Nano Server Workshop

Nano Server

and Windows Containers

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time cockpit
Saves the day.

Your Host

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Windows OS for the Cloud

Optimized for the cloud (private/public)

Smaller footprint, faster startup, less update, etc.

How can it be smaller and faster?

Headless (=no GUI)

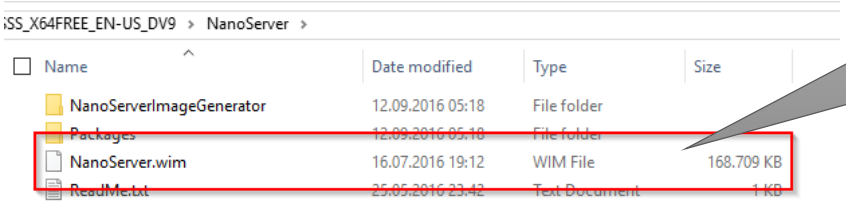
Limited functionality (e.g. only 64bit, no AD domain controller, no group policy, …; details)

Current Branch for Business (CBB)

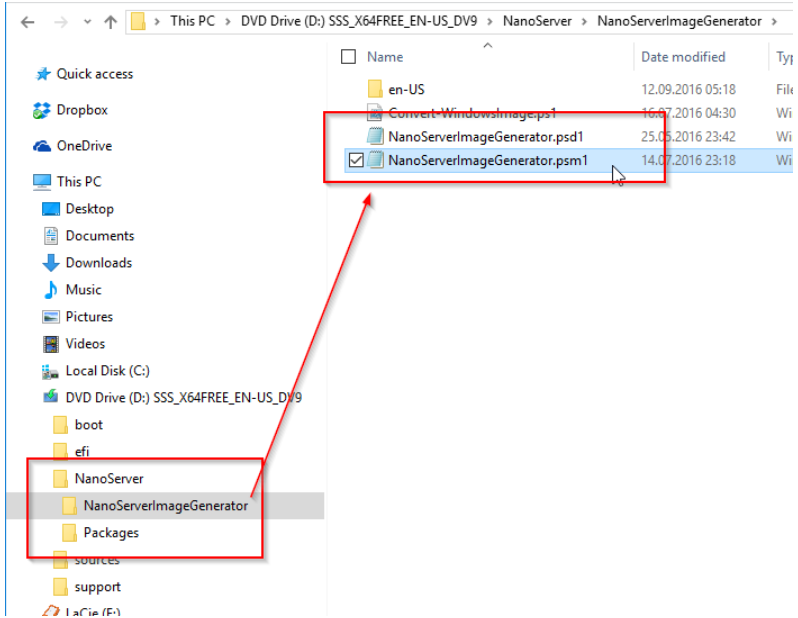
2-3 feature update/year for Nano Server

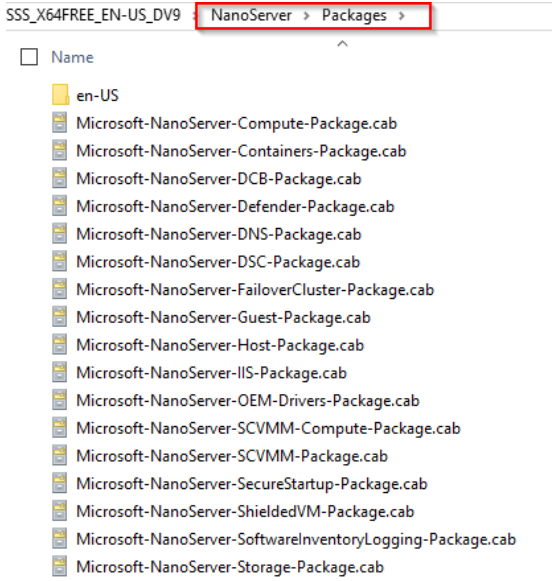
Not more than two Nano Server CBB releases behind for support (details)

Installation



Tip: You can create custom Windows images to be used as a baseline





Demo

Install Nano Server

Create VHD

Add virtual Machine

Connect

- Remote PowerShell

```
# Location where the Windows Server 2016 ISO is mounted.
# We will copy the Nano Server Image Generator from there.
$winServerInstallRoot = "d:\"
$temp = "c:\temp"
$nanoServerImageGeneratorFolder = "$temp\NanoServerImageGenerator"
$targetPath = $temp + "\demo\NanoServerVM.vhd"
$computerName = "mynanoserver"
$secure_string_pwd = convertto-securestring "pass" -asplaintext -force
[Environment]::SetEnvironmentVariable("TEMP", "c:\temp\tempFolder",`
   "Process")

# Copy Nano Server Image Generator to local disk
if (!(Test-Path -Path "$nanoServerImageGeneratorFolder")) {
   Copy-Item "$winServerInstallRoot\NanoServer\NanoServerImageGenerator" `
      "$nanoServerImageGeneratorFolder" -Recurse -Force
}

# Import Nano Generator module
cd $nanoServerImageGeneratorFolder
Import-Module .\NanoServerImageGenerator -Verbose

# Create Nano Server ISO VHD
New-NanoServerImage -Edition Standard -DeploymentType Guest `
   -MediaPath $winServerInstallRoot `
   -BasePath .\Base -TargetPath $targetPath -ComputerName $computerName `
   -AdministratorPassword $secure_string_pwd `
   -Package Microsoft-NanoServer-Guest-Package -MaxSize 100GB `
   -EnableRemoteManagementPort -Verbose
```

Installation

Create VHD

https://github.com/rstropek/DockerVS2015Intro/blob/master/dockerDemos/07-win-container-nano-server/setup-simple-nano-server.ps1

```
Import-Module Hyper-V
net start WinRM

$computerName = "Simple Nano Server"

$vm = Get-VM -Name $computerName
$vmIP = (Get-VMNetworkAdapter $vm)[0].IPAddresses[0]

Set-Item WSMan:\localhost\Client\TrustedHosts $vmIP -Force
$cred = Get-Credential
$session = New-PSSession -ComputerName $vmIP -Credential $cred
Enter-PSSession -Session $session
```

Installation

Connect and create session

https://github.com/rstropek/DockerVS2015Intro/blob/master/dockerDemos/07-win-container-nano-server/connect-nano-server.ps1

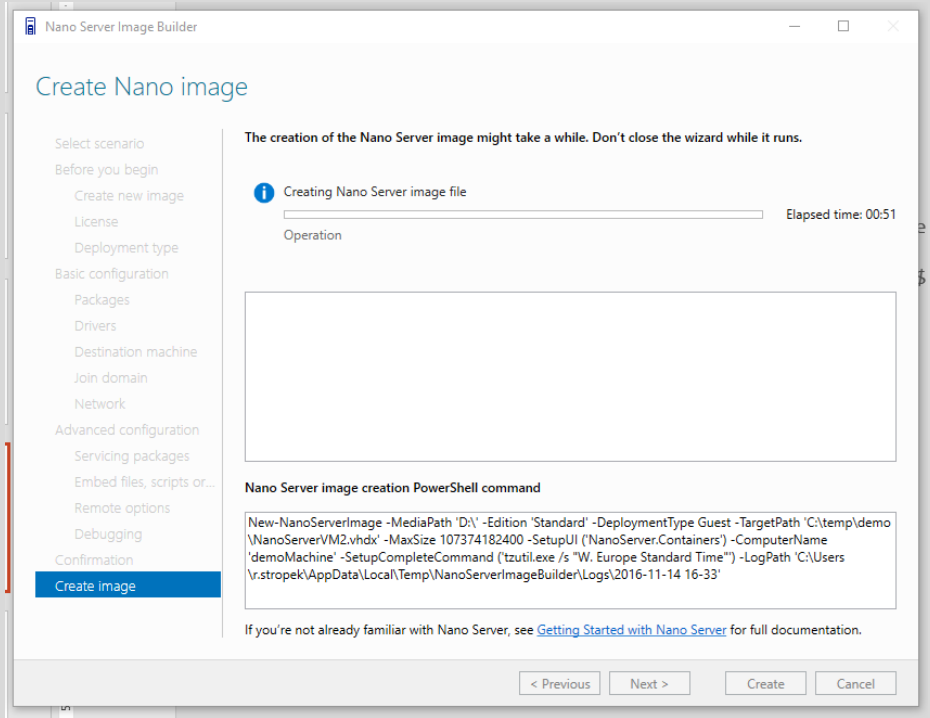
Deployment

Virtual machine from ISO

Physical machine

- Dual boot VHD/VHDX
- PxE-boot and install Nano Server from WDS (details)
- Booting into WinPE and deploying Nano Server using a .wim file (details)

Tip: Consider Nano Server Image Builder GUI



Demo

Install Nano Server

Nano Server Image Builder

https://blogs.technet.microsoft.com/nanoserver/2016/10/15/introducing-the-nano-server-image-builder/

Updates

Use *-ServicingPackagePath* option

New-NanoServerImage and *Edit-NanoServerImage*

Apply update to an existing VHD or VHDX

Offline or running

Add-WindowsPackage or *dism*

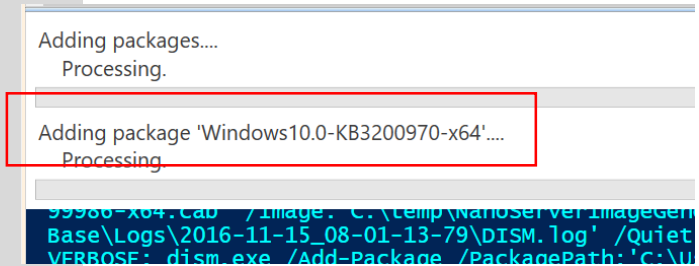
Manage updates using CIM/WMI

https://technet.microsoft.com/en-us/windows-server-docs/get-started/update-nano-server

```
$sess = New-CimInstance `
  -Namespace root/Microsoft/Windows/WindowsUpdate `
  -ClassName MSFT_WUOperationsSession

$scanResults = Invoke-CimMethod -InputObject $sess `
  -MethodName ScanForUpdates `
  -Arguments @{SearchCriteria="IsInstalled=0";OnlineScan=$true}

$scanResults.Updates | Select Title
# SAMPLE RESULT:
# Title
# -----
# Cumulative Update for Windows Server 2016 for x64-based Systems (KB3197954)
# Update for Windows Server 2016 for x64-based Systems (KB3199986)
# Cumulative Update for Windows Server 2016 for x64-based Systems (KB3200970)

# DOWNLOAD AND EXPAND UPDATES
Expand kb3200970.msu -F:* kb3200970
# COPY CAB FILES

New-NanoServerImage … `
  -ServicingPackagePath `
    "c:\temp\Windows10.0-KB3197954-x64.cab", `
    "c:\temp\Windows10.0-KB3199986-x64.cab", `
    "c:\temp\Windows10.0-KB3200970-x64.cab" …
```

Demo

Install Updates during VHD building



PowerShell

PowerShell Core Edition

Limited functionality

Details in TechNet

Guidelines for porting to PowerShell Core available

Details in TechNet

Container

Container Host

Installation details

Container Base Image

microsoft/nanoserver on Docker Hub

Demo

Docker and Nano

Start Nano Server as
Docker Container

Dockerfile
Nano Server with IIS

Nano Server as
Docker Host
Setup
Connect from Docker client

Summary

Higher hosting density → lower costs

Less updates and reboots → higher availability

Frequent update → faster innovation

Nano Server: Windows OS for the private and public cloud

Q&A

Thank your for coming!

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