Filtering with Windows PowerShell

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What is Filtering?

The process of removing unwanted objects from the pipeline

Get only the data you need

Can improve performance

Filtering Philosophies

Early Filtering

Filtering is done at the source

Filtered objects come through the pipeline

Better performing

Late Filtering

Filtering is done at the destination

Everything comes through the pipeline, then filter

Poorer performance may be relative

Sometimes late filtering is your only choice

You can combine both approaches in the same Windows PowerShell statement

Filter first and filter left...

Late filtering is not “bad”
unless there are early filtering
options you could have used.

Filtering with Parameters

These are early filtering techniques

Read full cmdlet help and examples

Filter

Name

ID

Include

Exclude

Filtering with Where-Object

Incoming objects are piped to Where-Object

Aliases of *Where* and ?

Objects that pass a filtering test to the next command in the pipeline

```
Get-Service | Where-Object {$_.Status -eq 'running'}
```

Where-Object -> Legacy Syntax

$_ means “the current object in the pipeline”

Use a comparison operator

- Help about_comparison_operators

The entire expression must be True

```
Get-Service | Where Status -eq 'running'
```

Where-Object -> Modern Syntax

Simple comparisons only

Use an object's property name

```
Get-Service | Where {$psitem.Status -eq 'running'}
```

Where-Object -> Alternate Modern Syntax

If you find $_ confusing

Must use a script block

```
Get-Service |
Where {$_.Status -eq 'running' -AND $_.StartType -eq 'manual'}
```

Where-Object -> My Recommendation

Use the legacy syntax

It works everywhere

You need it for complex filtering

```
Get-Service -name w* |
Where {$_.Status -eq 'running' -AND $_.StartType -eq 'manual'}
```

Filtering Early and Late

Get all services that start with 'w' (early filtering)

Filter these results with Where-Object (late filtering)

Get in the habit of filtering early

```
Get-Service -computername $servers |
Where {$_.name -like 'w*'} |
Where {$_.status -eq 'running'} |
Where {$_.StartType -eq 'manual'} | Select-Object Name,Machinename

Get-Service -computername $servers |
Where {$_.name -like 'w*' -AND $_.Status -eq 'running' -AND
$_.StartType -eq 'manual'} | Select-Object Name,MachineName
```

Not the PowerShell Way

Yes, it will work but it is technically inefficient

```
Get-Service -name w* -computername $servers |
Where {($_.Status -eq 'running') -AND ($_.StartType -eq 'manual')} |
Select-Object Name,MachineName
```

The PowerShell Way

Using parentheses keeps you organized

```
Get-CimInstance -ClassName Win32_Service -filter "name like 'w%' AND
state = 'running' AND startmode = 'manual'" -cimsession $servers|
Select-Object Name,PSComputername
```

Find a Better Way

There might be another way to get the same information

Demo

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