



Chef and PowerShell DSC

CODE-THE-IMPOSSIBLE



Niklas Akerlund



Chef and PowerShell DSC

CODE-THE-IMPOSSIBLE

Niklas Akerlund

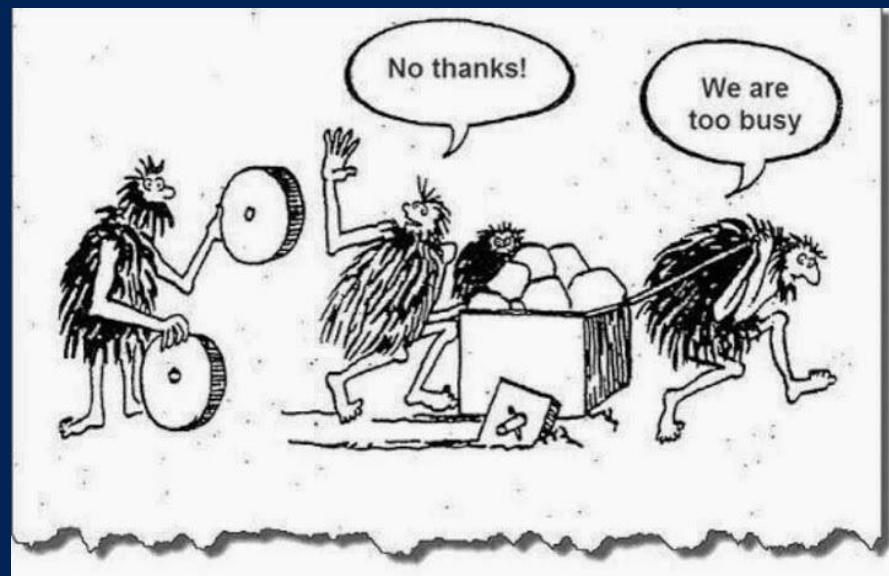
Agenda

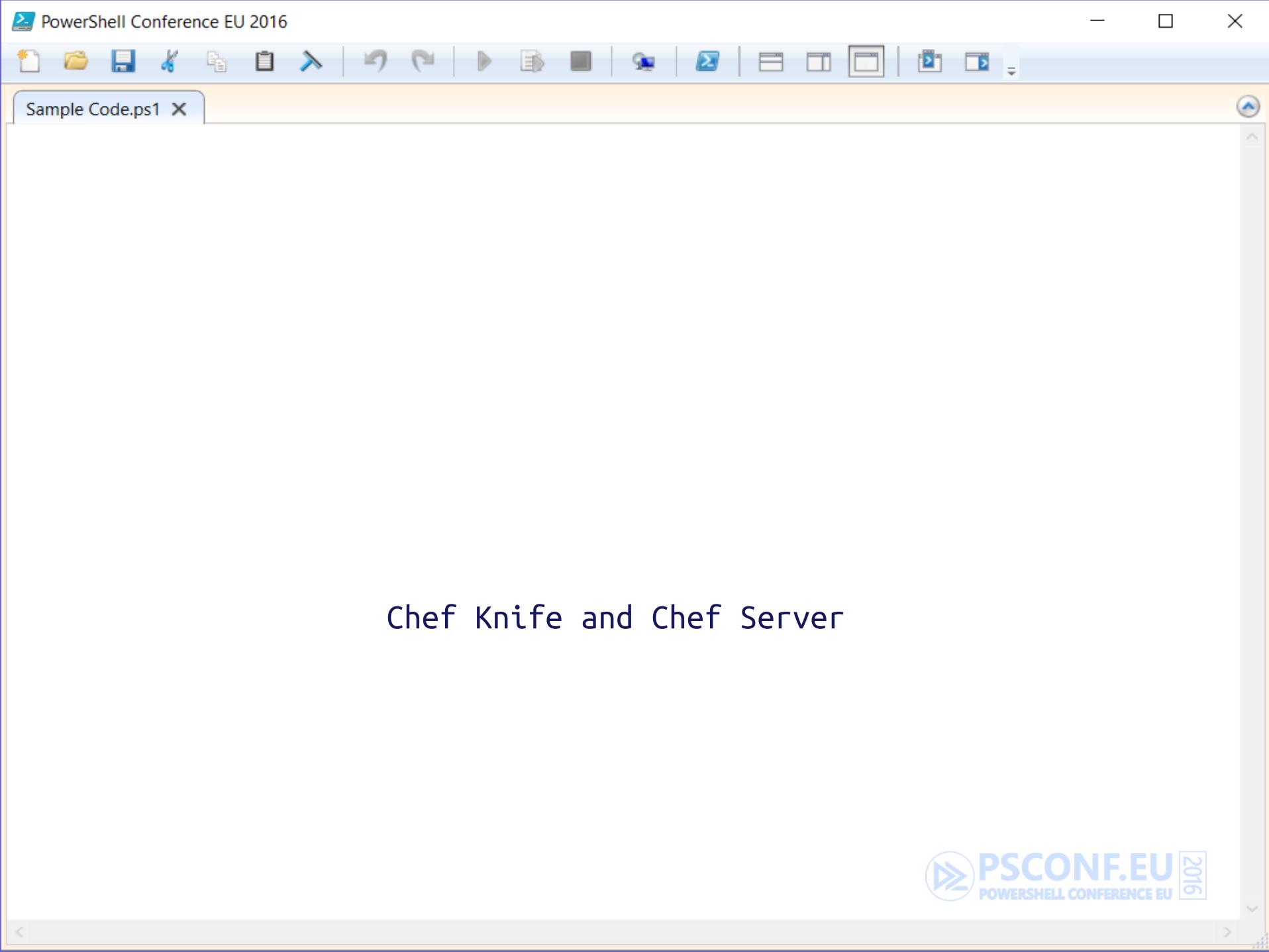
- What is Chef
- Why use Chef with DSC?
- Where Should I Use DSC Resources vs. Chef Resources?
- How Windows PowerShell DSC Is Used By Chef
- How to Find New or Updated DSC Resources
- Summary



What is Chef

- Powerful automation platform
- Transforms complex infrastructure into code





Chef Knife and Chef Server

Why Use DSC with Chef?

- DSC is great and Chef is great
- DSC is a platform feature, not an end to end solution
- DSC has some rough edges
- How Chef helps
- What DSC offers to Chef

Why Use DSC with Chef?

- **DSC is great and Chef is great**
 - Both systems have strong capabilities on their own.
 - Chef is a mature, flexible automation platform.
 - DSC is built into the Windows operating system and has a growing ecosystem of resources.
- DSC is a platform feature, not an end to end solution
- DSC has some rough edges
- How Chef helps
- What DSC offers to Chef

Why Use DSC with Chef?

- DSC is great and Chef is great
- **DSC is a platform feature, not an end to end solution**
 - DSC primarily is a platform feature (the Local Configuration Manager and the patterns for resources).
 - DSC has limited constructs for separating out environment specific data.
 - There are workflow and management limits.
 - You will need to build some tooling.
- DSC has some rough edges
- How Chef helps
- What DSC offers to Chef

Why Use DSC with Chef?

- DSC is great and Chef is great
- DSC is a platform feature, not an end to end solution
- **DSC has some rough edges**
 - Resources in a configuration cannot execute conditionally.
 - Resources cannot be reused inside other resources (outside of composite resources).
 - Parameters to resources have to be provided ahead of time.
- How Chef helps
- What DSC offers to Chef

Why Use DSC with Chef?

- DSC is great and Chef is great
- DSC is a platform feature, not an end to end solution
- DSC has some rough edges
- **How Chef helps**
 - Use run-time information to determine how policy is applied.
 - Constructs for modeling your environmental data - roles, environments, data bags, and policyfiles.
 - Workflow tooling in the Chef Development Kit (ChefDK), to help scaffold and extend projects.
 - Strong community of test tools including lint, syntax, unit, and integration/acceptance.
 - Compliance as a first-class citizen (testing tools, Audit mode, and Chef Compliance).
 - Chef server makes configuration and environment data available for reporting and during configuration management tasks.
- What DSC offers to Chef

Why Use DSC with Chef?

- DSC is great and Chef is great
- DSC is a platform feature, not an end to end solution
- DSC has some rough edges
- How Chef helps
- **What DSC offers to Chef**
 - Resources, resources, and more resources.



Where Should I Use DSC Resources vs. Chef Resources?

- 5 Questions
 - Is there a cookbook with resources or recipes on Supermarket that meets the use case?
 - Is there a DSC resource in PowerShell Gallery that meets the use case?
 - How easily can I test that the (recipe/resource) meets my need?
 - Is my team stronger in Ruby or PowerShell?
 - What kind of community support is out there for the recipe/resource?

Where Should I Use DSC Resources vs. Chef Resources?

- 5 Questions
 - Is there a cookbook with resources or recipes on Supermarket that meets the use case?
 - **Is there a DSC resource in PowerShell Gallery that meets the use case?**
 - Very often the presence of a community resource or recipe can get us 80 to 90% of the way to solving our problem.
 - Even when there is overlap, there can be differences in their behavior.
 - How easily can I test that the (recipe/resource) meets my need?
 - Is my team stronger in Ruby or PowerShell?
 - What kind of community support is out there for the recipe/resource?

Where Should I Use DSC Resources vs. Chef Resources?

- 5 Questions
 - Is there a cookbook with resources or recipes on Supermarket that meets the use case?
 - Is there a DSC resource in PowerShell Gallery that meets the use case?
 - **How easily can I test that the (recipe/resource) meets my need?**
 - Probably the most important aspect, if you cannot verify what the resource or recipe does, you cannot trust the resource in production.
 - Is my team stronger in Ruby or PowerShell?
 - What kind of community support is out there for the recipe/resource?

Where Should I Use DSC Resources vs. Chef Resources?

- 5 Questions
 - Is there a cookbook with resources or recipes on Supermarket that meets the use case?
 - Is there a DSC resource in PowerShell Gallery that meets the use case?
 - How easily can I test that the (recipe/resource) meets my need?
 - **Is my team stronger in Ruby or PowerShell?**
 - If you have to build a custom resource or modify an existing one, where does your team's skillset lie?
 - You will need to troubleshoot the application of resources at some point.
 - What kind of community support is out there for the recipe/resource?

Where Should I Use DSC Resources vs. Chef Resources?

- 5 Questions
 - Is there a cookbook with resources or recipes on Supermarket that meets the use case?
 - Is there a DSC resource in PowerShell Gallery that meets the use case?
 - How easily can I test that the (recipe/resource) meets my need?
 - Is my team stronger in Ruby or PowerShell?
 - **What kind of community support is out there for the recipe/resource?**
 - One of the greatest parts of the Chef and PowerShell communities is the depth of the community support.
 - DSC is still fairly new in the PowerShell community.

How Windows PowerShell DSC Is Used By Chef

- `dsc_script`
- `dsc_resource`

Sample Code.ps1 X

Cookbook with PowerShell and DSC Script/ DSC Resource Resources

How Windows PowerShell DSC Is Used By Chef

- **dsc_script**

- Supports Windows Management Framework 4 and newer
- Embedded snippets of DSC configuration commands.
- Configuration document is generated on the node and sent to the LCM.
- The last `dsc_script` configuration will remain as the “current” configuration.

```
dsc_script 'Setup IIS' do
  imports 'xWebAdministration'
  code <<-SETUPIIS
    windowsfeature 'iis'
    {
      Name = 'web-server'
    }

    service 'w3svc'
    {
      Name = 'w3svc'
      StartupType = 'Automatic'
      State = 'Running'
      DependsOn = '[windowsfeature]iis'
    }

    xWebSite 'Shutdown Default Website'
    {
      Name = 'Default Web Site'
      State = 'Stopped'
      PhysicalPath = 'C:\\inetpub\\wwwroot\\'
      DependsOn = '[windowsfeature]iis'
    }
  SETUPIIS
end
```

How Windows PowerShell DSC Is Used By Chef

- **dsc_resource**

- Supports Windows Management Framework 5 and newer.
- Direct resource access where Chef controls calling the test and set methods.
- Faster for individual resources.

```
dsc_resource 'Install IIS' do
  resource :windowsfeature
  property :name, 'web-server'
end

service 'w3svc' do
  action [:enable, :start]
end

dsc_resource 'Shutdown Default Website' do
  resource :xwebsite
  property :name, 'Default Web Site'
  property :State, 'Stopped'
  property :PhysicalPath, 'C:\inetpub\wwwroot'
end
```



How Windows PowerShell DSC Is Used By Chef

- **dsc_resource**



```
dsc_resource 'Install IIS' do
  resource :windowsfeature
  property :name, 'web-server'
end

service 'w3svc' do
  action [:enable, :start]
end

dsc_resource 'Shutdown Default Website' do
  resource :xwebsite
  property :name, 'Default Web Site'
  property :State, 'Stopped'
  property :PhysicalPath, 'C:\inetpub\wwwroot'
end
```

Did you notice there is a
Chef resource
sandwiched between the
two DSC resources?



This

```
powershell_script "new website for #{site_name}" do
  code <<-EOH
    Import-Module WebAdministration
    if (-not(test-path IIS:\Sites\#\{site_name})) {
      $NewWebsiteParams = @{Name= '#{site_name}';Port= #{site_data['port']};PhysicalPath= '#{site_dir}';ApplicationPool= '#{site_name}'}
      New-Website @NewWebsiteParams
    }
    elseif ((Get-WebBinding -Name #{site_name}).bindingInformation -ne '*:#{site_data['port']}') {
      $CurrentBinding = (Get-WebBinding -Name #{site_name}).bindingInformation
      $BindingParameters = @{Name= '#{site_name}';Binding= $CurrentBinding;PropertyName= 'Port';Value = #{site_data['port']} }
      Set-WebBinding @BindingParameters
    }
    Get-Website -Name #{site_name} | Where {$_.state -like 'Stopped'} | Start-Website
  EOH
end
```

Becomes this with dsc_script

```
dsc_script "Configure Site #{site_name}" do
  imports 'xWebAdministration'
  code <<-SITESDSC
    $SiteDir = '#{site_dir}'
    xWebSite "#{site_name}WebSite"
    {
      Name = '#{site_name}'
      ApplicationPool = '#{site_name}'
      PhysicalPath = $SiteDir
      BindingInfo = MSFT_xWebBindingInformation {
        IPAddress = '*'
        Port = #{site_data['port']}
        Protocol = 'http'
      }
    }
  SITESDSC
end
```

Becomes this with dsc_resource

```
dsc_resource "#{site_name} Web Site" do
    resource :xWebSite
    property :Name, site_name
    property :ApplicationPool, site_name
    property :PhysicalPath, site_dir
    property :BindingInfo, cim_instance_array(
        'MSFT_xWebBindingInformation',
        ipaddress: '*',
        protocol: 'http',
        port: site_data['port'])
end
```

TIP: Finding Out The Parameters of a DSC Resource



How to Find New or Updated DSC Resources

- PowerShell Gallery -
<https://www.powershellgallery.com>
- Github - <https://github.com/powershell>
- PowerShellGet
 - Find-Module
 - Find-DscResource



It's a brave new world in
the Microsoft ecosystem.



Simple Console Demos

Embed one-liners right into your slides:

```
PS> Get-ExecutionPolicy  
Bypass
```



Roger screws up.



CONF.EU
POWERSHELL CONFERENCE EU
2016

Further Resources

- Come to ChefConf - <https://chefconf.chef.io/>
 - There will be talks about DSC
 - Building DSC Resources
 - Cheffing Sharepoint
 - and more...
 - Building Cookbooks with DSC Resources
- Learn Chef - <https://learn.chef.io>
- Track Your Chef Learning -
<https://training.chef.io>

About_Author: Niklas Akerlund

- Chief Technical Architect at Real Time Services AB
- Cloud Datacenter Management MVP
- PS User Group Sweden founder
- Blog: vniklas.com
- Twitter: @vniklas



Summary

- DSC is great and Chef is great
- Thus making the combination Super-great



Questions?

Next Steps...

- Now: 15 min break
- Grab a coffee
- Stay here to enjoy next presentation
- Change track and switch to another room
- Ask me questions or meet me in a breakout session room afterwards



Sample Code.ps1 X



Demo

Use the ISE-style demo slides
to show code

To insert color-coded code, insert the code into a real ISE
script pane,



Sample Code.ps1 X



```
# simply enter code into a REAL ISE script pane  
# then select all, copy, and paste the code  
# into this slide
```

```
# in the overlay toolbox window that appears in the  
# slide, choose KEEP FORMATTING  
# to keep the color-coding
```

```
Get-Audience |  
Add-Speaker -Level GodlikeBeing |  
Out-PowerShellExtravaganza
```