



2018

# PowerShell 2018 - State of the Art



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It's 2018 and  
PowerShell  
has never been  
more important





~~Cloud changes everything~~

Digital Transformation changes everything

**Automation** enables Digital Transformation





Core

Mission Critical  
Failure=> Deep trouble

\$\$\$

Context  
Everything else

Risk

Everything else

\* <http://ecorner.stanford.edu/videos/1327/Core-and-Context>



**BUILD** what advances your mission  
**BUY** what doesn't

# But How?

- ~~Ask for more people~~
- Create bandwidth
- Invest in innovation

## Create Bandwidth

- SaaS
- Lift and Shift
- **Automate! Automate! Automate!**

## Invest in innovation

- Use cloud architectures (PaaS)
- Embrace devops
- **Automate! Automate! Automate!**



Excellence at  
**Digital  
Transformation**  
means winning





Excellence at  
**Automation**  
means winning



**So it's just Windows PowerShell  
right?**

# No

- **Windows** PowerShell is all about Windows
- The world is **heterogenous**
- **Services** are as important as machines  
(maybe more)
- Cloud requires better **programming in the large**  
support

**A new tool is needed**



**A NEW TOOL...**



**WHAT ABOUT THE SACRED VOW?**

**So...YES**  
**It's just ~~Windows~~ PowerShell**

# New Mission for PowerShell: Support Digital Transformation

From **ANY** client

Manage **ANY** server or service

Running on **ANY** cloud

Or on-prem using:

**ANY** hypervisor

**ANY** storage

and **ANY** networking

# What About Windows PowerShell?

- Windows PowerShell is complete
- Fully supported (probably forever)
- No feature development
- Security fixes & customer blocking bug fixes only
- All feature investment is in PowerShell (Core)
- Breaking changes required ergo: "pwsh"



**POWERSHELL V6**



**WHAT ABOUT COVERAGE?**

# PSV6 !> WPSV5.1

- Hit Refresh
  - Workflows, Snapins, WMI, etc.
- .NET core !> Desktop .NET
  - V1 => V2 doubled the API surface
  - Windows Compat Pack doubles the API surface again!
- PS Remoting provide interoperability
- Ask product teams for PSV6 support
  - Your voice has the most influence

# Demo: rModule

# When Do I Switch to PSV6?

- For USERS
  - When it makes sense for you
  - Work SxS
  - Some might never switch
- For CMDLET providers
  - Compile against .NET Standard libraries so you work with BOTH WPS and PSV6
- For Script/Module writers
  - Support both
  - Declare what versions you support e.g.  
Tag=PSEDITION\_CORE



# What's in PowerShell V.Next?

- I don't know
- 50% of PRs came from the community
  - <http://aka.ms/psgithubbi>
- I only know what we are investing in
  - <https://github.com/PowerShell/PowerShell/projects>

# Microsoft's Investments in PowerShell

- Cloud and service management
- Programing in the large
- Community feedback

# Cloud & Service Management

- Help consume cloud & services
  - Any client
  - All targets (every OS and service)
  - Swagger-based cmdlets
  - Production quality gallery
  - CloudShell
- Drive features
  - Update management
  - Inventory
  - Change Tracking
  - Azure Automation
  - Configuration Management
  - Azure Security Baselines
    - (Native code DSC)
  - Azure Functions

Home > JPS-2



JPS-2  
Virtual machine

Search (Ctrl+/)



Locks



Automation script

#### OPERATIONS



Auto-shutdown



Backup



Disaster recovery (Preview)



Update management



Inventory



Change tracking



Connect



Start



Restart



Stop



Capture



Move



Delete

Resource group ([change](#))

JPSRG

Status

Running

Location

East US

Subscription ([change](#))

AutomationTeam

Subscription ID

4b462a8b-b30d-450b-b924-633ae6190e66

Show data for last:

1 hour

6 hours

12 hours

1 day

7 days

30 days

CPU (average)

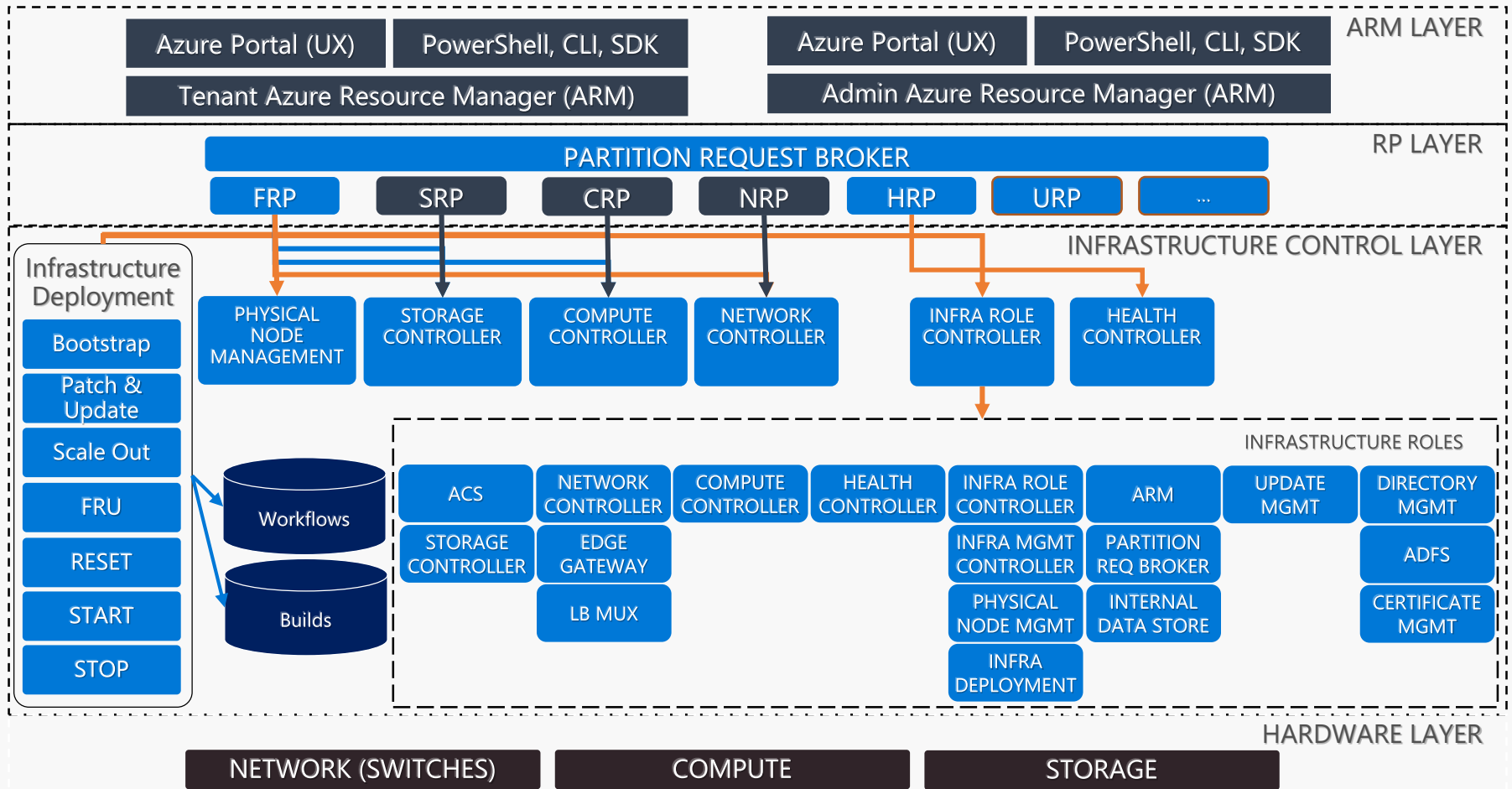


Network (total)

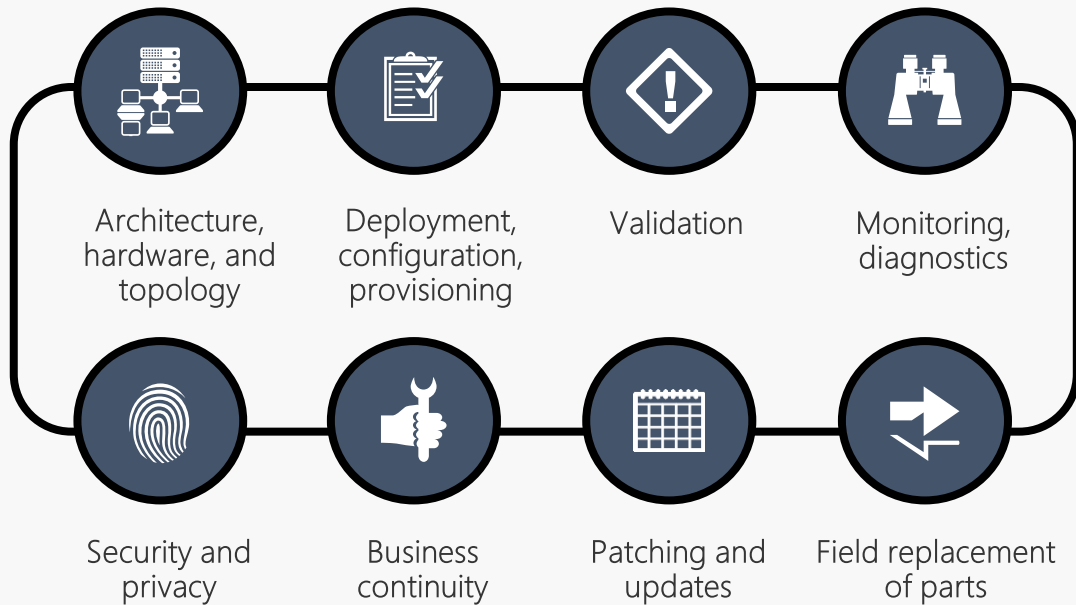


# Programing in the large (Azure Stack)

# Azure Stack Internals



# Azure Stack infrastructure lifecycle



Continuous  
flow of  
innovation  
from Azure to  
Azure Stack

# **Azure Stack is Programming in the Large**

# PowerShell Runs Azure Stack

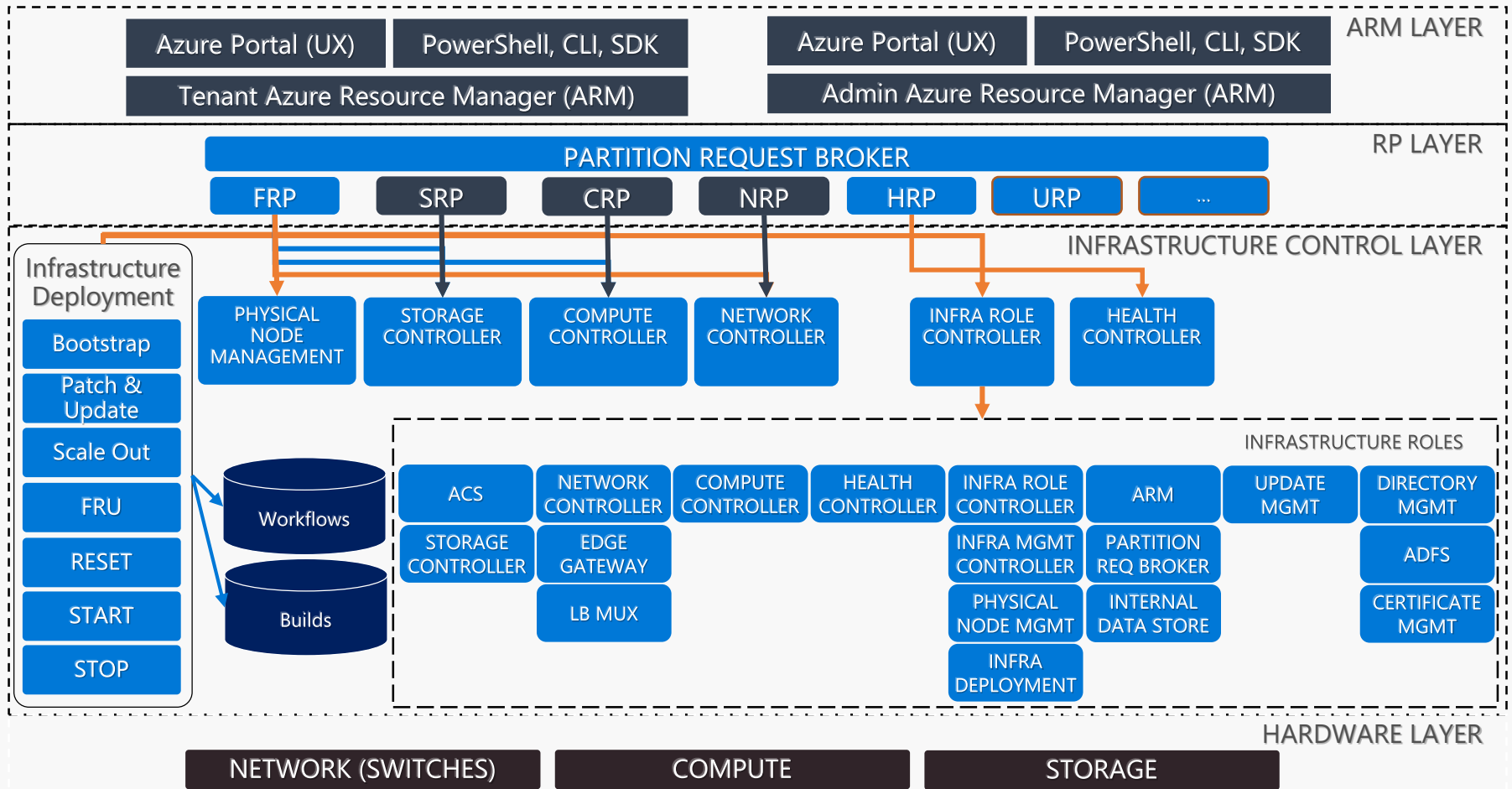
- >250KLOC PS & DSC
- Average 472 cmdlet calls/VM creation
- JEA core to security design & support



# History of Programming in the Large

- Cloud Platform Solution
- "I hate PowerShell"
- Devs didn't have the tools to succeed
  - Authoring/debugging tools => VS & VS.Code
  - Classes to define contracts => Classes & new lang mode
  - Pre-checkin linting tools => Script analyzer
  - Unit tests => Pester
  - etc.

# Azure Stack Internals



# Appliance Experience



Our hyper-complexity delivers you hyper-simplicity  
(That is your job too)

# Azure Stack Challenges

- Ubiquitous -PSOnError{}

# Demo: Ubiquitous -PsOnError{}



# Azure Stack Challenges

- Ubiquitous `-PSOnError{}`
- Better control over module/Nested modules
- `Set-PSBreakPoint –OnBreak {}`
- Classes => Cmdlets & DSLs
- **And features/fixes when we need them**



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Lean In  
Reach Out  
Build  
Publish

# Predictions

- PowerShell Core renamed to PowerShell
- SHIPS reinvigorates namespaces
- Swagger-based cmdlets
- CloudShell ships as Linux only
- Hierarchical OSS DSC LCM
- Linux distributions include PowerShell
- CrossStack IT emerges as peer to fullstack devs
- Community supported V6 on full .NET

**Questions?**