

Windows Virtual Desktop, Advanced scenarios & lessons learned!

Freek Berson



Workplace Ninja Virtual Edition 2020



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About Freek Berson

www.wpninjas.eu

Focus

Windows Virtual Desktop, RDS, Azure

From

The Netherlands

My Blog

TheMicrosoftPlatform.net



Awards

Microsoft MVP since 2011

Hobbies

Spending time with my wife & kids
Cycling, Soccer, traveling (pre COVID-19)

Contact

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Key takeaways:

- **Get familiarized with the more advanced WVD scenarios!**
- **Learn how to make your WVD environment full production ready at scale!**
- **Walk away with ARM & PowerShell code to jumpstart your automation!**
- **BONUS: Having fun with WVD! 😊**



INTRODUCTION

What is WVD and why this session?



WVD IS NOT ALL PAAS & WHAT YOU NEED TO KNOW!

Understanding and optimizing the IaaS part of WVD



SCALING TO ACHIEVE PAY PER USE

Scale your Session Hosts to save costs!



ARM TEMPLATES, REST API & POWERSHELL

Use ARM, REST & PowerShell to deploy fast & consistently!



MONITORING WVD USAGE

Using Log Analytics & Azure Monitor to monitor WVD

INTRODUCTION

What is WVD and why this session?





Components & control

Your subscription—your control

Desktop and remote apps



Full desktop



Remote app



Windows 10 enterprise multi-session



Windows Server 2012 R2 and newer



Windows 10 enterprise



Windows 7 enterprise full desktop

Management and policies



Image, app, and profile management



User density, VM sizing, and scaling policies



User management and identity



Network policies

Managed by Microsoft

Windows Virtual Desktop Service



Clients



Broker



Management



Gateway



Diagnostics



Load balancing

Azure Infrastructure



Compute



Storage



Networking

WVD IS NOT ALL PAAS & WHAT YOU NEED TO KNOW!

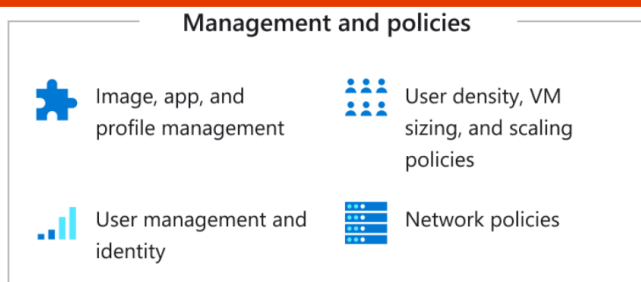
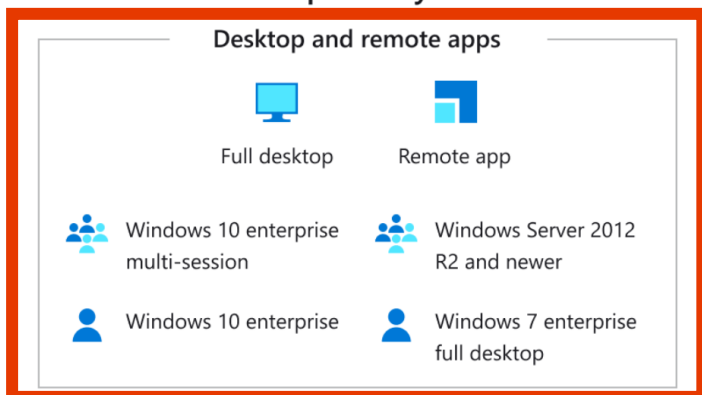
Understanding and optimizing the IaaS part of WVD



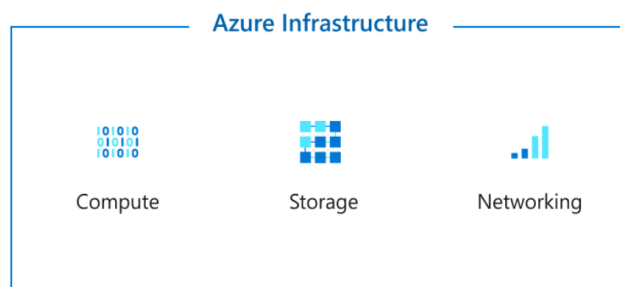
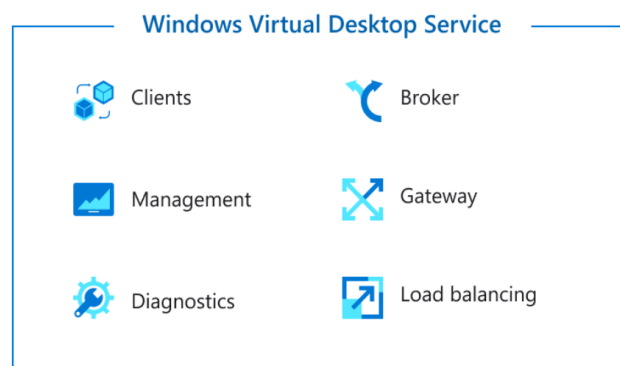


The IaaS part of WVD

Your subscription—your control



Managed by Microsoft



- WVD Hosts are IaaS VMs
- You manage:
 - Applications (*Future: MSIX app attach*)
 - Golden Images
 - Sizing
 - Profiles
 - Lock down
 - Security
 - Group Policy (*no full Intune support yet*)
- VDI / SBC / RDS knowledge still applies!



Demo: The IaaS part of WVD





https://docs.microsoft.com/en-us/windows-server/remote/remote-desktop-services/rds_vdi-recommendations-1909

Optimizing Windows 10, version 1909, for a Virtual Desktop Infrastructure (VDI) role

02/19/2020 • 56 minutes to read •

This article helps you choose settings for Windows 10, version 1909 (build 18363) that should result in the best performance in a Virtualized Desktop Infrastructure (VDI) environment. All settings in this guide are recommendations to be considered and are in no way requirements.



Important note:

Always investigate and understand what the tool removes **before** running it!



TheVDIGuys / Windows_10_VDI_Optimize

[Code](#) [Issues 2](#) [Pull requests](#) [Actions](#) [Projects](#) [Wiki](#) [Security](#) [Insights](#)

master 1 branch 0 tags

[Go to file](#)

[Add file](#)

[Code](#)

	tmmuessig Removing duplicate entry ...	ceccc08 12 days ago	🕒 134 commits
1803	Update script logic	4 months ago	
1903	Update script logic	4 months ago	
1909	Removing duplicate entry	12 days ago	
1909_WindowsUpdateEnabled	Created a new script set with WU enabled	3 months ago	
2004	Update AppxPackages.json	12 days ago	

https://github.com/TheVDIGuys/Windows_10_VDI_Optimize



Azure Image Builder (AIB)

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<https://github.com/TomHickling/AzureImageBuilder>


🔗 master ▾

🔗 1 branch

🏷️ 0 tags

Go to file

📄 Code ▾

 **TomHickling** Update DeployAIBImage.ps1 3ea06ae 20 days ago 🕒 45 commits

📄 AIBWin10MS.json	Update AIBWin10MS.json	2 months ago
📄 AIBWin10MSImageBuild.ps1	Add files via upload	3 months ago
📄 AIBWin10MSImageBuildTeamMedia.p...	Update AIBWin10MSImageBuildTeamMedia.ps1	2 months ago
📄 DeployAIBImage.ps1	Update DeployAIBImage.ps1	20 days ago
📄 README.md	Update README.md	20 days ago
📄 aibRoleImageCreation.json	Add files via upload	3 months ago
📄 index.html	Update index.html	2 months ago



SCALING TO ACHIEVE PAY PER USE

Scale your Session Hosts to save costs!





WVD Licensing

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You are eligible to access Windows Virtual Desktop if you have one of the following per user licenses:

Microsoft 365 E3/E5

Microsoft 365 A3/A5/Student Use Benefits

Microsoft 365 F3

Microsoft 365 Business Premium

Windows 10 Enterprise E3/E5

Windows 10 Education A3/A5

Windows 10 VDA per user





Virtual Machine Sizing

Microsoft Multi-session recommendations

Workload	Users per vCPU	vCPU, RAM	Example instances
Light	6	2 vCPUs, 8 GB RAM	D2s_v3
Medium	4	4 vCPUs, 16 GB RAM	D4s_v3
Heavy	2	4 vCPUs, 16 GB RAM	D4s_v3
Power	1	6 vCPUs, 56 GB RAM	D4s_v3, NV6

Size * ⓘ

Standard_D2s_v3 - 2 vcpus, 8 GiB memory (€115.73/month)

Select size

Size * ⓘ

Standard_D4s_v3 - 4 vcpus, 16 GiB memory (€231.47/month)

Select size

Size * ⓘ

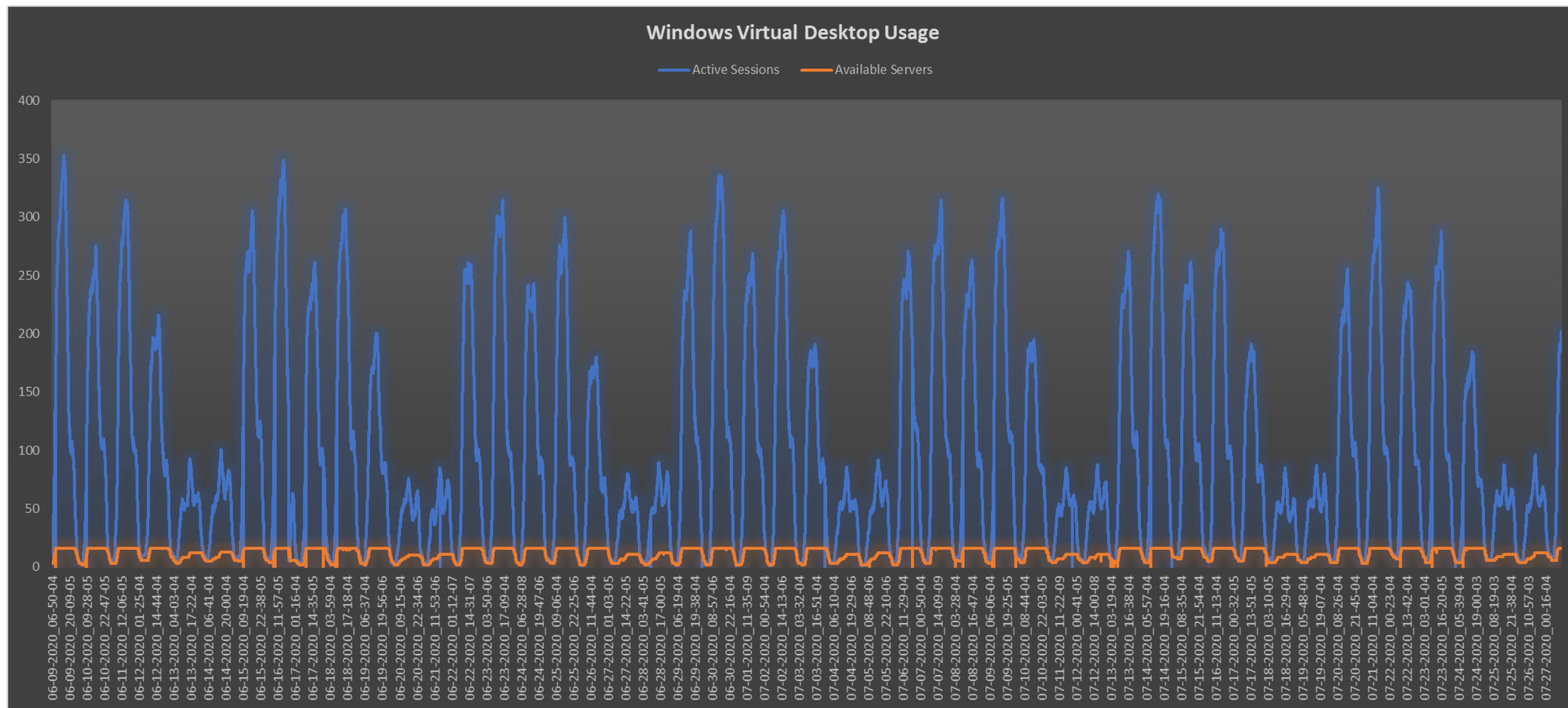
Standard_NV6 - 6 vcpus, 56 GiB memory (€886.48/month)

Select size

1 EUR = 1.1795 USD



Auto scaling





Demo: Scaling WVD





<https://github.com/Azure/RDS-Templates/tree/master/wvd-templates/wvd-scaling-script>

master ▾ [RDS-Templates](#) / [wvd-templates](#) / [wvd-scaling-script](#) /

nakranimohit0

fix webhook uri getting corrupted when setting the auto var with out-...

..

ARM_based	WVD scaling tool v2 (#516)
CreateOrUpdateAzAutoAccount.ps1	fix webhook uri getting corrupted when setting the auto var with out-...
CreateOrUpdateAzLogicApp.ps1	WVD scaling tool v2 (#516)
README.md	Fix the heading
basicScale.ps1	WVD scaling tool v2 (#516)
logicAppCreationTemplate.json	WVD scaling tool v2 (#516)
runbookCreationTemplate.json	WVD scaling tool v2 (#516)



ARM TEMPLATES, REST API & POWERSHELL

Use ARM, REST & PowerShell to deploy fast & consistently!





WVD Custom ARM Templates

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- Fast, customized and consistent deployments
- Meet (customer) Naming Convention Requirements
- Define allowed values for easy dropdown boxes
- Use parameters to make the template usable across multiple subscriptions

Custom deployment

Deploy from a custom template

Location: (US) East US

SETTINGS

Ad Domain Name ⓘ	wvd.ninja
Local Admin Password * ⓘ ✓
Asset Location ⓘ	\\ninja-dc-01\scripts\$\
Existing Availability Set Name ⓘ	Ninja-fb-gpu-hostpool-avset
Domain Join Password * ⓘ ✓
Domain Join UPN ⓘ	ninja-svc-wvd@wvd.ninja
Existing Template Image Name * ⓘ	WVDNINJA2004-1T-image-20200420084648 ✓
Existing Template Resource Group Name ⓘ	NINJA-WE-P-RG-WVD-TEMPLATE-IMAGE
Existing Subnet Name ⓘ	NINJA-WE-P-VNET-10-50-1-0-24-SUB-WVD
Existing Vnet Name ⓘ	NINJA-WE-P-VNET-10-50-0-0-16
Existing Vnet Resource Group Name ⓘ	NINJA-WE-P-RG-NETWORK
Existing WVD Workspace Name ⓘ	NINJA-WE-P-RG-WVD-FB-GPU-WORKSPACE
Existing WVD Workspace Resource Group Name ⓘ	NINJA-WE-P-RG-WVD-FB-ADMINS-WORKSPACE NINJA-WE-P-RG-WVD-FB-APP-WORKSPACE NINJA-WE-P-RG-WVD-FB-DESKTOP-WORKSPACE NINJA-WE-P-RG-WVD-FB-GPU-WORKSPACE
Existing WVD Host Pool Name ⓘ	NINJA-WE-P-RG-WVD-FB-GPU-WORKSPACE

Purchase



WVD PowerShell Scripts

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- Troubleshoot Session Host registration issues
- Move Session Hosts to different Host Pools
- Migrate existing (Classic Release) Session Hosts

```
Add-WVDHostToHostpoolSpring.ps1 X
1  <#
2  .SYNOPSIS
3      Adds an WVD Session Host to an existing WVD Hostpool *** SPRING UPDATE 2020***
4  .DESCRIPTION
5      This scripts adds an WVD Session Host to an existing WVD Hostpool by performing the following action:
6      - Download the WVD agent
7      - Download the WVD Boot Loader
8      - Install the WVD Agent, using the provided hostpoolRegistrationToken
9      - Install the WVD Boot Loader
10     - Set the WVD Host into drain mode (optionally)
11     - Create the workspace <-> App Group Association (optionally)
12     The script is designed and optimized to run as PowerShell Extension as part of a JSON deployment.
13 .NOTES
14     File Name   : add-WVDHostToHostpoolSpring.ps1
15     Author      : Freek Berson - Wortell - RDSGurus
16     Version     : v1.3.6
17 .EXAMPLE
18     .\Add-WVDHostToHostpool.ps1 existingWVDworkspaceName existingWVDHostPoolName `
19     existingWVDAppGroupName servicePrincipalApplicationID servicePrincipalPassword azureADTenantID
20     resourceGroupName azureSubscriptionID Drainmode createWorkspaceAppGroupAsso >> <yourlogdir>\dd-WVDHostToHostpoolSpring.log
21 .DISCLAIMER
22     Use at your own risk. This scripts are provided AS IS without warranty of any kind. The author further disclaims all implied
23     warranties including, without limitation, any implied warranties of merchantability or of fitness for a particular purpose. The entire risk
24     arising out of the use or performance of the scripts and documentation remains with you. In no event shall the author, or anyone else involved
25     in the creation, production, or delivery of the scripts be liable for any damages whatsoever (including, without limitation, damages for loss
26     of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use of or inability
27     to use the this script.
28 #>
29
30
31 #Get Parameters
32 $existingWVDworkspaceName = "Ninja-fb-desktop-tenant"
33 $existingWVDHostPoolName = "Ninja-fb-desktop-hostpool"
34 $existingWVDAppGroupName = "Ninja-Desktops"
35 $existingWVDAppGroupPassword = "Ninja-Desktops"

2020-08-04T13:47:27.4681832+02:00 Obtain RdsRegistrationInfotoken
2020-08-04T13:47:27.7806882+02:00 Token is valid for:@{Days=0; Hours=8; Minutes=12; Seconds=32}
2020-08-04T13:47:27.7806882+02:00 Install the WVD Agent
2020-08-04T13:47:33.1244914+02:00 Install the Boot Loader
2020-08-04T13:47:33.3744944+02:00 Finished
```



WVD REST API Scripts

www.wpninjas.eu

- Open REST API Documentation available
- CRUD all WVD Objects using REST API
- Fast, easy and automated deployments

```
rest-api-wvd-ninja.ps1 X
1 <#
2 .SYNOPSIS
3     Contains functions to get & create WVD Workspaces, Hostpools, App Groups and apps using REST API
4 .DESCRIPTION
5     This contains the following functions that use REST API for WVD
6     - Get-Workspace
7     - Get-Hostpool
8     - Get-AppGroup
9     - Get-Apps
10    - New-Workspace
11    - New-Hostpool
12    - New-AppGroup
13    - New-App
14 .NOTES
15     File Name   : WVD-Rest-API-Functions.ps1
16     Author      : Freek Berson - Wortell - wvd.ninja :)
17     Version     : v1.0.1
18 .DISCLAIMER
19     Use at your own risk. This scripts are provided AS IS without warranty of any kind. The author further disclaims all implied
20     warranties including, without limitation, any implied warranties of merchantability or of fitness for a particular purpose. The entire risk
21     arising out of the use or performance of the scripts and documentation remains with you. In no event shall the author, or anyone else involve
22     in the creation, production, or delivery of the scripts be liable for any damages whatsoever (including, without limitation, damages for loss
23     of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use of or inability
24     to use the this script.
25 #>
26
27
28 #Function to get the details of an existing WVD Workspace via REST API
29 function Get-WVDWorkspace {
30     param
31     (
32         [Parameter(Mandatory=$true)]
33         $AzureSubscriptionID,
34         $ResourceGroupName,
35         $WorkspaceName
36     )
37     $url = "https://management.azure.com/subscriptions/" + $AzureSubscriptionID + "/resourceGroups/" + $ResourceGroupName + "/providers/Microsoft.Desktop
38     $results = Invoke-RestMethod -Uri $url -Method Get -Headers $apiHeader
39     return $results
40 }
41
42 #Function to get the details of an existing WVD Hostpool via REST API
43 function Get-WVDHostpool {
44     param
45     (
46         [Parameter(Mandatory=$true)]
47         $AzureSubscriptionID,
```



Demo: ARM Templates PowerShell REST API





Sharing my PowerShell & REST code

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<https://github.com/fberson/wvd>



master

wvd / Add-WVDHostToHostpoolSpring.ps1



fberson Token ExpirationTime ...

1 contributor

Add-WVDHostToHostpoolSpring.ps1

This script adds an WVD Session Host to an existing WVD Hostpool by performing the following action:

- Download the WVD agent
- Download the WVD Boot Loader
- Install the WVD Agent, using the provided hostpoolRegistrationToken
- Install the WVD Boot Loader
- Set the WVD Host into drain mode (optionally)
- Create the Workspace <-> App Group Association (optionally) The script is designed and optimized to run as PowerShell Extension as part of a JSON deployment.

master

wvd / WVD-Rest-API-Functions.ps1



fberson Removed trailing newlines and corrected minor typo in comments area

1 contributor

WVD-Rest-API-Functions.ps1

This script contains the following functions that use REST API for WVD

- Get-WorkSpace
- Get-Hostpool
- Get-AppGroup
- Get-Apps
- New-WorkSpace
- New-Hostpool
- New-AppGroup
- New-App

MONITORING WVD USAGE

Using Log Analytics & Azure Monitor to monitor WVD





Log Analytics & Azure Monitor

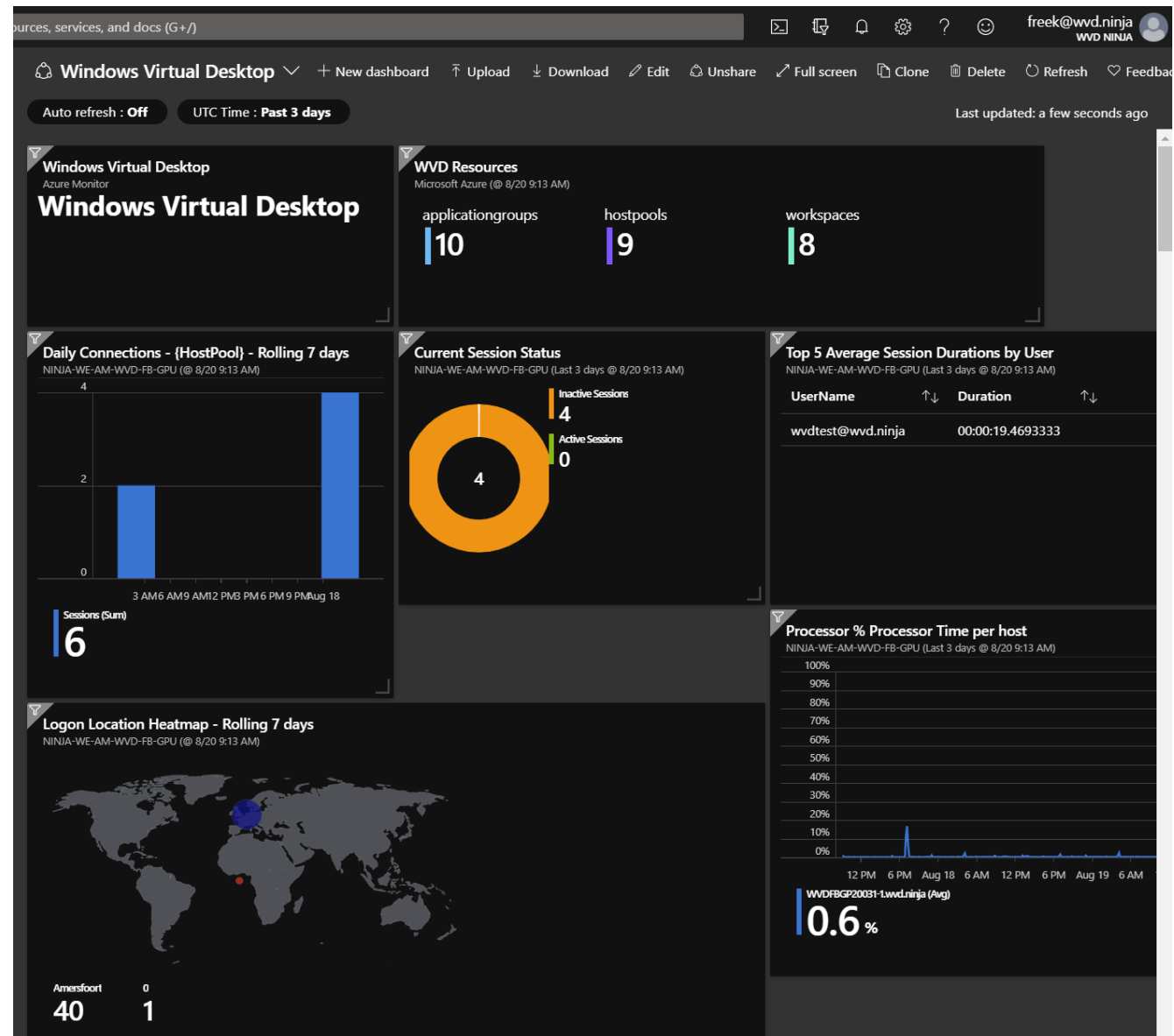
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Key elements to capture:

- Session details
- Session diagnostics
- User specific reporting
- Session performance
- Host performance
- Disk performance

Requirements:

- WVD environment based on ARM
- Log Analytics workspace
- The following roles
 - Monitoring Contributor
 - Log Analytics Contributor
 - Security Administrator





Demo: Azure Monitor Log Analytics





<https://docs.microsoft.com/en-us/azure/virtual-desktop/diagnostics-log-analytics>

Use Log Analytics for the diagnostics feature

05/27/2020 • 6 minutes to read •  +2

Windows Virtual Desktop uses [Azure Monitor](#) for monitoring and alerts like many other Azure services. This lets admins identify issues through a single interface. The service creates activity logs for both user and administrative actions. Each activity log falls under the following categories:



BONUS: Having fun with WVD 😊





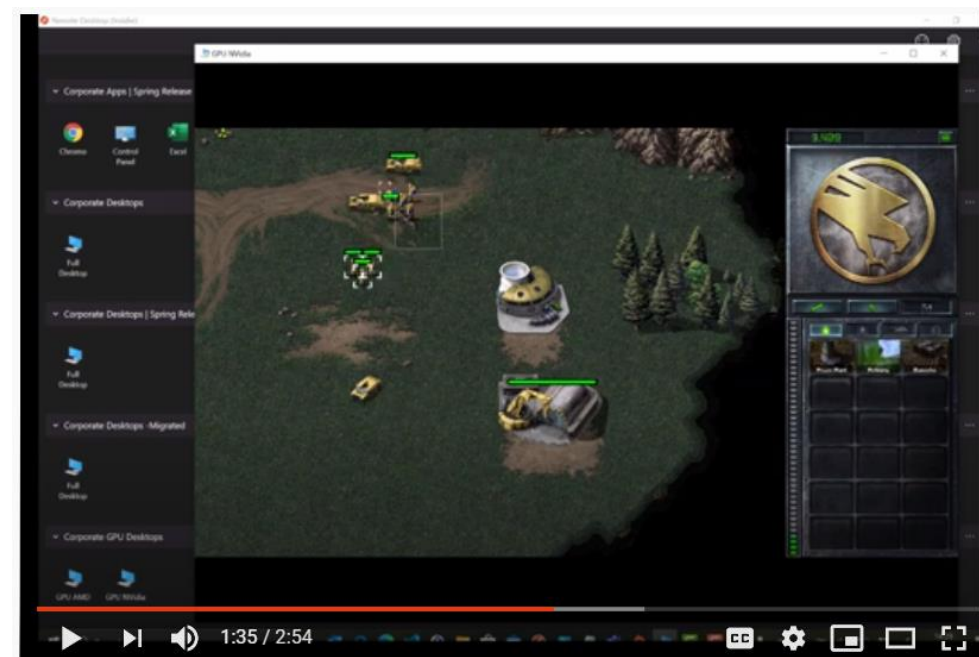
WVD Fun - links

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Windows Virtual Desktop inside Minecraft!

<https://www.youtube.com/watch?v=95d2tIOYDts>



Command and Conquer Remastered running on Windows Virtual Desktop!

<https://www.youtube.com/watch?v=DQzks251mBk&t=31s>





Thank You

Freek Berson
@fberson
freek@wortell.nl
TheMicrosoftPlatform.net



Workplace Ninja Virtual Edition 2020