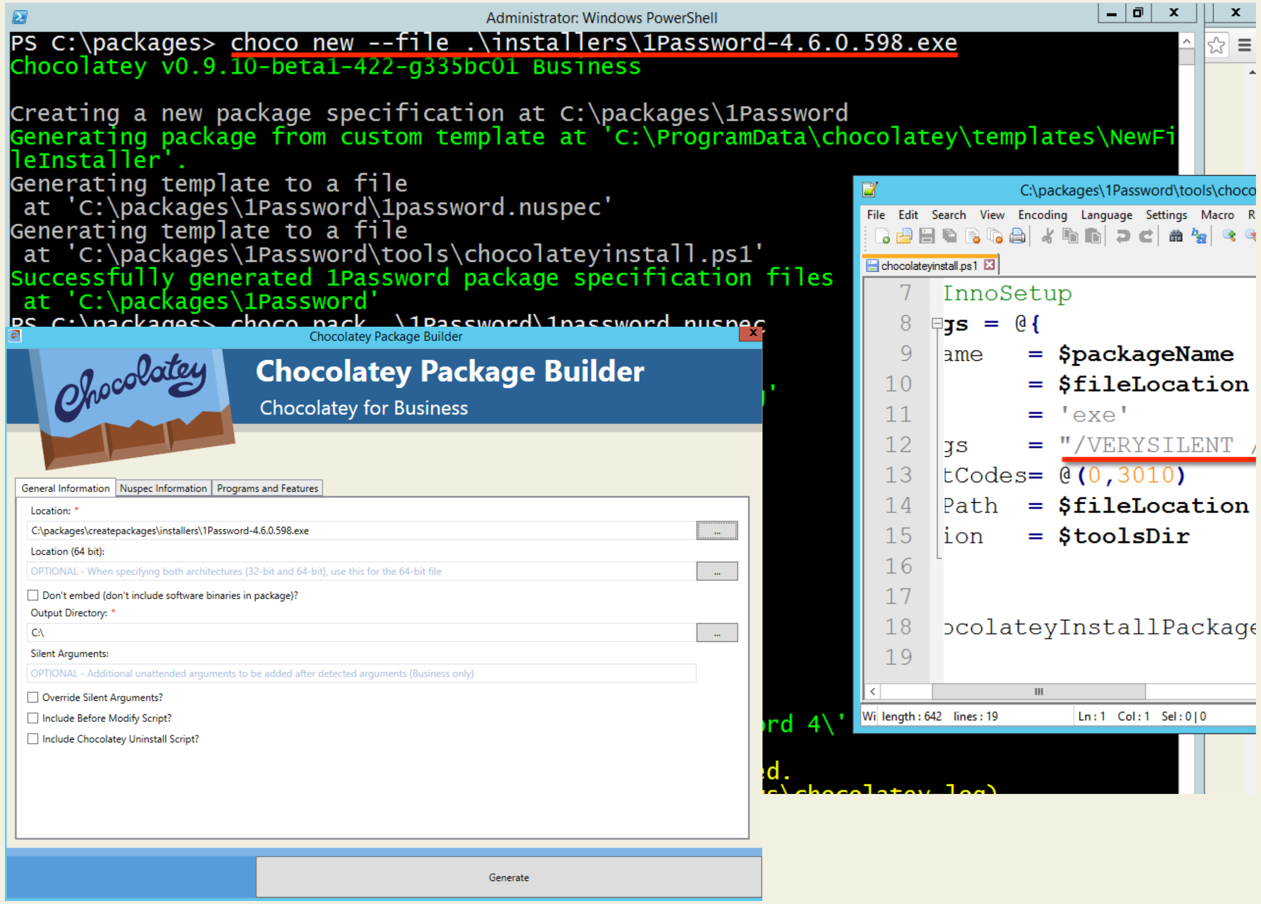
- Zip files + Versioning, Dependencies & PowerShell
- Metadata - Software Information / Package Information
- PowerShell - https://chocolatey.org/docs/helpers-reference
  - 30+ Built-in functions - turn hard tasks into 1 liners
  - Handle additional missing installer logic (like add to PATH)
  - Add options missing from installer arguments
- Files - drop in binaries, native installers

Creating Packages

- https://chocolatey.org/docs/create-packages
- choco new
  - Generates package files with most of the work done
- Create your own packaging templates!

Package Builder “Generates software deployment packages”

Package Builder



```
PS C:\packages> choco new --file .\installers\1Password-4.6.0.598.exe
Chocolatey v0.9.10-beta1-422-g335bc01 Business

Creating a new package specification at C:\packages\1Password
Generating package from custom template at 'C:\ProgramData\chocolatey\templates\NewFi
leInstaller'.
Generating template to a file
 at 'C:\packages\1Password\1password.nuspec'
Generating template to a file
 at 'C:\packages\1Password\tools\chocolateyinstall.ps1'
Successfully generated 1Password package specification files
 at 'C:\packages\1Password'
PS C:\packages> choco pack .\1Password\1password.nuspec
```

```
InnoSetup
gs = @{
ame     = $packageName
        = $fileLocation
        = 'exe'
gs      = "/VERYSILENT /
tCodes= @(0,3010)
Path    = $fileLocation
ion     = $toolsDir


ocolateyInstallPackage
```

Wi length : 642 lines : 19 Ln : 1 Col : 1 Sel : 0 | 0

Chocolatey Package Builder

Chocolatey for Business

Location: * C:\packages\createpackages\installers\1Password-4.6.0.598.exe

Location (64 bit): OPTIONAL - When specifying both architectures (32-bit and 64-bit), use this for the 64-bit file

□ Don't embed (don't include software binaries in package)?

Output Directory: * C:\

Silent Arguments: OPTIONAL - Additional unattended arguments to be added after detected arguments (Business only)

□ Override Silent Arguments?

□ Include Before Modify Script?

□ Include Chocolatey Uninstall Script?

Administrator: Windows PowerShell
Chocolatey Package Builder
C:\packages\1Password\tools\choco
File Edit Search View Encoding Language Settings Macro R
chocolateyinstall.ps1
General Information
Nuspec Information
Programs and Features
Generate

- Package Builder automatically creates high quality packaging from an installer/zip in 5-10 seconds
- Determines everything necessary for silently installing software
- Supports passing urls (and checksums) - downloads files first
- Allows customization
- Supports exe, msi, 7z, zip, msu, and msp files

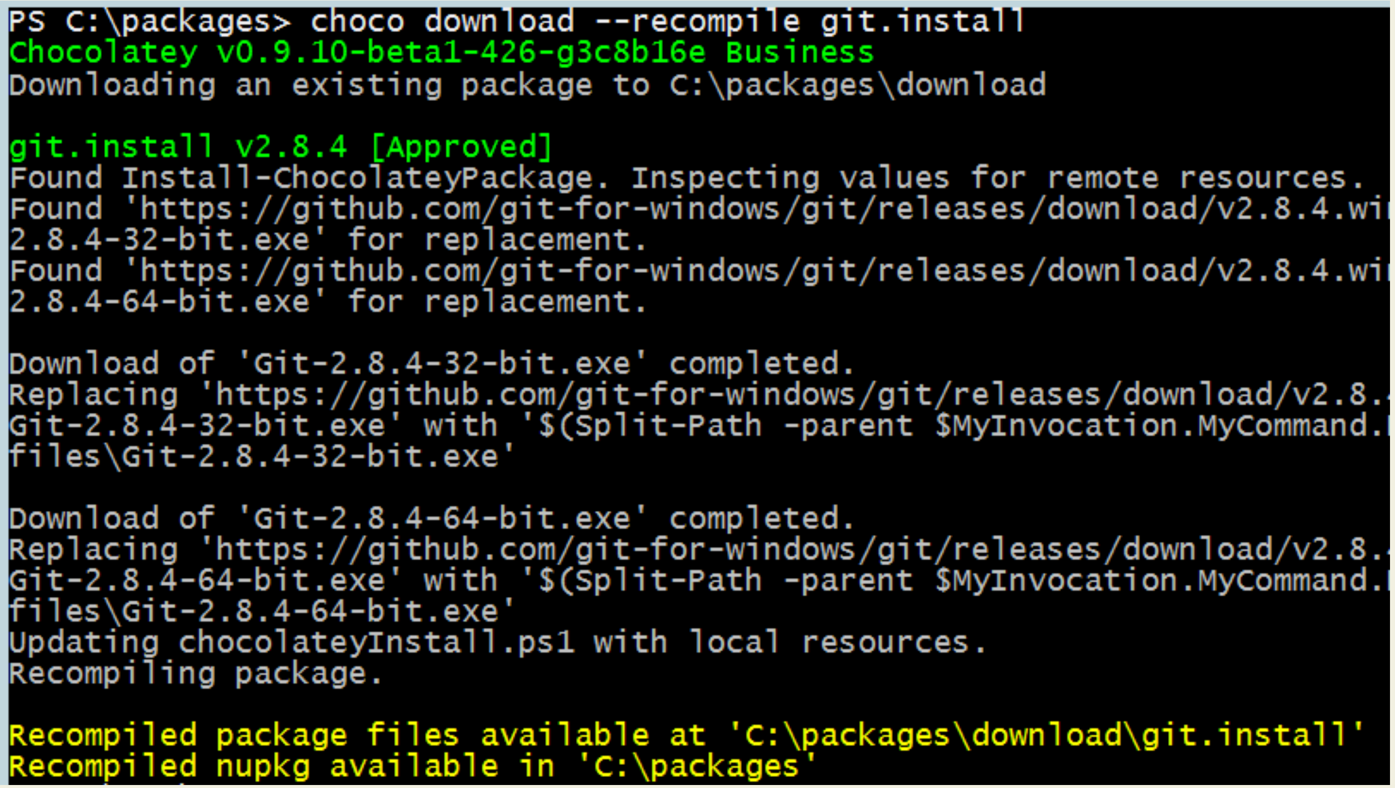
How does it work?

ReactionGIFS.me

Package Internalizer “Convert existing packages to offline”

Package Internalizer

- Take advantage of existing packages without dependency on the internet
- Downloads existing package and all remote resources
- Recompiles package to use those internal resources
- Option to download and point to other locations
- Ability to host packages on private internal repositories
- Visual Interface coming

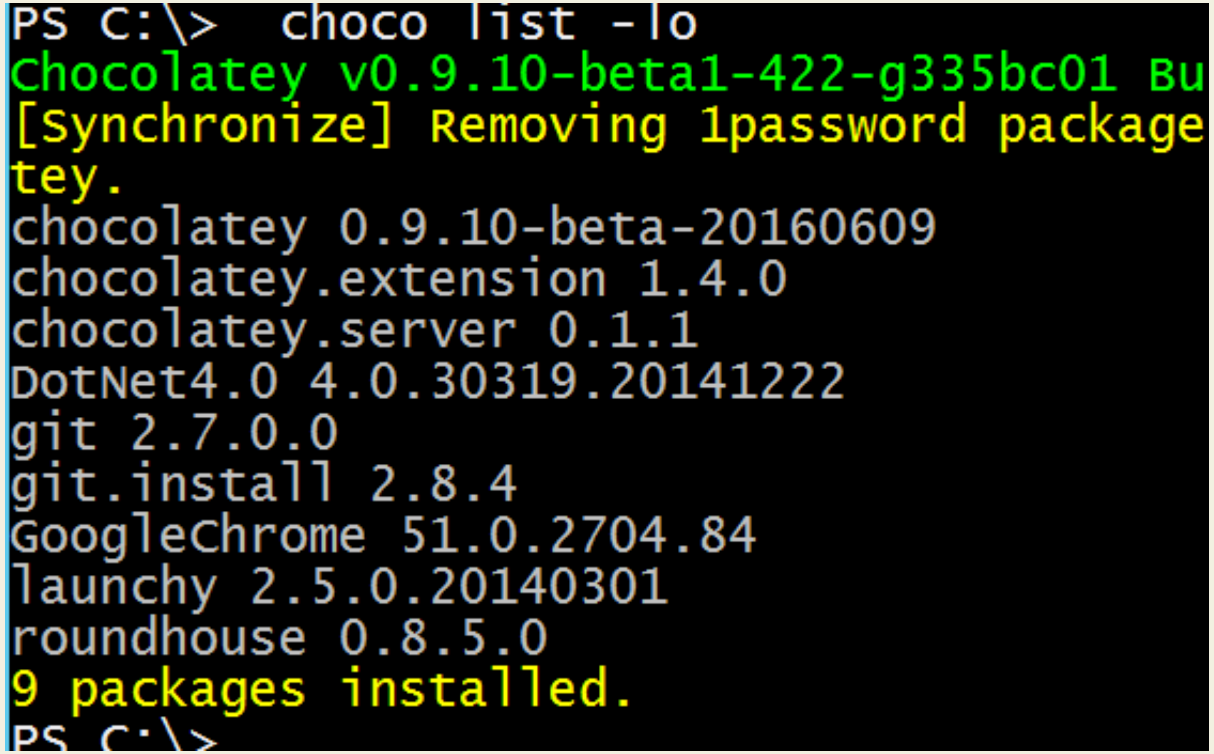


```
PS C:\packages> choco download --recompile git.install
Chocolatey v0.9.10-beta1-426-g3c8b16e Business
Downloading an existing package to C:\packages\download

git.install v2.8.4 [Approved]
Found Install-ChocolateyPackage. Inspecting values for remote resources.
Found 'https://github.com/git-for-windows/git/releases/download/v2.8.4.wi
2.8.4-32-bit.exe' for replacement.
Found 'https://github.com/git-for-windows/git/releases/download/v2.8.4.wi
2.8.4-64-bit.exe' for replacement.

Download of 'Git-2.8.4-32-bit.exe' completed.
Replacing 'https://github.com/git-for-windows/git/releases/download/v2.8.
Git-2.8.4-32-bit.exe' with '$(Split-Path -parent $MyInvocation.MyCommand.
files\Git-2.8.4-32-bit.exe'

Download of 'Git-2.8.4-64-bit.exe' completed.
Replacing 'https://github.com/git-for-windows/git/releases/download/v2.8.
Git-2.8.4-64-bit.exe' with '$(Split-Path -parent $MyInvocation.MyCommand.
files\Git-2.8.4-64-bit.exe'
Updating chocolateyInstall.ps1 with local resources.
Recompiling package.

Recompiled package files available at 'C:\packages\download\git.install'
Recompiled nupkg available in 'C:\packages'
```

Package Synchronizer

You detect a theme for feature names

Package Synchronizer - Auto Sync

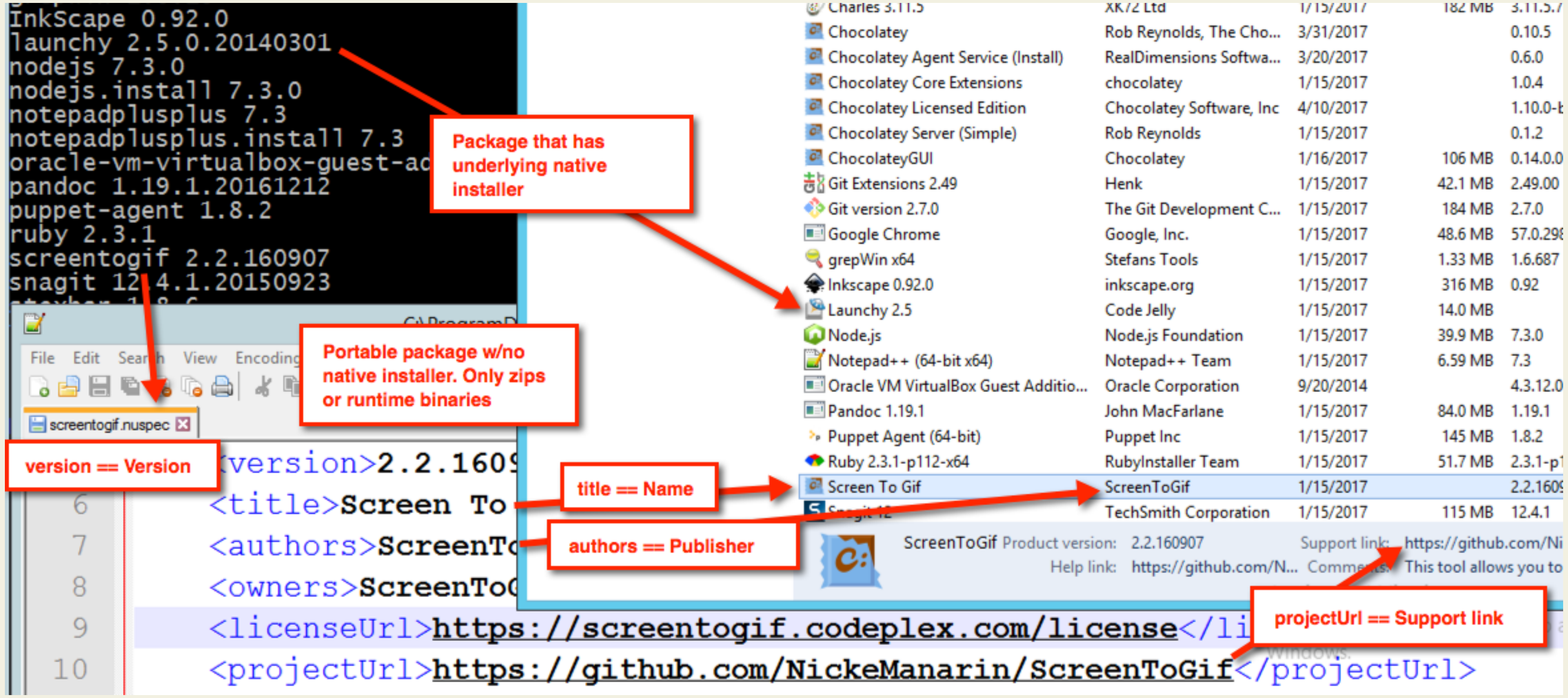


```
PS C:\>  choco list -lo
Chocolatey v0.9.10-beta1-422-g335bc01 Bu
[Synchronize] Removing 1password package
tey.
chocolatey 0.9.10-beta-20160609
chocolatey.extension 1.4.0
chocolatey.server 0.1.1
DotNet4.0 4.0.30319.20141222
git 2.7.0.0
git.install 2.8.4
GoogleChrome 51.0.2704.84
launchy 2.5.0.20140301
roundhouse 0.8.5.0
9 packages installed.
PS C:\>
```

- Chocolatey maintains state based on packages. System state can be manipulated outside of Chocolatey
- Any Chocolatey command will trigger synchronization in licensed editions of Chocolatey
- Package Synchronizer syncs with manual software removal
- Syncs w/software that automatically upgrades, such as Chrome

Package Synchronizer - All Packages in Programs and Features

- Any Chocolatey package installed will result in an entry in Programs and Features, even if it doesn't have a native install
- Supporting legacy inventory reporting systems is now a snap
- Do not need to build MSIs / Installers for internal use just to support legacy reporting



```
InkScape 0.92.0
launchy 2.5.0.20140301
nodejs 7.3.0
nodejs.install 7.3.0
notepadplusplus 7.3
notepadplusplus.install 7.3
oracle-vm-virtualbox-guest-ad
pandoc 1.19.1.20161212
puppet-agent 1.8.2
ruby 2.3.1
screentogif 2.2.160907
snagit 12.4.1.20150923
```

screentogif.nuspec

```
<version>2.2.160
<title>Screen To
<authors>ScreenTo
<owners>ScreenToG
<licenseUrl>https://screentogif.codeplex.com/license</li
<projectUrl>https://github.com/NickeManarin/ScreenToGif</projectUrl>
```

Charles 3.11.5	XK72 Ltd	1/15/2017	182 MB	3.11.5.7
Chocolatey	Rob Reynolds, The Cho...	3/31/2017		0.10.5
Chocolatey Agent Service (Install)	RealDimensions Softwa...	3/20/2017		0.6.0
Chocolatey Core Extensions	chocolatey	1/15/2017		1.0.4
Chocolatey Licensed Edition	Chocolatey Software, Inc	4/10/2017		1.10.0-b
Chocolatey Server (Simple)	Rob Reynolds	1/15/2017		0.1.2
ChocolateyGUI	Chocolatey	1/16/2017	106 MB	0.14.0.0
Git Extensions 2.49	Henk	1/15/2017	42.1 MB	2.49.00
Git version 2.7.0	The Git Development C...	1/15/2017	184 MB	2.7.0
Google Chrome	Google, Inc.	1/15/2017	48.6 MB	57.0.298
grepWin x64	Stefans Tools	1/15/2017	1.33 MB	1.6.687
Inkscape 0.92.0	inkscape.org	1/15/2017	316 MB	0.92
Launchy 2.5	Code Jelly	1/15/2017	14.0 MB	
Node.js	Node.js Foundation	1/15/2017	39.9 MB	7.3.0
Notepad++ (64-bit x64)	Notepad++ Team	1/15/2017	6.59 MB	7.3
Oracle VM VirtualBox Guest Additio...	Oracle Corporation	9/20/2014		4.3.12.0
Pandoc 1.19.1	John MacFarlane	1/15/2017	84.0 MB	1.19.1
Puppet Agent (64-bit)	Puppet Inc	1/15/2017	145 MB	1.8.2
Ruby 2.3.1-p112-x64	RubyInstaller Team	1/15/2017	51.7 MB	2.3.1-p1
Screen To Gif	ScreenToGif	1/15/2017		2.2.1609
Snagit 12	TechSmith Corporation	1/15/2017	115 MB	12.4.1

ScreenToGif Product version: 2.2.160907 Support link: https://github.com/Ni
Help link: https://github.com/N... Comments: This tool allows you to

Package that has underlying native installer

Portable package w/no native installer. Only zips or runtime binaries

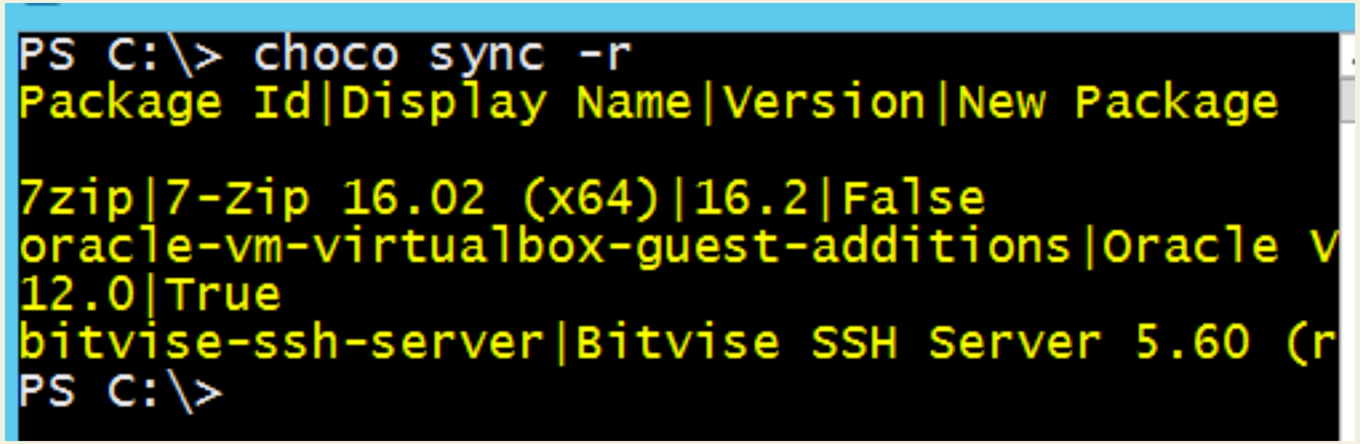
version == Version

title == Name

authors == Publisher

projectUrl == Support link

Package Synchronizer - Choco Sync Command



```
PS C:\> choco sync -r
Package Id|Display Name|Version|New Package

7zip|7-Zip 16.02 (x64)|16.2|False
oracle-vm-virtualbox-guest-additions|Oracle V
12.0|True
bitvise-ssh-server|Bitvise SSH Server 5.60 (r
PS C:\>
```

- Brings all software in Programs and Features under Chocolatey management
- Generates packaging and baselines to Chocolatey install
- Provides packaging code to take back to source control

How does it work?

ReactionGIFS.me

Other Features

Other Features

- https://chocolatey.org/docs/release-notes-licensed
- Auto-uninstaller more effective thanks to more checks and Package Synchronizer
- Install/upgrade passing secrets
- Ubiquitous Directory Switch
- More built-in PowerShell functions
- Uninstall non-Chocolatey managed software
- Self-Service Installer
- Package Throttle / Package Modernizer / Package Grid
- Upcoming Central Management UI
- Others

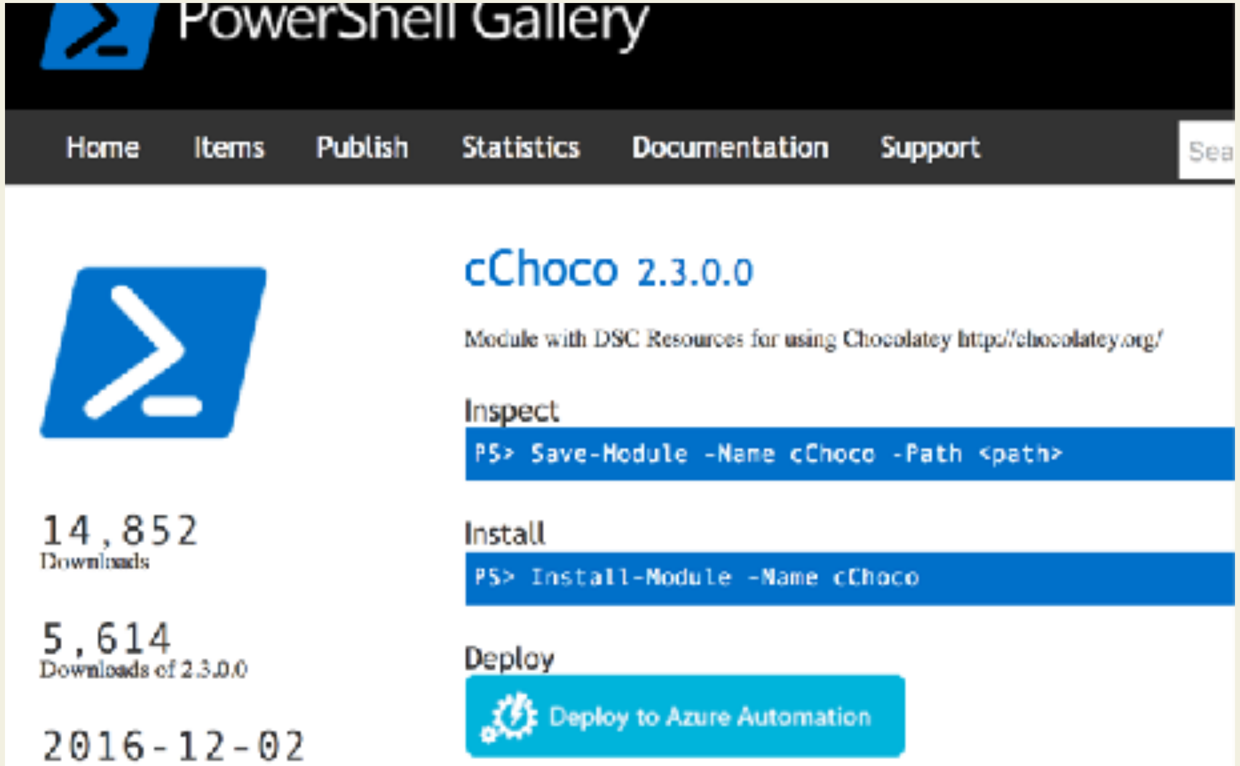
Roadmap

- WSA support / Windows Nano Support
- More Security / More UX
- Package enhancements
  - Package signing / security enhancements
  - Extend Nuspec further - name, version, release, architecture (release is in, doesn't work with anything yet so don't use it)
- Package Management Provider - hoping to finish here at Summit!

Where does DSC come in?

cChoco DSC Resource

- Manages Chocolatey installation
- Manages Choco sources
- Manages packages
- https://github.com/PowerShellOrg/cChoco
- https://www.powershellgallery.com/packages/cChoco/2.3.0.0



cChoco 2.3.0.0

Module with DSC Resources for using Chocolatey http://chocolatey.org/

Inspect

```
PS> Save-Module -Name cChoco -Path <path>
```

Install

```
PS> Install-Module -Name cChoco
```

Deploy

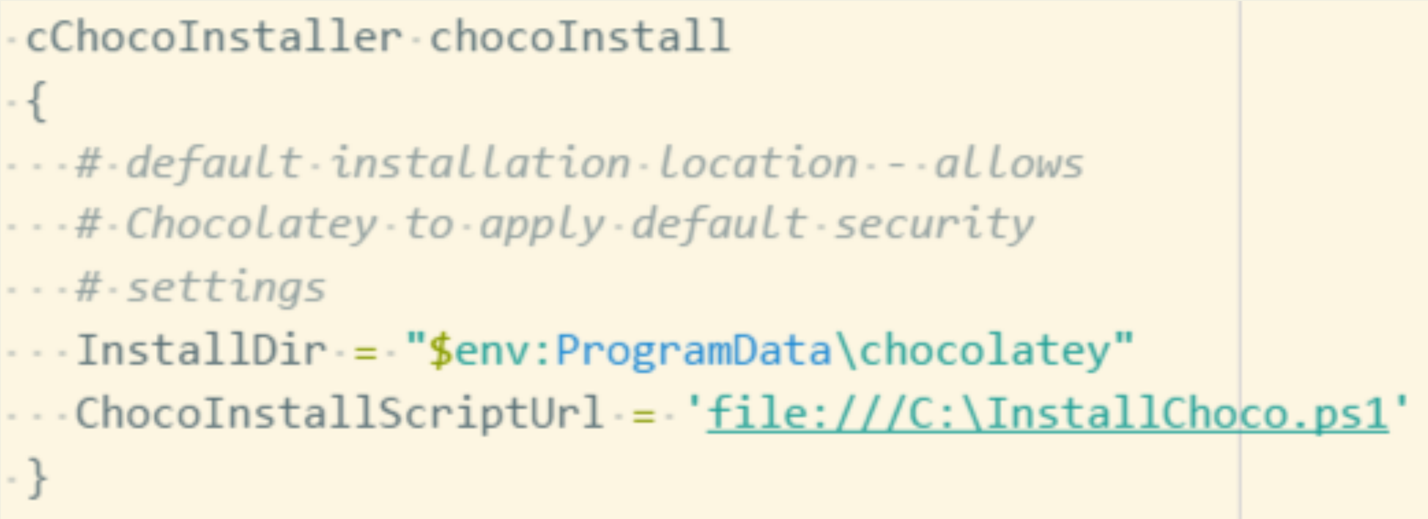
14,852
Downloads

5,614
Downloads of 2.3.0.0

2016-12-02

cChocoInstaller

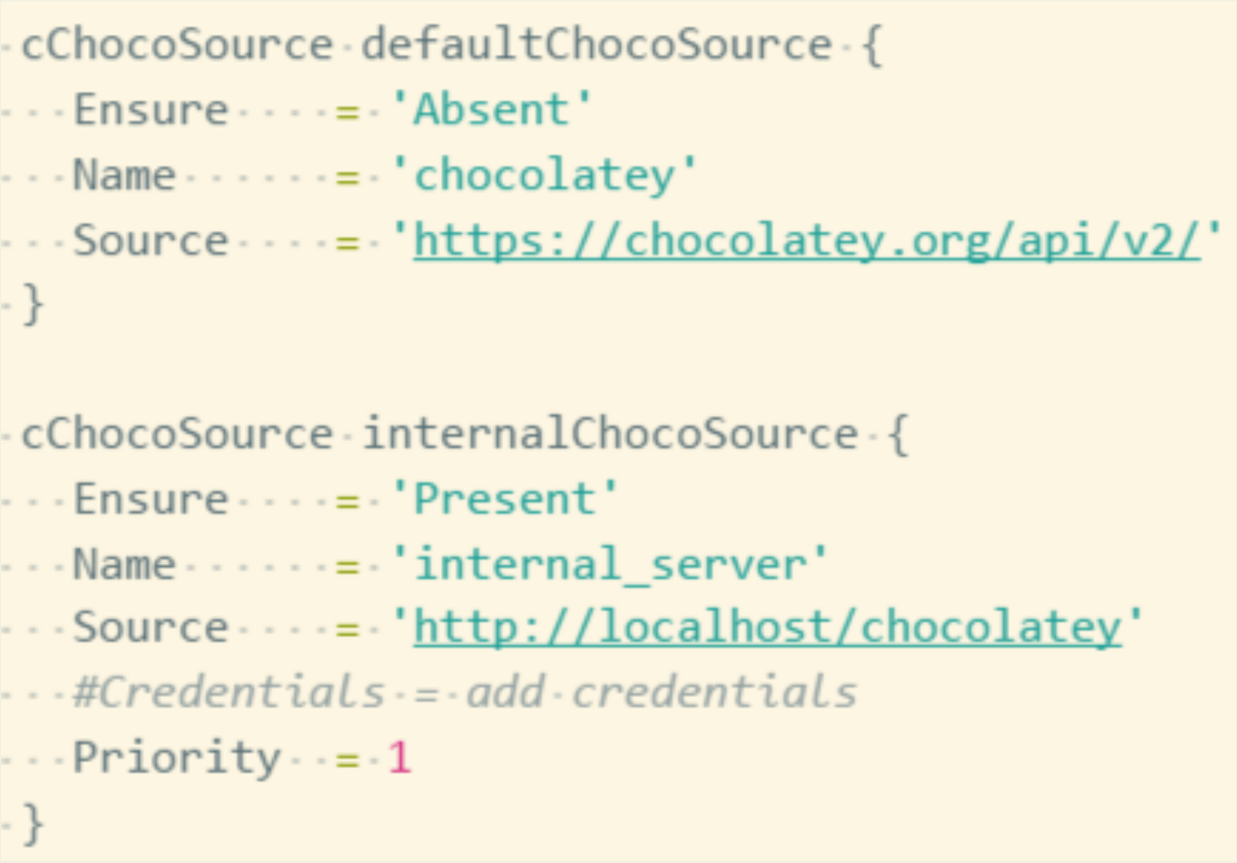
- Manages Chocolatey installation
- Manage install location
- Can work offline, however currently requires specifying a script to run locally



```
cChocoInstaller chocoInstall
{
   # default installation location - allows
   # Chocolatey to apply default security
   # settings
   InstallDir = "$env:ProgramData\chocolatey"
   ChocoInstallScriptUrl = 'file:///C:\InstallChoco.ps1'
}
```

cChocoSource

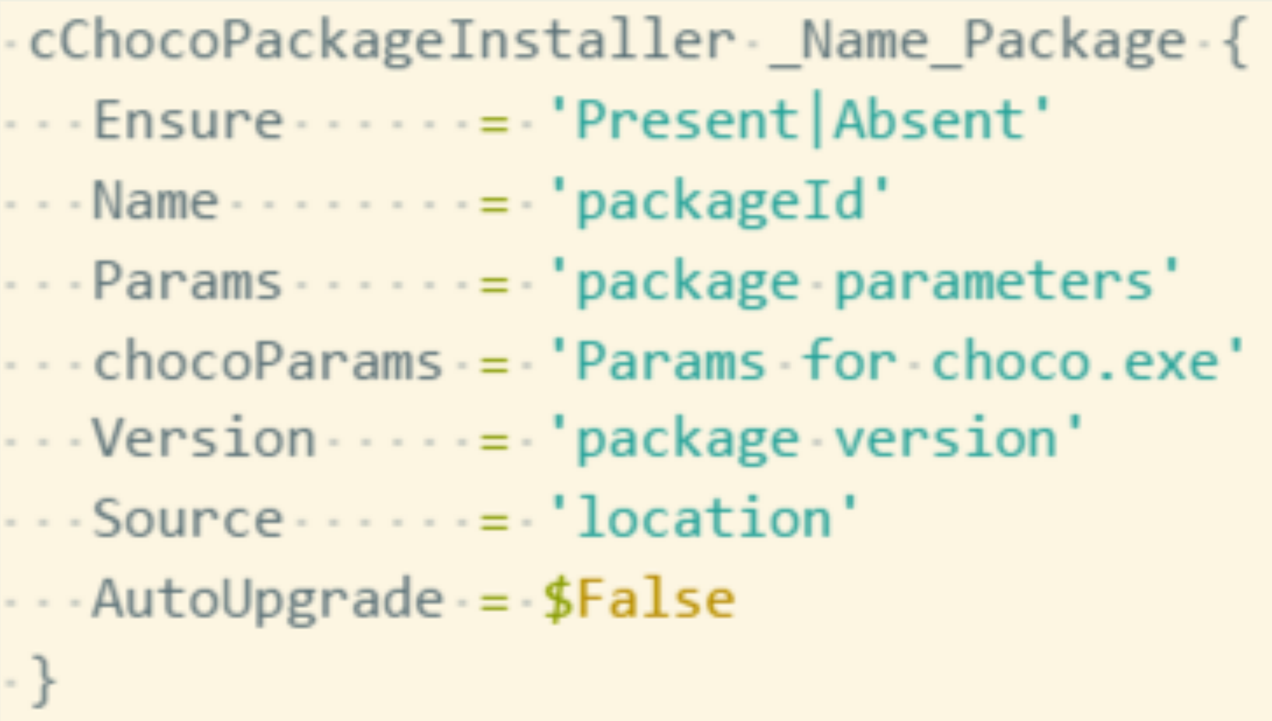
- Manage available package sources
- Add or remove, does not disable
- Add credentials
- Add priorities for sources
- Will need new source items - 0.10.4+
- Bug somewhere currently, so hold on this one



```
 cChocoSource defaultChocoSource {
   Ensure    = 'Absent'
   Name      = 'chocolatey'
   Source    = 'https://chocolatey.org/api/v2/'
 }

 cChocoSource internalChocoSource {
   Ensure    = 'Present'
   Name      = 'internal_server'
   Source    = 'http://localhost/chocolatey'
   #Credentials = add credentials
   Priority  = 1
 }
```

cChocoPackageInstall

- Ensure software package installation
- Optional params, chocoParams, Version, Source, and AutoUpgrade
- Allows customizing complete choco call
- Recommend not setting source until it is fixed - https://github.com/PowerShellOrg/cChoco/issues/44 (pass source through chocoParams)



```
 cChocoPackageInstaller _Name_Package {
   Ensure      = 'Present|Absent'
   Name        = 'packageId'
   Params      = 'package parameters'
   chocoParams = 'Params for choco.exe'
   Version     = 'package version'
   Source      = 'location'
   AutoUpgrade = $False
 }
```

cChoco - Get Involved

- If you are looking for a place to contribute, this is a good place

Demo

Questions

- Rob
- @ferventcoder
- ferventcoder at gmail

Evaluate Chocolatey for Business in your environment - special discounts available conference attendees - reach out at https://chocolatey.org/contact for details