Many thanks to our sponsors:

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Evgenij Smirnov

- I live in Berlin (*used to be @cj_berlin*)
- Principal Solutions Architect @ Semperis
- 30+ years of consulting and delivery
- PowerShell MVP since 2020
- Attended all PSConfEU since 2016
  - and spoke at six of them, including this one
- Ask Me Anything about Active Directory *(but you might not like the answer)*

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In this session

- Windows administrator's view of Linux automation
- What's (not) in the box
- Solving everyday problems across distro flavours
- Working remotely

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What about those other X's?

- Yes, PowerShell is available on
  - MacOS (officially)
  - and several UNIX flavours (unofficially)
  - and some unsupported Linuxes (with workarounds)
- No, not talking about having PowerShell on them…
- …but may touch on managing those remotely

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Managing Expectations

- Most of us here are Windows people
  - …and would like a consistent* management experience
- None of us here are system-level Linux coders
  - …and could create a cross-distro interop library from first principles

*T&C apply

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What's (not) in the box?

Because it was supposed to be the same experience, right?

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Remember 2016?

■ Microsoft
PowerShell
Connector of the Hybrid Cloud

From **ANY** client
Manage **ANY** server
Running in **ANY** cloud*
*Or on-premises using **ANY** hypervisor
And **ANY** storage

THOSE WHO DON'T
AUTOMATE ARE DOOMED
TO REPEAT THEMSELVES

What's in the box today

- Windows: 1800+ cmdlets on fresh install

- Non-Windows: 285 cmdlets

- Only one exclusively on non-Windows OSes:
  `Switch-Process`

- .NET does not have feature parity between platforms
  - ...so falling back to .NET classes is not going to help us

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What's in the box today (cont'd)

Things that work well

- Core functionality
  - data types, flow control
- Working with file systems
  - and file content
- Low-level access to data
  - SQLClient, S.DS.P
  - `Invoke-RestMethod`*

Things that are missing

- disks + volumes
- users + groups
- services + tasks
- networking + firewall
  - even `Resolve-DNSName`
- certificates
  - even in file form

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What can we do to help?

- Let's look at what the team is doing when .NET doesn't deliver…

- …and do likewise ☺

Demo

What's in the box?

START-DEMO

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Running native commands

It's Monad Manifesto all over again…

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Native commands in Linux

- Different commands in different distros
  - most notably, but not only, package managers
- Different command and data paths
  - sometimes they matter → the `which` command helps a lot
- Unregulated arguments and output formatting
  - same cmd in different distros can have different output
  - sometimes actionable output goes to error stream **(2>&1)**
  - some commands allow JSON as output format **<3**

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Running a native command

- My personal favourite in scripts/modules:
  `Invoke-Expression –Command $cmd –EA Stop`

- Allows preparing the **$cmd** string in advance
  - good for logging, troubleshooting etc.

- Fairly lightweight

- PowerShell-y
  - ...because personally, I find this super cringeworthy:
  `$result = & somecommand --somearg=somevalue`

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Demo

Recreating
Resolve-DNSName

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Dealing with Elevation

Because some things *are* dangerous, you know...

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Five levels of elevation in Linux

- Shell is running as root

- User can sudo the desired command w/o password

- User can sudo the desired command with password
  - This can be tricky sometimes

- Users cannot sudo the desired command but a user who can is known

- User cannot sudo the desired command, period.

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Elevation (cont'd)

- Determine if **pwsh** is already running as sudo:
  - `#requires –RunAsAdministrator` only works on Windows!
  - Use `[System.Environment]::IsPrivilegedProcess`
- If not running as sudo (or root), it gets interesting...
- For better usability, elevation without password should be tried first...
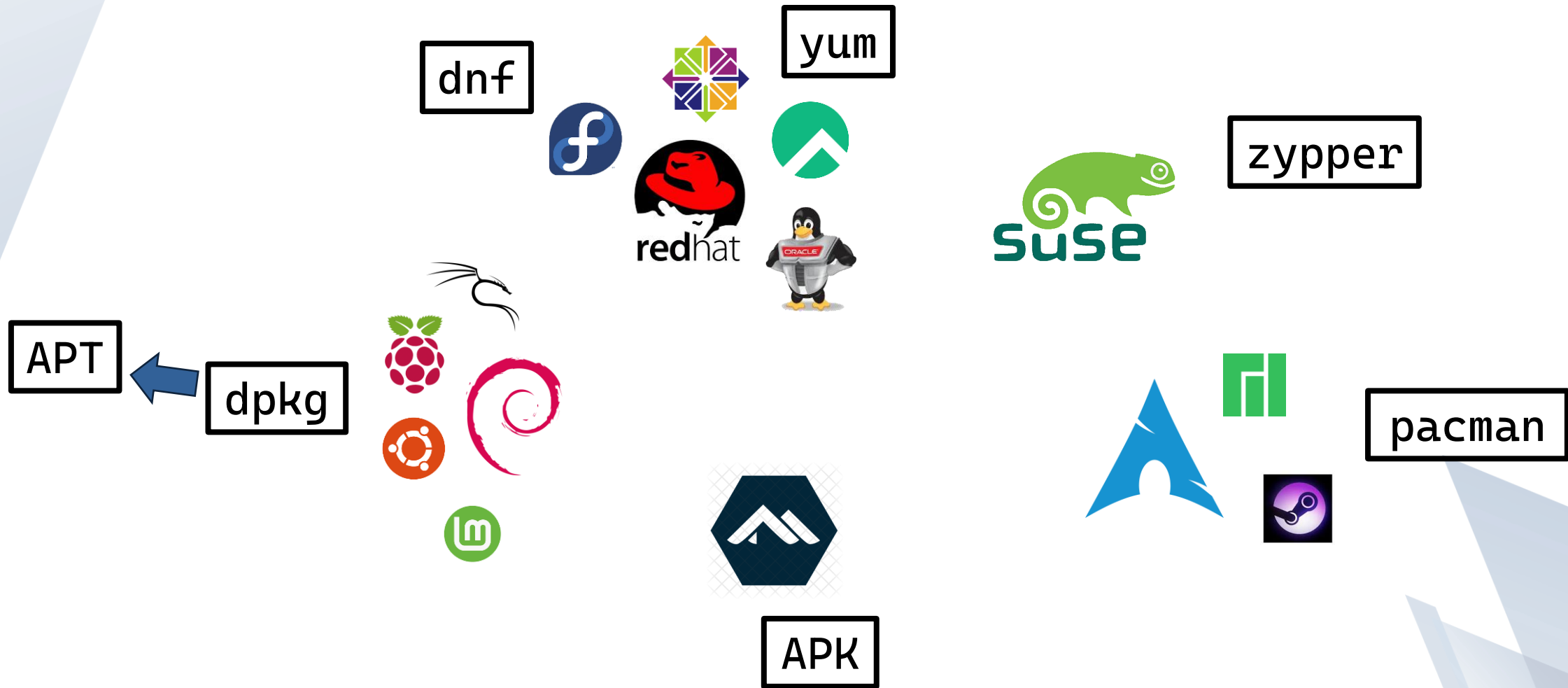- ...but what do we do if it fails?

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Across distributions

...because Linux -notlike Linux -notlike Linux...

Package Management (excerpt)

dnf

yum

zypper

APT

dpkg

pacman

APK

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Demo

Cross-Distro

package management

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// TODO: Support remote computers?

Because, you know... stuff.

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To remote or to remote?


```
Invoke-Command –HostName PSPenguin
-ScriptBlock {
    Import-Module Linux.Automation
    Get-LinuxComputerInfo
}
```

```
Import-Module Linux.Automation
Get-LinuxComputerInfo
    –ComputerName PSPenguin
```

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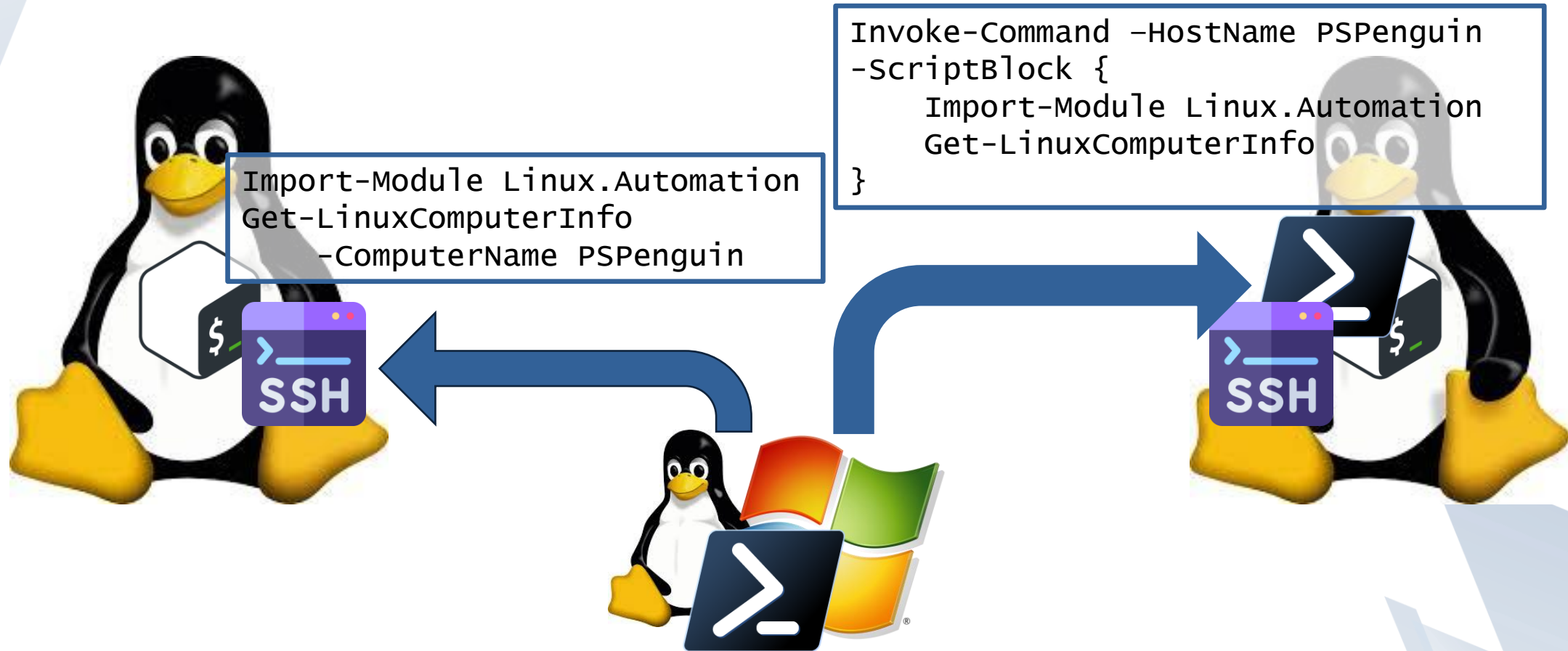
Demo

Universal command invocation

START-DEMO

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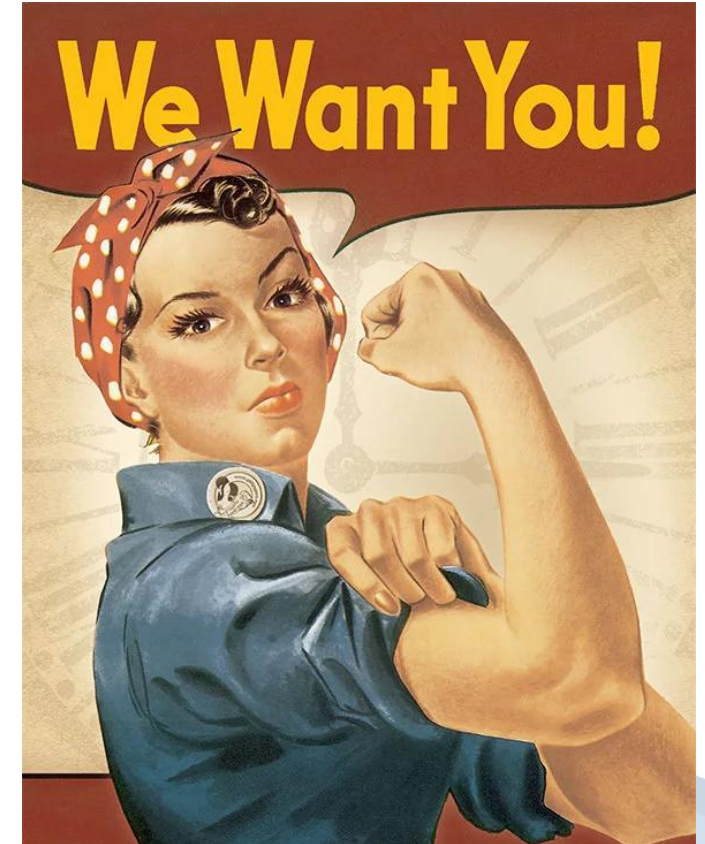
Call to Action

Linux.Automation module shown today
needs YOU to help

- extend functionality
- expand distro coverage
- improve stability

- get rid of module dependencies

https://github.com/it-pro-berlin-de/Linux.Automation

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Q&A

15 minutes

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