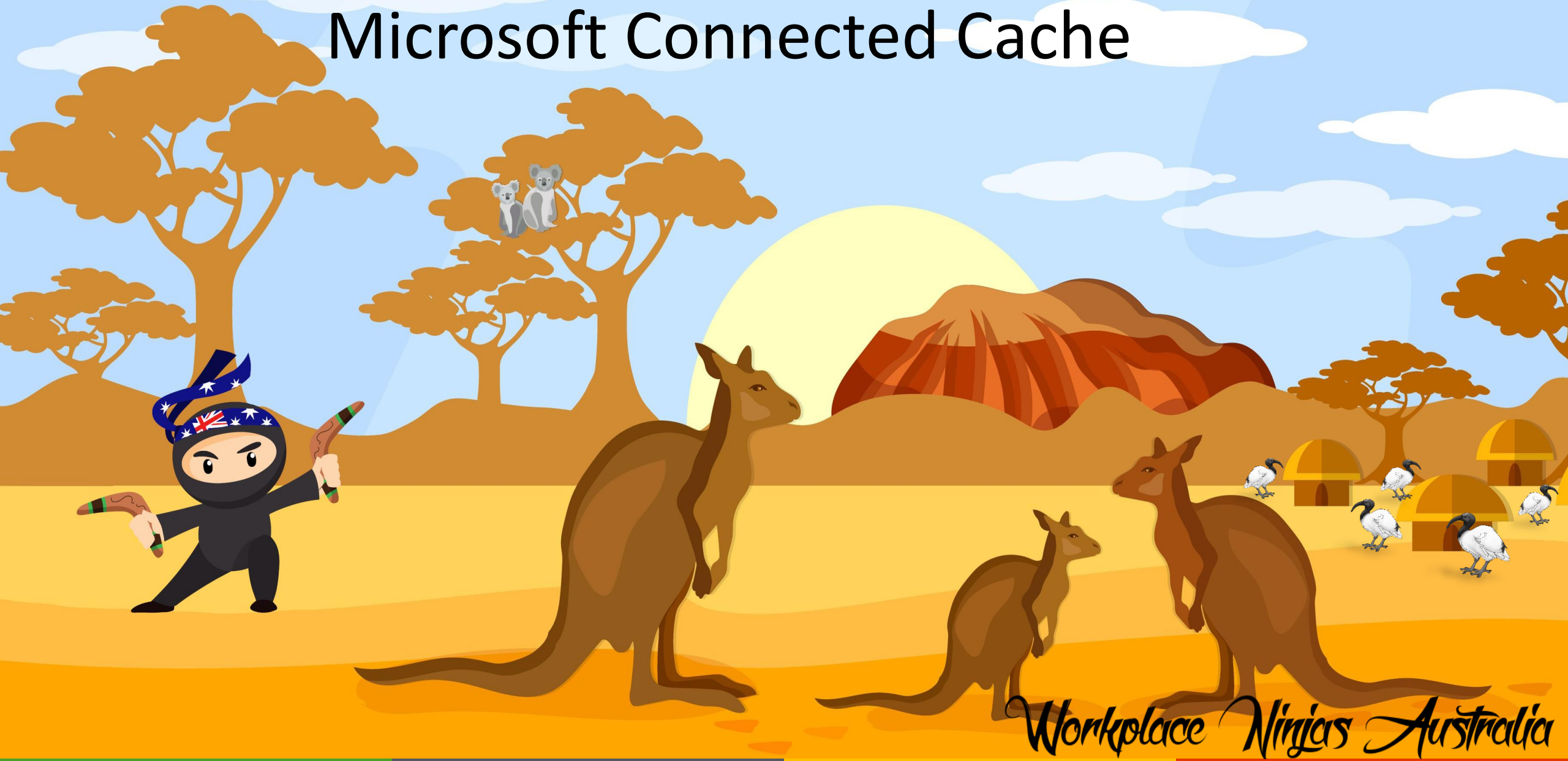


# Delivery Optimization and Microsoft Connected Cache



# Delivery Optimization (DO) and Microsoft Connected Cache (MCC)

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Microsoft MVP

Microsoft Certified Trainer





# About me

wpninjas.au

## Focus

Device management,  
things with “Defender for” in their  
name

## From

Sydney

## Socials

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12x MVP

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Feline Entertainer

## Contact

@intunedin on X



# Session Agenda

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- Overview
- Deployment Modes
- Test Environment
- Troubleshooting
- Questions

# Overview



- HTTP downloader that allows Windows to download a variety of packages from a variety of network sources
- Reduces bandwidth consumption
- Can be used with Windows Update, Windows Server Update Services, Windows Update for Business, Intune, and Configuration Manager
- For the scenarios in today's session, Internet access, as well as access to Microsoft's Delivery Optimization cloud services are required
- It downloads the required parts of the updates and app deployments, not necessarily the whole update or app.
- How can you get results like the 94.7% in the image to the left, without a cache server?

Last updated on 05/24/2019 at 11:00 PM



## Need Attention!

# of devices that need attention

NA



## Security Update Status

% of devices on latest security update

100%



## Feature Update Status

% of devices on latest feature update

NA



## Windows Defender AV Status

% of assessed devices with insufficient protection

NA



## Delivery Optimization Status

% bandwidth savings in Feature and Quality Updates over the last 28 days

94.7%





# Demonstration

DO peering and MCC in  
action

Office Deployment Tool

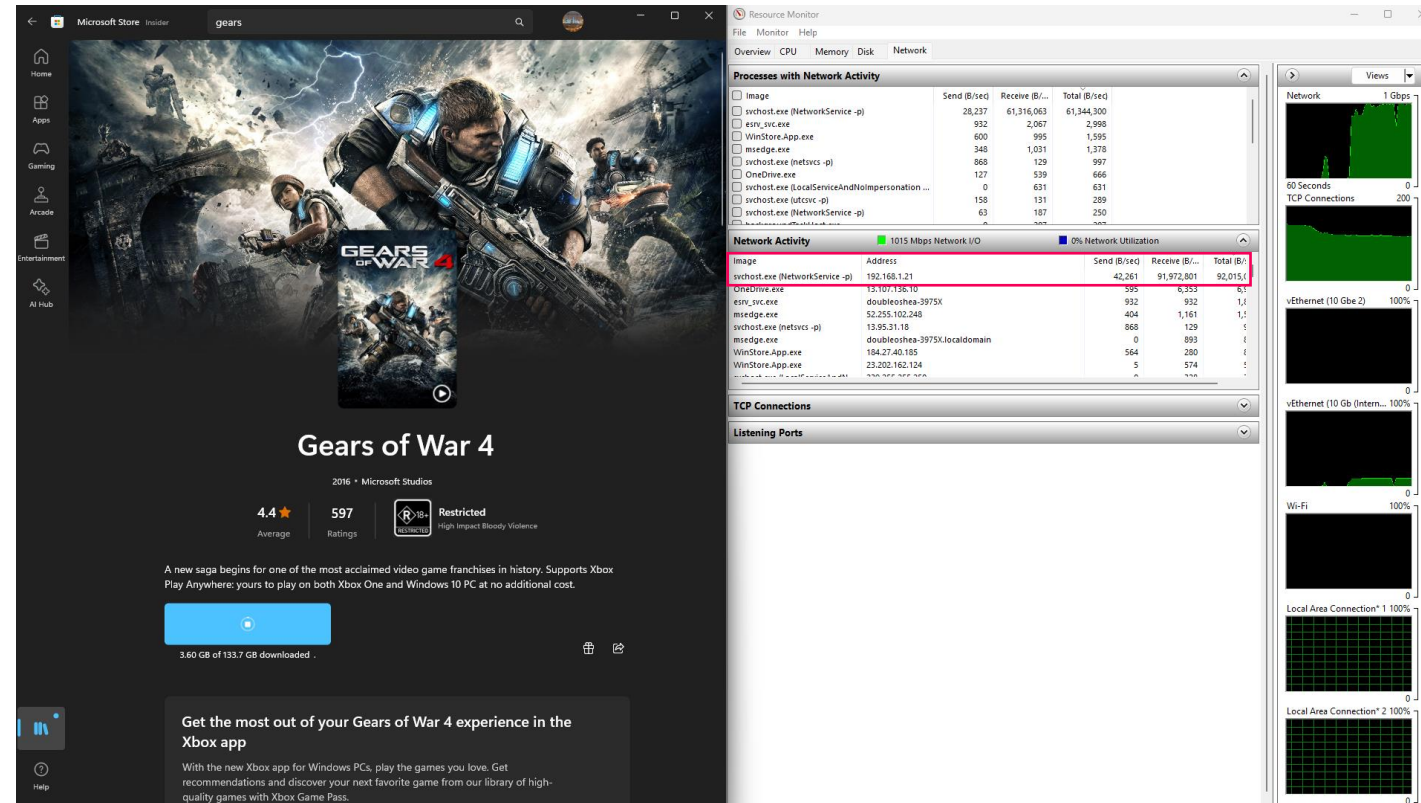
Windows Update for  
Business reports





# What will benefit from DO caching?

- Windows Update For Business/Windows Update
  - Firmware
  - Drivers
  - Quality updates
  - Cumulative updates
  - Defender signatures
- Win 10/11 Store Apps (UWP)
- Intune Win32 app deployments
  - Includes deployments via App Catalog
- Edge browser updates
- Microsoft 365 apps for Business/Enterprise
- Some Xbox Game Pass PC games, useful if you want some very large downloads
- For the official, more comprehensive list...
  - [What is Delivery Optimization? - Windows Deployment](#)







# What only benefits from DO HTTP downloader ? wpninjas.au

- Win32 Store Apps
- Winget/WPM downloads that don't match items on previous slide
- Edge browser installs
- MSIX installers
- Work around this by publishing as an Intune Win32 app, including App Catalog
- For the official, more comprehensive list...
  - [What is Delivery Optimization?](#)

```
{  
  "$schema": "https://aka.ms/winget-settings.schema.json",  
  
  // For documentation on these settings, see: https://aka.ms/winget-settings  
  // "source": {  
  //   "autoUpdateIntervalInMinutes": 5  
  // },  
  "network": {  
    "downloader": "do"  
  }  
}
```





# What about other operating systems?

- Windows Server 2016 and later
  - ADMX updates may be required to expose all functionality
- Linux (public preview)
  - Device Update for IoT Hub
  - Ubuntu 18.04, 20.04
  - Debian 9,10
  - <https://github.com/microsoft/do-client>

Delivery Optimization			
[Reserved for future use] Cache Server Hostname			
Edit <a href="#">policy setting</a>			
Requirements: At least Windows Server 2016, Windows 10			
Description: [Reserved for future use]			
Setting	State	Comments	
Absolute Max Cache Size (in GB)	Not configured	No	
Enable Peer Caching while the device connects via VPN	Not configured	No	
[Reserved for future use] Cache Server Hostname	Enabled	No	
Delay background download from http (in secs)	Enabled	No	
Delay Foreground download from http (in secs)	Enabled	No	
Download Mode	Enabled	No	
Group ID	Not configured	No	
Select the source of Group IDs	Enabled	No	
Max Cache Age (in seconds)	Not configured	No	
Max Cache Size (percentage)	Not configured	No	
Maximum Download Bandwidth (in KB/s)	Not configured	No	
Max Upload Bandwidth (in KB/s)	Not configured	No	
Minimum Background QoS (in KB/s)	Not configured	No	
Allow uploads while the device is on battery while under set ...	Not configured	No	
Minimum disk size allowed to use Peer Caching (in GB)	Not configured	No	
Minimum Peer Caching Content File Size (in MB)	Enabled	No	
Minimum RAM capacity (inclusive) required to enable use o...	Enabled	No	
Modify Cache Drive	Not configured	No	
Monthly Upload Data Cap (in GB)	Not configured	No	
Maximum Background Download Bandwidth (percentage)	Not configured	No	
Maximum Download Bandwidth (percentage)	Not configured	No	
Maximum Foreground Download Bandwidth (percentage)	Not configured	No	
Select a method to restrict Peer Selection	Enabled	No	
Set Business Hours to Limit Background Download Bandwid...	Not configured	No	
Set Business Hours to Limit Foreground Download Bandwidth	Not configured	No	

# Deployment Modes



- HTTP Only
  - No MCC
  - With MCC
- Peering
  - Peer to peer
- Microsoft Connected Cache
  - GA - Configuration Manager
  - Early Preview - Microsoft Connected Cache for Enterprise and Education
  - Preview - Microsoft Connected Cache for ISPs
- Which mode/modes is/are best for you?

HTTP blended with peering behind same NAT (1) ▼

Not configured

HTTP only, no peering (0)

HTTP blended with peering behind same NAT (1)

HTTP blended with peering across private group (2)

HTTP blended with internet peering (3)

Simple download mode with no peering (99)

Bypass mode (100)

## What is Microsoft Connected Cache?

Article • 06/02/2023 • 6 contributors • Applies to: Windows 11, Windows 10

Feedback

### In this article

[Microsoft Connected Cache for ISPs \(preview\)](#)

[Microsoft Connected Cache for Enterprise and Education \(early preview\)](#)

[Next steps](#)



# MCC in Configuration Manager

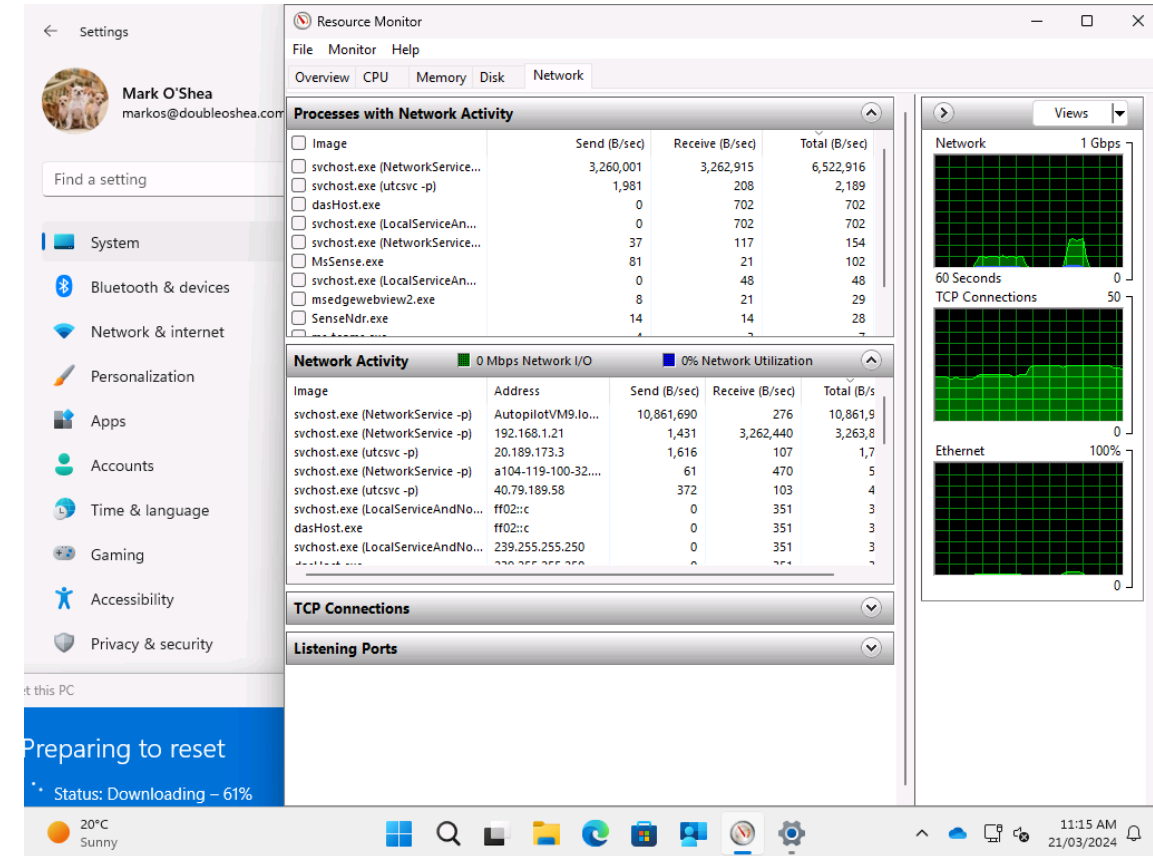
Enabling Connected Cache  
Exploring Connected Cache  
downloads



# Test Environment



- What are you trying to test/optimize?
  - Autopilot deployments
  - OS updates
  - App installs
  - App downloads
  - Impact on client device performance
  - The amount of concurrent bidirectional traffic required to cause an old access point to burst into flames
- Ensure that what you are testing is providing the data you are looking for
- Background activity like Store app updates, M365 app updates, Intune app deployments etc can generate traffic that can be misinterpreted
- Try to include some scenarios that mimic production, such as device performance, network speed, downloads/updates delivered etc
- If you want an easy way to deploy MCC on CM for testing
  - <https://www.microsoft.com/en-us/evalcenter/evaluate-windows-11-office-365-lab-kit>





# Testing DO with the ODT

- Microsoft 365 apps for Business/Enterprise
  - Download only mode if you don't want to be as impacted by overall device performance
  - Single or multiple channels to simulate your requirements or generate network traffic
- Frequent but unpredictable updates can be generated with Beta/Current Preview/Current
- Predictable monthly updates can be generated with Monthly Enterprise/Semi Annual Preview/Semi Annual, or those other things with a year in them
- In my example on the left, it's rare to see 6 different builds downloaded, it's usually 5
- Loop the script if you want it to run multiple times
- Initial Beta Channel downloads may exhibit different performance characteristics to the others

```
delete-deliveryoptimizationcache
remove-Item -Path 'C:\ODT\Office' -Recurse -
Include *.* -confirm

.\setup /download BetaChannel.xml
.\setup /download CurrentPreview.xml
.\setup /download Current.xml
.\setup /download MonthlyEnterprise.xml
.\setup /download SemiAnnualPreview.xml
.\setup /download SemiAnnual.xml
```



# Testing DO with the ODT

- You can choose all channels/editions, 32 and 64 bit if you want to generate larger amounts of traffic
- Downloads everything, ignores installation options that may be configured inside the XML files
- More predictable than some other options in terms of seeing activity, but the amount of traffic generated will vary, potentially multiple times per week

```
<Configuration ID=WPININJAS>  
  <Add OfficeClientEdition="64"  
    Channel="BetaChannel">  
    <Product ID="O365ProPlusRetail">  
      <Language ID="MatchOS" />  
      <ExcludeApp ID="Bing" />  
    </Product>  
  </Configuration>
```



# Peer Troubleshooting

- Can the clients reach the DO cloud services
  - Run `Get-DeliveryOptimizationStatus` and look for download mode 99 which indicates an issue

```
Get-DeliveryOptimizationStatus
```

- Can the clients see each other at all
  - Network segmentation
  - Device isolation
  - Firewall rules

```
Test-NetConnection -ComputerName 192.168.9.17 -Port 7680
```

- If they can, Telnet into port 7680, and if it fails
  - Check firewall rules
- Are the same DO policies/settings being applied
  - Run `Get-DeliveryOptimizationStatus` and see if download mode 1,2 or 3 are enabled

```
dism /online /Enable-Feature /FeatureName:TelnetClient  
telnet 192.168.9.17 7680
```

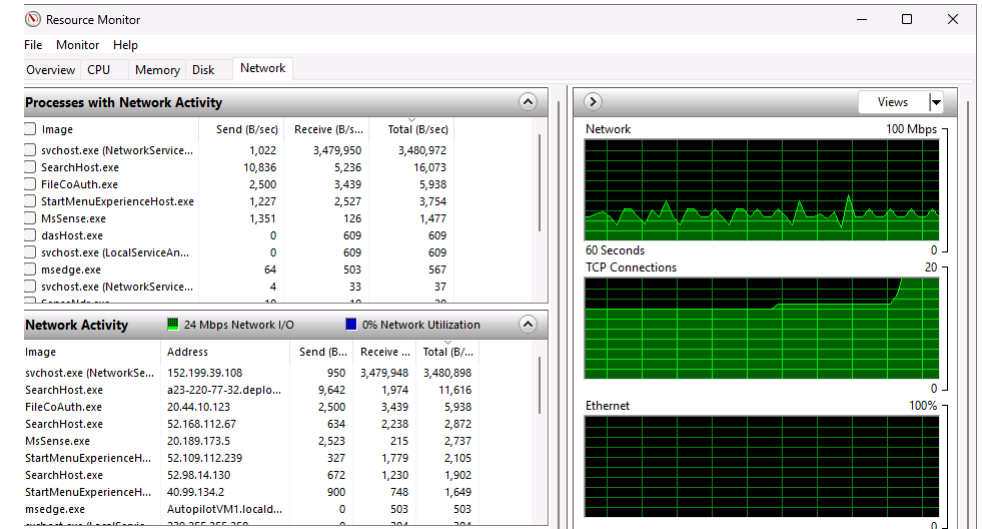
- Does the device meet the requirements for peer distribution
- Is the device asleep, powered off, disconnected from network...



# MCC Troubleshooting



- Will vary based on the version of MCC being used
- Is MCC functioning?
  - Invoke-WebRequest -URI "http://<YourCacheServerIP>/mscomtest/wuidt.gif" -Headers @{"Host"="b1.download.windowsupdate.com"}
  - http://<YourCacheServerIP>/mscomtest/wuidt.gif?cacheHostOrigin=au.download.windowsupdate.com
- What DNS servers are you using?
  - Clients and servers
  - Network infrastructure
  - Standalone Microsoft Connected Cache, which even makes its own suggestion during installation
- Some results of misconfigured/inconsistent DNS I've seen
  - UWP Store apps coming from MCC, but M365 apps coming directly from CDNs
  - UWP Store apps and some/most M365 channels coming from MCC, but Beta/InsiderFast coming from CDNs



```

PS C:\Users\MarkO'Shea> Invoke-WebRequest -URI "http://192.168.1.21/mscomtest/wuidt.gif" -Headers @{"Host"="b1.download.windowsupdate.com"}

StatusCode      : 200
StatusDescription : OK
Content         : {71, 73, 70, 56...}
RawContent      : HTTP/1.1 200 OK
                  Server: nginx
                  Date: Thu, 21 Mar 2024 08:11:35 GMT
                  Connection: keep-alive
                  Cache-Control: public, max-age=172800
                  X-Powered-By: ASP.NET
                  X-CID: 10000
                  X-CC: a8eb8cc4-cd8e-4d9c-bea9-...
Headers         : [{"Server", System.String[]}, {"Date", System.String[]}, {"Connection", System.String[]}, {"Cache-Control", System.String[]}]
RawContentLength: 969710
RelationLink    : {}
  
```



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