



ANAXCO



ZABBIX

10TH ZABBIX SUMMIT 2022

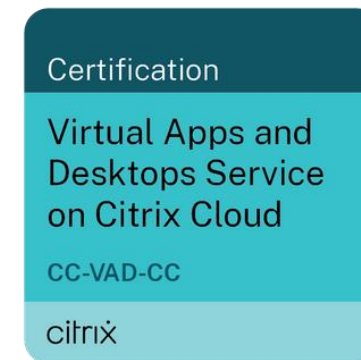
KEEPING HUNDREDS
OF WINDOWS ZABBIX
AGENTS IN SYNC ACROSS
DIFFERENT CUSTOMERS

Marco Hofmann,
Anaxco, IT-System Engineer





- Apprenticeship: IT Specialist for system integration (2010)
- 15+ years at ANAXCO GmbH
- Main areas:
 - Monitoring with **Zabbix**
 - App and Desktop provisioning with **Citrix**
- Community Work:
 - Blog: <https://www.meinekleinefarm.net/>
 - Twitter: [@xenadmin](https://twitter.com/xenadmin)
 - Moderator Zabbix subreddit <https://www.reddit.com/r/zabbix/>
 - Moderator Telegram Zabbix International: <https://t.me/ZabbixTech>



- Two Tools developed and maintained by **Bernhard Linz**, a Zabbix administrator from Germany.
 - [InstallZabbixAgent.bat](#) and [AgentAutoUpdate.exe](#) free to use and open source
 - Hosts a German Wiki about Zabbix and IT → <https://znit.net>
-
- Azure DevOps is not mandatory to fulfill this concept
 - Should work with any agent-based CI/CD solution



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ZABBIX

Why do we need this concept?

Keeping Windows Zabbix agents in sync

You're a Managed Services Provider or an Enterprise sized company:

- How many Zabbix agents can you deploy at once?
- Do you need to maintain customers without direct access?
- Have you ever thought of switching to Zabbix agent2 in less than a few minutes?
- How long does it take you to onboard a new customer?
- Can your Zabbix agent deployment scale ***limitless***?

Why do we need this concept?



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ZABBIX

ZABBIX

Monitoring

Dashboard

Problems

Hosts

Latest data

Maps

Discovery

Web

Services

Inventory

Overview

Hosts

Zabbix Agents

Reports

Configuration

Host groups

Templates

Hosts

Maintenance

Actions

Event correlation

Host inventory overview

Host groups

type here to search

Select

Grouping by

Software application A

Apply

Reset

Software application A	Host count
6.0.8	1
6.0.7	1
6.0.6	24
5.4.7	37
5.4.5	1
5.2.7	1
5.2.6	32
5.2.4	13
5.0.27	2
5.0.26	1
5.0.9	8
5.0.8	14
5.0.5	9
4.4.9	1
4.2.8	2
4.0.34	1
4.0.4	1



CargoSuite TMS



CargoSuite WMS



CargoSuite CRM



CargoSuite BI



IT-Lösungen

Why we need this concept!



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ZABBIX

ZABBIX

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Hosts

Zabbix Agents

Host inventory overview

Host groups

type here to search

Select

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Software application A

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Software application A		Host count
6.0.8		1
6.0.7		693



CargoSuite TMS



CargoSuite WMS



CargoSuite CRM



CargoSuite BI



IT-Lösungen



Challenges:

1. Keeping track of changes with a GIT like revision system
2. Targeting each and every Windows server
3. Keeping Windows Zabbix agent binary up-to-date
4. Keeping zabbix_agentd.conf up-to-date
5. Distributing newly developed custom [User parameters](#)
6. Scale limitless across dozens of customers and thousands of Zabbix agents



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ZABBIX

Methods and tools to install Windows Zabbix agent

Keeping Windows Zabbix agents in sync

Classic method

MSI method

```
Administrator: C:\Windows\system32\cmd.exe
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Windows\system32>cd "c:\Program Files\Zabbix"

c:\Program Files\Zabbix>zabbix_agentd.exe --config "C:\Program Files\Zabbix\zabbix_agentd.win.conf" --install
zabbix_agentd.exe [7804]: service [Zabbix Agent] installed successfully
zabbix_agentd.exe [7804]: event source [Zabbix Agent] installed successfully

c:\Program Files\Zabbix>net start "Zabbix Agent"

The Zabbix Agent service was started successfully.

c:\Program Files\Zabbix>_
```

Zabbix Agent (64-bit) v6.0.7 Setup

Zabbix Agent service configuration

Please enter the information for configure Zabbix Agent

ZABBIX

Host name:

Zabbix server IP/DNS:

Agent listen port:

Server or Proxy for active checks:

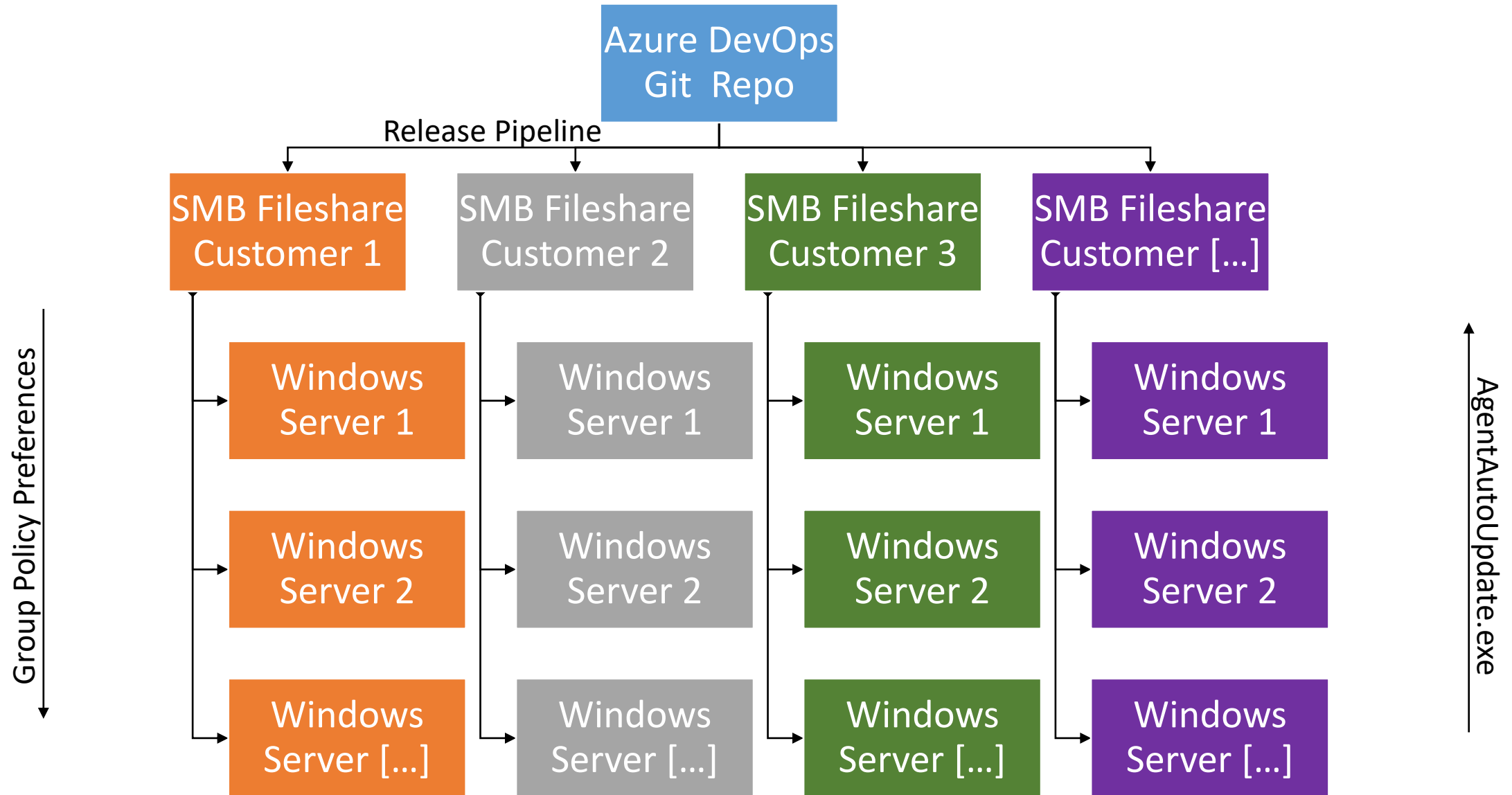
☐ Enable PSK

☐ Add agent location to the PATH



Conclusion

- **Classic method**, tools already exist since 2013
- Official Zabbix MSI files were introduced with version [4.0.6](#) in [2019](#)
- Why not MSI?
 - *Never change a running system*
- Results will nearly be the same





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Azure DevOps: Git, Agent & Pipeline

Keeping Windows Zabbix agents in sync

- GIT has become industry standard, to keep track of source files
- We host the content of our SMB Master share in Azure DevOps GIT

Azure DevOps Anaxco / Anaxco / Repos / Files / zabbix-agent

Anaxco

Overview

Boards

Repos

Files

Commits

Pushes

Branches

Tags

Pull requests

Pull Request Manager Hub

Repository list

zabbix-agent

bin

win32

win64

zabbix_agentd.exe

zabbix_get.exe

zabbix_sender.exe

Include

Tools

UserParameter

config.bat

InstallZabbixAgent.bat

dev

bin

win64

win64

Contents

History

Name ↑	Last change	Commits
zabbix_agentd.exe	10. Aug.	72a93ee7 Zabbix agent v6.0.7 Marco Hofmann
zabbix_get.exe	10. Aug.	72a93ee7 Zabbix agent v6.0.7 Marco Hofmann
zabbix_sender.exe	10. Aug.	72a93ee7 Zabbix agent v6.0.7 Marco Hofmann

Azure DevOps Git repository - Demo



Download Zabbix agents

win64 - Repos

https://www.zabbix.com/download_agents?version=6.0+LTS&release=6.0.8&os=Win

Select a default site language Deutsch Confirm

ZABBIX

PRODUCT

SOLUTIONS

SUPPORT & SERVICES

TRAINING

PARTNERS

COMMUNITY

ABOUT US

DOWNLOAD

4.0 LTS

3.0 LTS

Zabbix Release: 6.0.8

Zabbix agent v6.0.8

Read manual

Packaging: Archive

Encryption: No encryption

Linkage: Dynamic

Checksum: sha256: a8d1c2837442d275a150fbb5273fdecbbcf0e993614e719933a9e1e8f668d01de

sha1: 0aaac77b8f64f2173ae9dd99ef2bcc6fcfb11a64

md5: 0323f64178a4d1c279ec171c46c05e76

DOWNLOAD

https://cdn.zabbix.com/zabbix/binaries/stable/6.0/6.0.8/zabbix_agent-6.0.8-windows-amd64.zip

Zabbix agent 2 v6.0.8

Read manual

Packaging: Archive

Encryption: No encryption

Linkage: Static

Checksum: sha256: cb6e564655fd3a097218dd60dd187f53a33956b963a29c432d4200a05dcb7bf2

sha1: 0a59685b28492fdb97ad9750d92d62c0f7c99afd

md5: 3fd6ebc5c609dfff3c949de24310acca2

DOWNLOAD

https://cdn.zabbix.com/zabbix/binaries/stable/6.0/6.0.8/zabbix_agent2-6.0.8-windows-amd64-static.zip

Watch recorded webinar:

EXTENDED OUT OF THE BOX MONITORING WITH AGENT 2

ZABBIX WEBINARS

CargoSuite TMS

CargoSuite WMS

CargoSuite CRM

CargoSuite BI

IT-Lösungen

Temp

Datei Start Freigegeben Ansicht

An Schnellzugriff anheften Kopieren Einfügen Zwischenablage Organisieren Öffnen Neu Eigenschaften Auswählen

< > << Dow... > _Temp _Temp durchsuchen

Schnellzugriff

OneDrive - ANAXCO GmbH

OneDrive - Personal

Dieser PC

Netzwerk

Name

Änderungsdatum

zabbix_agent-6.0.8-windows-amd64.zip 11.09.2022 11

Azure DevOps on-premises Agent



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- Azure DevOps Agent allows to build code or deploy software using Pipelines
- Install one DevOps Agent per customer on Windows Server
- Will host the SMB share with Zabbix agent setup files

Type of target to register:

Windows

[System prerequisites](#)

Registration script (PowerShell)

```
$ErrorActionPreference="Stop";If(-NOT ([Security.Principal.WindowsPrincipal]
[Security.Principal.WindowsIdentity]::GetCurrent() ).IsInRole( [Security.Principal.WindowsBuiltInRole]
"Administrator")){ throw "Run command in an administrator PowerShell prompt";If($PSVersionTable.PSVersion -lt (New-
Object System.Version("3.0"))){ throw "The minimum version of Windows PowerShell that is required by the script (3.0)
does not match the currently running version of Windows PowerShell." };If(-NOT (Test-Path $env:SystemDrive\azagent'))
{mkdir $env:SystemDrive\azagent}; cd $env:SystemDrive\azagent; for($i=1; $i -lt 100;
$i++){ $destFolder="A"+$i.ToString();if(-NOT (Test-Path ($destFolder))){mkdir $destFolder;cd $destFolder;break;}};
$agentZip="$PWD\agent.zip";$DefaultProxy=
[System.Net.WebRequest]::DefaultWebProxy;$securityProtocol=@();$securityProtocol+=
[Net.ServicePointManager]::SecurityProtocol;$securityProtocol+=[Net.SecurityProtocolType]::Tls12;
[Net.ServicePointManager]::SecurityProtocol=$securityProtocol;$WebClient=New-Object Net.WebClient;
$Uri='https://vstsagentpackage.azureedge.net/agent/2.210.1/vsts-agent-win-x64-2.210.1.zip';if($DefaultProxy -and (-not
$DefaultProxy.IsBypassed($Uri))){$WebClient.Proxy= New-Object
Net.WebProxy($DefaultProxy.GetProxy($Uri).OriginalString, $True)}; $WebClient.DownloadFile($Uri, $agentZip);Add-Type
-AssemblyName System.IO.Compression.FileSystem;[System.IO.Compression.ZipFile]::ExtractToDirectory( $agentZip,
"$PWD");.\config.cmd --deploymentgroup --deploymentgroupname "Summit" --agent $env:COMPUTERNAME --runasservice --work
'_work' --url 'https://dev.azure.com/Anaxco/' --projectname 'Anaxco'; Remove-Item $agentZip;
```

☐ Use a personal access token in the script for authentication



[Copy script to the clipboard](#)

[Run from an administrator PowerShell command prompt](#)

Azure Pipelines Agent (Anaxco.Anaxco-Anaxco-IT-MDT.mdt.int.an... X

General Log On Recovery Dependencies

Service name: agent.Anaxco.Anaxco-Anaxco-IT-MDT.mdt.int.anaxco.de

Display name: Azure Pipelines Agent (Anaxco.Anaxco-Anaxco-IT-MDT.1

Description:

Path to executable:
|C:\azagent\A1\bin\AgentService.exe"

Startup type: Automatic (Delayed Start)

Service status: Running

Start Stop Pause Resume

You can specify the start parameters that apply when you start the service from here.

Start parameters:

OK Cancel Apply

DevOps on-premises Agent – Installation Demo



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The screenshot displays the Azure DevOps portal interface for configuring a deployment group. The browser address bar shows the URL: `https://dev.azure.com/Anaxco/Anaxco/_machinegroup?view=MachineGroup`.

Azure DevOps Portal - Deployment group configuration:

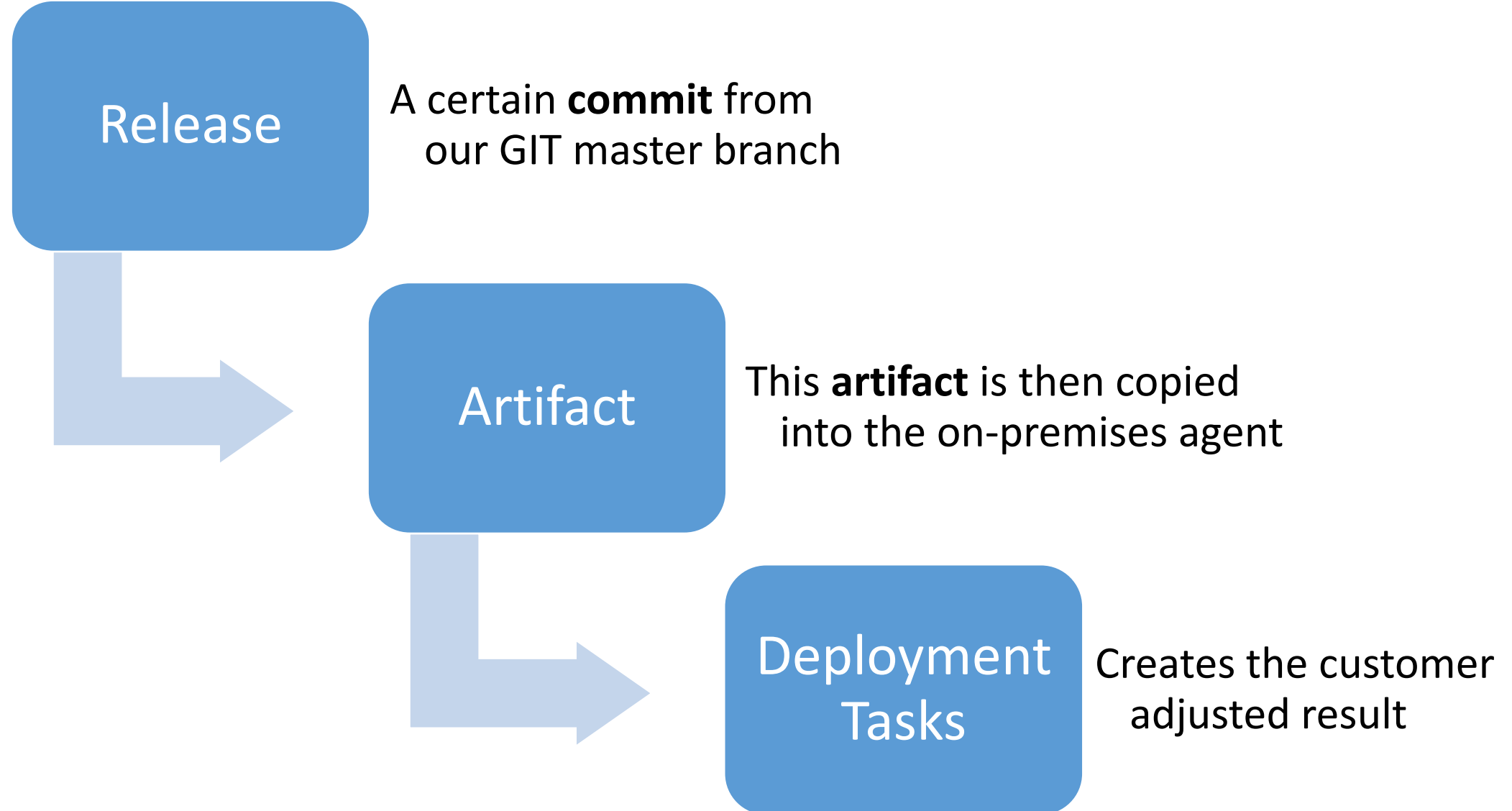
- Deployment group name:** Summit
- Description:** (Empty text area)
- Deployment pool:** Anaxco-Summit
- Type of target to register:** Windows
- Registration script (PowerShell):**

```
$ErrorActionPreference="Stop";If(-NOT ([Security.Principal.WindowsPrincipal][Security.Principal.WindowsIdentity]::GetCurrent()).IsInRole([Security.Principal.WindowsBuiltInRole] "Administrator")){ throw "Run command as administrator PowerShell prompt";If($PSVersionTable.PSVersion -lt (New-Object System.Version("3.0"))){ throw "The minimum version of Windows PowerShell required by the script (3.0) does not match the currently running version of Windows PowerShell." };If(-NOT (Test-Path $env:SystemDrive\azagent)){mkdir $env:SystemDrive\azagent}; cd $env:SystemDrive\azagent; for($i=1; $i<=10; $i++){ $destFolder="A"+$i.ToString();if(-NOT (Test-Path ($destFolder))){mkdir $destFolder;cd $destFolder;break;}}; $agentZip="$PWD\agent.zip";DefaultProxy=[System.Net.WebRequest]::DefaultWebProxy;$securityProtocol=@();$securityProtocol+=[Net.ServicePointManager]::SecurityProtocol;$securityProtocol+=[Net.SecurityProtocolType]::Tls12;[Net.ServicePointManager]::SecurityProtocol=$securityProtocol;$WebClient=New-Object Net.WebClient; $Uri='https://vstsagentpackage.azureedge.net/agent/1.10.0/vsts-agent-win-x64-2.210.1.zip';if($DefaultProxy -and (-not $DefaultProxy.IsBypassed($Uri))){$WebClient.Proxy= New-Object Net.WebProxy($DefaultProxy.GetProxy($Uri).OriginalString, $True);};$WebClient.DownloadFile($Uri, $agentZip);Add-Type -AssemblyName System.IO.Compression.FileSystem;[System.IO.Compression.ZipFile]::ExtractToDirectory($agentZip, "$PWD");.\config.cmd --deploymentgroup --deploymentgroupname "Summit" --agentname $env:COMPUTERNAME --runasservice --work '_work' --url 'https://dev.azure.com/Anaxco/' --projectname 'Anaxco'; Remove-Item $agentZip;
```

Remote Desktop Manager - xa-wms2016-02.int.anaxco.de:

The remote session shows a Windows PowerShell prompt with the following text:

```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.
PS C:\Windows\system32>
```





Azure DevOps Anaxco / Anaxco / Pipelines / Task groups

Anaxco +

- Overview
- Boards
- Repos
- Pipelines
- Pipelines
- Environments
- Releases
- Library
- Task groups**
- Deployment groups
- Build Tags
- Test Plans

Task groups > IT zabbix-agent

Tasks History References Refresh Save Export ...

IT zabbix-agent Version 1.*

New-ZabbixAgentShare.ps1 PowerShell

Replace tokens in **/config.bat Replace Tokens

Copy Files to: zabbix-agent share Copy files

New-ZabbixAgentShare.ps1 PowerShell

Replace tokens in **/config.bat Replace Tokens

Copy Files to: zabbix-agent share Copy files

PowerShell ⓘ

Task version 2.*

Display name *
New-ZabbixAgentShare.ps1

Type ⓘ
☒ File Path ☐ Inline

Script Path * ⓘ
_zabbix-agent\Tools\New-ZabbixAgentShare.ps1

Arguments ⓘ
-AgentFolder "\$(zabbix-target-folder-path)"

Preference Variables ▾

Advanced ▾

Control Options ▾

Environment Variables ▾





New-ZabbixAgentShare.ps1

Checks if the target folder already exists

Creates folder ->
C:\zabbix-agent

Enables SMB share

Permissions:

Everyone – Read

NTFS permissions

Local System – Full Control

BuiltIn Administrators – Full Control

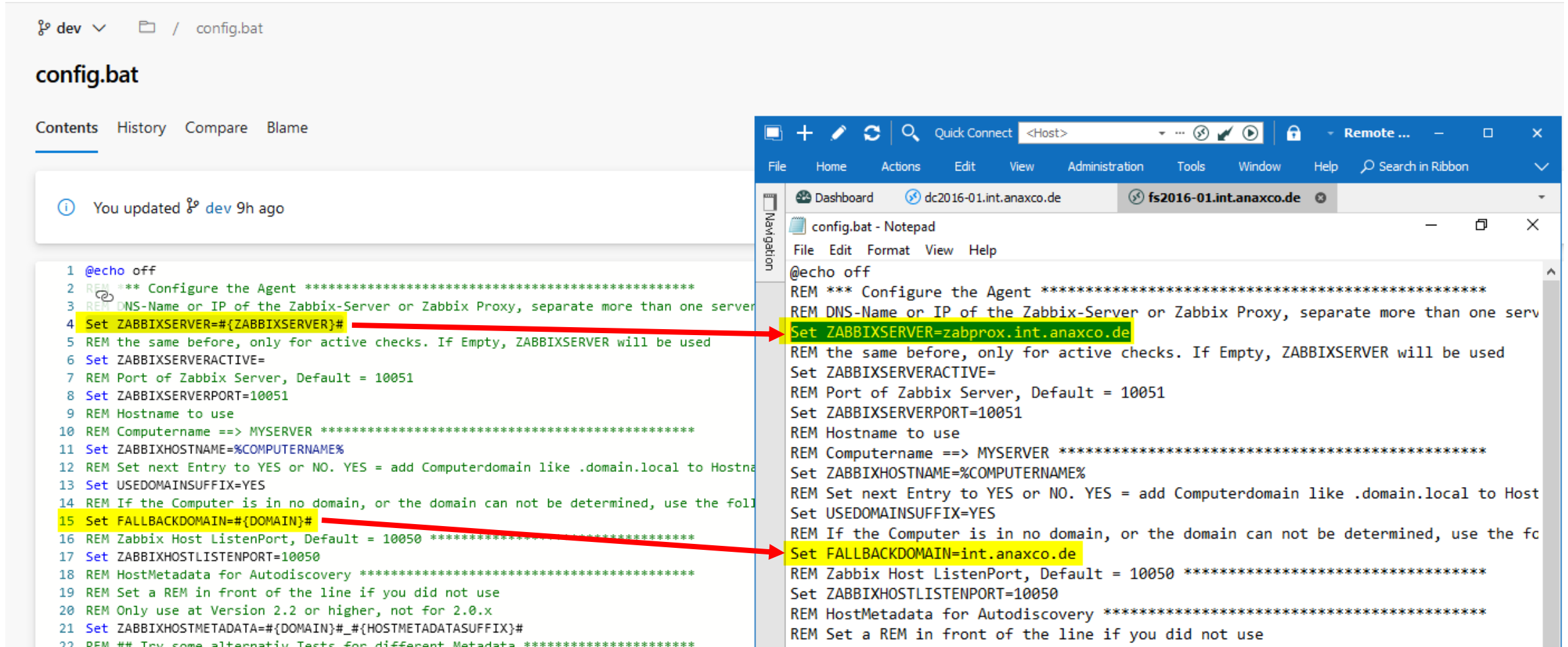
Authenticated Users – Read and Execute

Users – Read and Execute

Everyone – Read and Execute



- **Replace Tokens** is a free Azure DevOps marketplace function, that can replace tokens in any text file during a release



The screenshot displays the Azure DevOps interface for a file named `config.bat`. The file content is as follows:

```
1 @echo off
2 REM *** Configure the Agent *****
3 REM DNS-Name or IP of the Zabbix-Server or Zabbix Proxy, separate more than one server
4 Set ZABBIXSERVER=#{ZABBIXSERVER}#
5 REM the same before, only for active checks. If Empty, ZABBIXSERVER will be used
6 Set ZABBIXSERVERACTIVE=
7 REM Port of Zabbix Server, Default = 10051
8 Set ZABBIXSERVERPORT=10051
9 REM Hostname to use
10 REM Computername ==> MYSERVER *****
11 Set ZABBIXHOSTNAME=%COMPUTERNAME%
12 REM Set next Entry to YES or NO. YES = add Computerdomain like .domain.local to Hostname
13 Set USEDOMAINSUFFIX=YES
14 REM If the Computer is in no domain, or the domain can not be determined, use the following
15 Set FALLBACKDOMAIN=#{DOMAIN}#
16 REM Zabbix Host ListenPort, Default = 10050 *****
17 Set ZABBIXHOSTLISTENPORT=10050
18 REM HostMetadata for Autodiscovery *****
19 REM Set a REM in front of the line if you did not use
20 REM Only use at Version 2.2 or higher, not for 2.0.x
21 Set ZABBIXHOSTMETADATA=#{DOMAIN}#_#{HOSTMETADATASUFFIX}#
22 REM ## Try some alternativ Tests for different Metadata *****
```

On the right, a 'Replace Tokens' function window is open, showing the same file content with two tokens replaced:

- The token `#{ZABBIXSERVER}#` on line 4 is replaced with `zabprox.int.anaxco.de`.
- The token `#{DOMAIN}#` on line 15 is replaced with `int.anaxco.de`.

Red arrows indicate the mapping from the tokens in the original file to their replacements in the function window.



- **Copy Files to** is a standard Azure DevOps task, copies the content of a cached artifact to any target path

Created target path with PowerShell, prepared **SMB & NTFS permissions**

Manipulated artifacts' **config.bat**, to correspond to target customers' environment

We **copy artifact** into SMB share:

C:\zabbix-agent



Azure DevOps Release Pipeline – Demo



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Releases - Pipelines

https://dev.azure.com/Anaxco/Anaxco/_release?_a=releases&view=all&dc=

Anaxco / Anaxco / Pipelines / Releases

Search all pipelines

+ New

Name

▼ All pipelines

- Approved
- AX
- AX-Infra
- BI
- CEP
- IT
 - AbrechnungIT
 - IT zabbix-agent
 - MDT-Deployment-Dev**
 - MDT-Deployment-Master
- ANX_InternalTools
- D365 Services
- DBSpiegelung
- New release pipeline

MDT-Deployment-Dev

Releases Deployments Analytics

Releases

Releases	Created	Stages
Release-33 879a7b... dev	10.2.2022, 16:35:07	DEV
Release-32 896ded... dev	10.2.2022, 14:24:24	DEV
Release-31 484154... dev	27.1.2022, 16:52:42	DEV

Edit Create release

All releases

Remote Desktop Manager [xa-wm...

Dashboard xa-wms2016-02.int.anaxco.de

File Home Actions Edit View Administration Tools Window Help Search in Ribbon

Navigation

File Home Share View Manage

Local Disk (C:)

This PC > Local Disk (C:)

Name	Date modified	Type	Size
azagent	25.09.2022 21:32	File folder	
inetpub	10.01.2017 08:45	File folder	
Log	26.03.2017 03:25	File folder	
Logs	16.09.2021 16:34	File folder	
PerfLogs	18.03.2018 02:30	File folder	
Program Files	19.06.2022 03:39	File folder	
Program Files (x86)	26.09.2017 23:15	File folder	
ProgramData	21.09.2022 12:26	File folder	
Users	28.01.2022 12:01	File folder	
Windows	23.09.2022 20:23	File folder	
WSUS.log	18.09.2022 03:33	Text Document	200 KB
zabbix_agentd.log	25.09.2022 01:03	Text Document	357 KB

12 items

Windows Taskbar: 22:10 25.09.2022

Enterprise Edition 2022.2.23.0 64-bit



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Deploy the Windows Zabbix agent via Group Policy Preferences

Keeping Windows Zabbix agents in sync

- Customers environment based on Microsoft Active Directory
→ All Windows Servers are domain joined
- **Managed Scheduled Tasks from Group Policy Preferences (GPP)**
- Zabbix agent will be installed by InstallZabbixAgent.bat via UNC path
- Deploy this call to every Windows Server:

```
cmd /c "\\fs2016-01.int.anaxco.de\zabbix-agent$\InstallZabbixAgent.bat"
```

Deploy Zabbix agent via GPP – Demo



Remote Desktop Manager [dc2016-01.int.anaxco.de]

File Home Actions Edit View Administration Tools Window Help Search in Ribbon

Dashboard dc2016-01.int.anaxco.de

Group Policy Management

File Action View Window Help

Group Policy Objects

- C_AX_Server
- C_AX_VDA_Server
- C_Bitlocker
- C_BKR_Energy-Saver
- C_CitrixWorkspaceApp
- C_D365_CIPHER
- C_Deactivate_Print_Spooler
- C_Default Client Policy
- C_Default Server Policy
- C_EnableRDP_Credential_Sav
- C_Endpoint_Manager
- C_ESTOS
- C_Firefox
- C_GoogleChrome
- C_LAPS
- C_Microsoft 365
- C_MicrosoftEdge
- C_NoUpdates
- C_NTP-Server
- C_Office365
- C_Printer_restriction
- C_Remote Desktop Licensing
- C_Time Test
- C_UAC
- C_Windows Firewall
- C_Windows_Hello
- Default Domain Controllers P

C_Default Server Policy

Scope Details Settings Delegation Status

Links

Display links in this location: int.anaxco.de

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
Domain Controllers	No	Yes	int.anaxco.
Server	No	Yes	int.anaxco.

Security Filtering

The settings in this GPO can only apply to the following groups, users, and computers:

Name

Authenticated Users

Add... Remove Properties

WMI Filtering

This GPO is linked to the following WMI filter:

<none> Open

Task Scheduler

File Action View Help

Task Scheduler (Local)

Task Scheduler Library

Name	S...	Triggers
CreateExplorerShellUnelevatedTask	Running	When the task is created
FslShrinkDisk	Ready	At 10:00 every Sunday of
MicrosoftEdgeUpdateTaskMachineCore1d...	Ready	Multiple triggers defined
MicrosoftEdgeUpdateTaskMachineUA	Ready	At 01:55 every day - After

Actions

Task Scheduler Libr...

- Create Basic Ta...
- Create Task...
- Import Task...
- Display All Run...
- Disable All Task...
- New Folder...
- View
- Refresh
- Help

16:23 11.09.2022

Enterprise Edition 2022.2.21.0 64-bit



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ZABBIX

Understanding the InstallZabbixAgent.bat & AgentAutoUpdate.exe

Keeping Windows Zabbix agents in sync





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ZABBIX

Conclusion

Keeping Windows Zabbix agents in sync

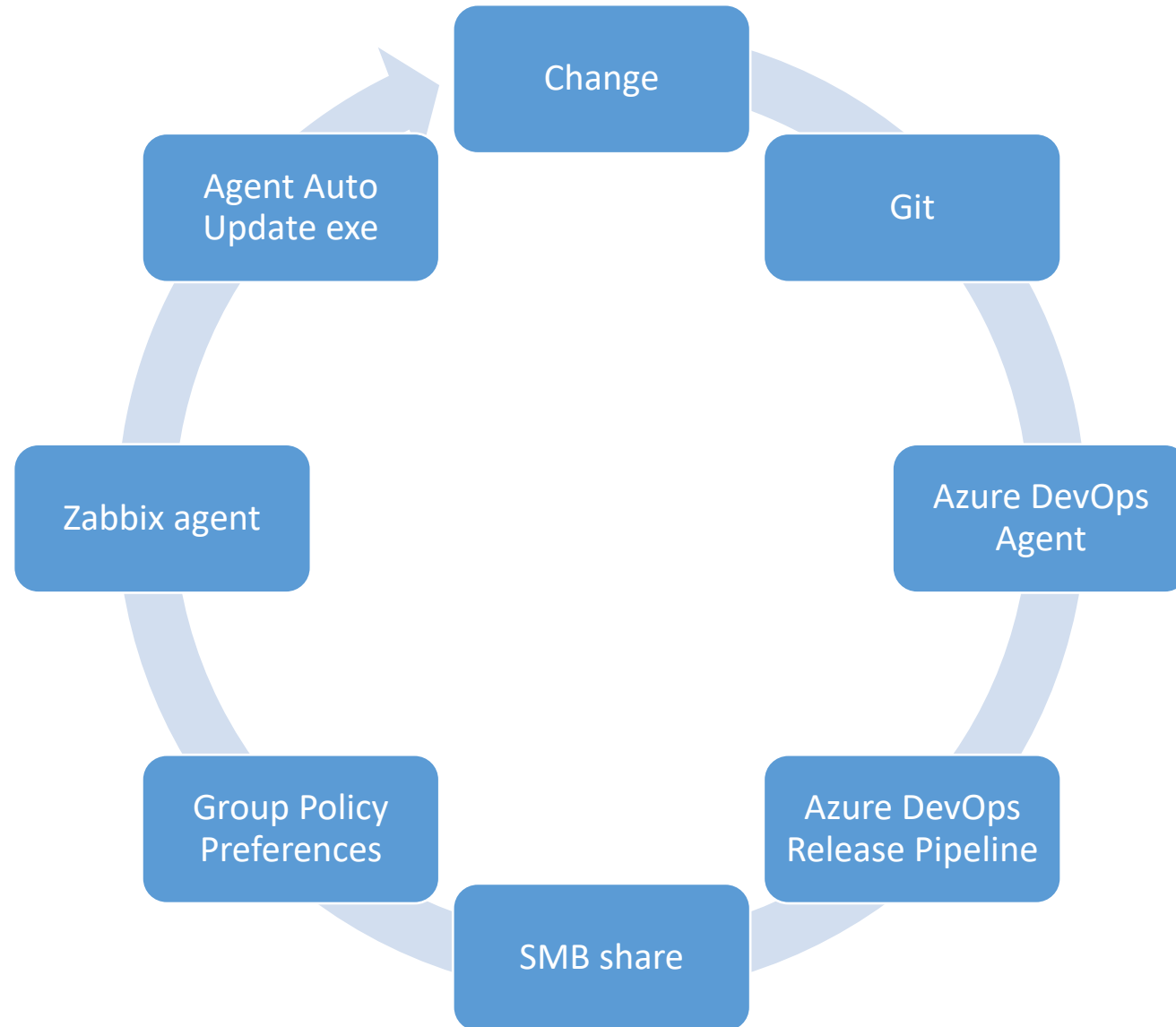
Bringing it all together



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ZABBIX



Challenges:

1. Keeping track of changes with a GIT like revision system ✓
2. Targeting each and every Windows server ✓
3. Keeping Windows Zabbix agent binary up-to-date ✓
4. Keeping zabbix_agentd.conf up-to-date ✓
5. Distributing newly developed custom [User parameters](#) ✓
6. Scale limitless / dozens of customers / thousands of Zabbix agents ✓

- Tools from Bernhard Linz:
 - https://znit.net/index.php?title=Zabbix_Agent_f%C3%BCr_Windows_per_Skript_automatisch_installieren_Musterdatei
 - https://znit.net/index.php?title=Agent_Auto_Updater
- Zabbix Windows agent installation:
 - <https://www.zabbix.com/documentation/6.0/en/manual/concepts/agent#agent-on-windows-systems>
 - https://www.zabbix.com/documentation/6.0/en/manual/appendix/install/windows_agent#installing-agent-as-windows-service
 - https://www.zabbix.com/documentation/6.0/en/manual/installation/install_from_packages/win_msi
- New-ZabbixAgentShare.ps1
 - <https://gist.github.com/xenadmin/c5bdf0ec0430a6a51baadef920e8ff0e>
- Azure DevOps:
 - <https://learn.microsoft.com/en-us/azure/devops/repos/git/?view=azure-devops>
 - <https://learn.microsoft.com/en-us/azure/devops/pipelines/agents/agents?view=azure-devops&tabs=browser>
 - <https://learn.microsoft.com/en-us/azure/devops/pipelines/get-started/key-pipelines-concepts?view=azure-devops>

Thank you!



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Questions?



CargoSuite TMS



CargoSuite WMS



CargoSuite CRM



CargoSuite BI



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