Manage AVD Shutdown

Tuesday, May 2, 2023 9:31 AM

This solution is for a use case where:

Azure Virtual desktops assignments are dedicated /personal desktops

- Users have certain workloads that may continue running after the work shift has ended
- Desktops need to be shutdown when all work is done or jobs have completed to save on compute usage costs
- User personas vary on types of jobs or work is performed
- User may change shifts and have different working hours

Solution Ask

- Allow users to identify when the Desktop can be shutdown
- Have an process/monitor that will run and check on when it can be safely shutdown and deallocated based user selection

GAP

- Azure virtual desktop cannot distinguish selection of critical task running and completion without gaining access to the desktop active running profiles
- Auto shutdown schedule is not flexible enough to manage shift changes for user based on ad-hoc needs

Proposed solution (POC)

- Create a time based monitor where the user will select a some point during the working day of a time when they expect to have their work or jobs completed
- When the user selected time has been reached, the monitor will shutdown and deallocated the Desktop (VM)
- The Azure Virtual Desktop Scheduler will need to wake up the VM when the next shift or user needs the desktop

Work flow and deployment

- Three scripts (also can be compiled into .exe)
  - **Deploy_job_to_task_scheuler_interval_from_Vault** *(optional to avoid the need for user credentials prompts when deploying)*
    - This scripts will read in local Service principal /or local admin credentials from an azure keyvault
    - Source the monitor job Manage_Shutdown_Timebased from c:\programdata\jobs folder (hidden folder) or can be on a shared folder
    - Create a schedule task to run every XxX minutes to check on the current date/time and the time the user selected to shutdown from the Registry
  - **Manage_Shutdown_Timebased**
    - This script is the monitor that will (as mentioned above) get launched every xxx minutes,
      - Check current date time
      - Compare it to the time selected by the user for shutdown
        - If time has been reached
          - Script will :
            - write to the event log ID#6666 that time has been reached and the shutdown and deallocation will be executed
            - Write to the registry a flag noting that the time to stop the VM flag is NO (a reset for from Yes when the user sets a time) to prevent shutdown again upon boot up. If the flag is set to NO , the monitor will not shutdown the VM and it will stay running until a manual shutdown is executed or the TimeToStop flag is set to YES with a time. If the time is in the past it will automatically shutdown again. A precaution is built in to the Manage_Shutdown_Timebased_set script to prevent this scenario
  - **Manage_Shutdown_Timebased_Set**
    - This script is to be run by the user when they want to set a time to automatically shutdown their assigned desktop/VM
      - It will:
        - Get the current time at execution
        - Provide a list of times to be selected from a UI pop-up
        - Create/update the desktop/VM registry with a Key and settings that the Manage_Shutdown_Timebased Monitor will be checking.
          - *"HKLM:\SOFTWARE\MANAGE_SHUTDOWN" -Name "Timetostop" -Value "time to be set"*
          - *"HKLM:\SOFTWARE\MANAGE_SHUTDOWN" -Name "Timecheck" -Value "time to be set"*
          - *"HKLM:\SOFTWARE\MANAGE_SHUTDOWN" -Name "Timeleft" -Value " "*
          - *"HKLM:\SOFTWARE\MANAGE_SHUTDOWN" -Name "Timetostopset" -Value "YES"*
        - Write to the event log "Manage_shutdown_monitor" -EventID 6666 that a time to shutdown has been set

Pre-Requirements

- The following are requirements to set up and use this solution
  - Working and assigned Azure Virtual Desktop instance/session host
  - An Azure keyvault with a secret created for the local admin of the desktop/VM or a service principal (used to create the scheduled task and prevent any user interaction for setup)
    - Keyvault access control set for the managed identity and Service principal to be able to list and read the secrets
    - Quickstart - Create an Azure Key Vault with the Azure portal | Microsoft Learn
    - Azure Quickstart - Set and retrieve a secret from Key Vault using Azure portal | Microsoft Learn
  - A managed identity for (user or system) with :

- **Desktop Virtualization Power On Off Contributor** - This role allows users to manage the virtual machine and perform tasks such as starting and stopping the virtual machine.
- [Configure managed identities on Azure VM using Azure CLI - Microsoft Entra | Microsoft Learn]
- [Configure managed identities on an Azure VM using PowerShell - Microsoft Entra | Microsoft Learn]

In PowerShell (as Admin) run:

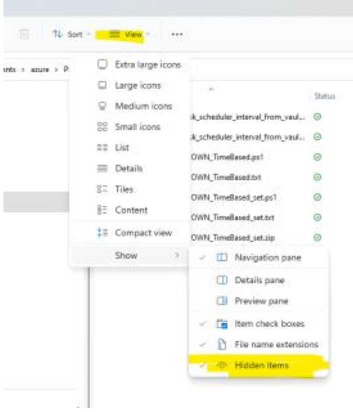
```
$vm = Get-AzVM -ResourceGroupName myResourceGroup -Name myVM

Update-AzVM -ResourceGroupName myResourceGroup -VM $vm -IdentityType SystemAssigned
```

********* Replace Myvm with the name of the Host session VM***

- A startup schedule to bring the Desktop/VM back online for users to start work

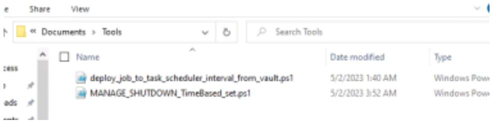
Deployments instructions

1) Download or save zip file MANAGE_SHUTDOWN_TimeBased_set.zip to a folder or storage account container or Fileshare
2) Unpackage **MANAGE_SHUTDOWN_TimeBased.zip** to the destination folder/container
3) In File explorer on the Host/VM to be managed
   a. Enable view of hidden items



   b. Navigate to the c:\programdata folder
      a. Create a new folder named : **Jobs**
      b. **Copy file named :** MANAGE_SHUTDOWN_TimeBased.ps1 **extracted from the zip collection** to the **c:\programdata\Jobs** folder
   c. Navigate to Home directory **"sl ~"** or **cd ~**
      a. Create a new folder named **tools**
      b. **Copy file named:** MANAGE_SHUTDOWN_TimeBased_set.ps1 **extracted from the zip collection** to the **~\tools** folder *(c:\users\xxxx\documents\tools)*

4) **Optional deployments**
   a. If user is allowed to the change task schedule:
      i. Copy file named**: deploy_job_to_task_scheduler_interval_from_vault.ps1 extracted from the zip collection** to the **~\tools** folder *(c:\users\xxxx\documents\tools)*
         1) *This will allow redeployment of the job to the task scheduler - It Will not create a duplicate !!! Access to the Service Principal or service account will be required to deploy the job.*



Name	Date modified	Type
deploy_job_to_task_scheduler_interval_from_vault.ps1	5/2/2023 1:40 AM	Windows Pow
MANAGE_SHUTDOWN_TimeBased_set.ps1	5/2/2023 3:52 AM	Windows Pow

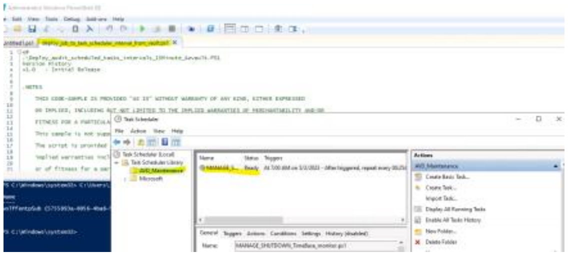
   b. **If centrally managed**
      i. Execute this script on the host using the administrator privileges - to set and create the job (see screenshots below) - or add to an session host image fully deployed
         1) This will:
            a) Read the **c:\programdata\jobs** folder for any scripts stored in that folder
            b) Create a scheduled task job with run intervals using a service principal/Service account stored in the keyVault created (see pre-requisites)

5) To Deploy (if all prerequisites are in place) :

   a. As administrator Run PowerShell
      i. Replace the values in the **deploy_job_to_task_scheduler_interval_from_vault.ps1** with **the setting for your environment**

```
$sub = get-azsubscription -SubscriptionName "<Subscriptionname>"

$keyvault = '<keyvaultname>'
$serviceprincipal = '<local VM Admin account name or ad Domain Admin Account>'  # Note
```

      ii. Execute **deploy_job_to_task_scheduler_interval_from_vault.ps1**
      iii. Verify Job/task creation



```
<#
.\Deploy_audit_scheduled_tasks_intervals_10minute_&results.PS1
Version History
v1.0   : Initial Release

.NOTES
    THIS CODE-SAMPLE IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
    OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR
    FITNESS FOR A PARTICULA
    This sample is not supp
    The script is provided
    implied warranties incl
    or of fitness for a par
```

Task Scheduler

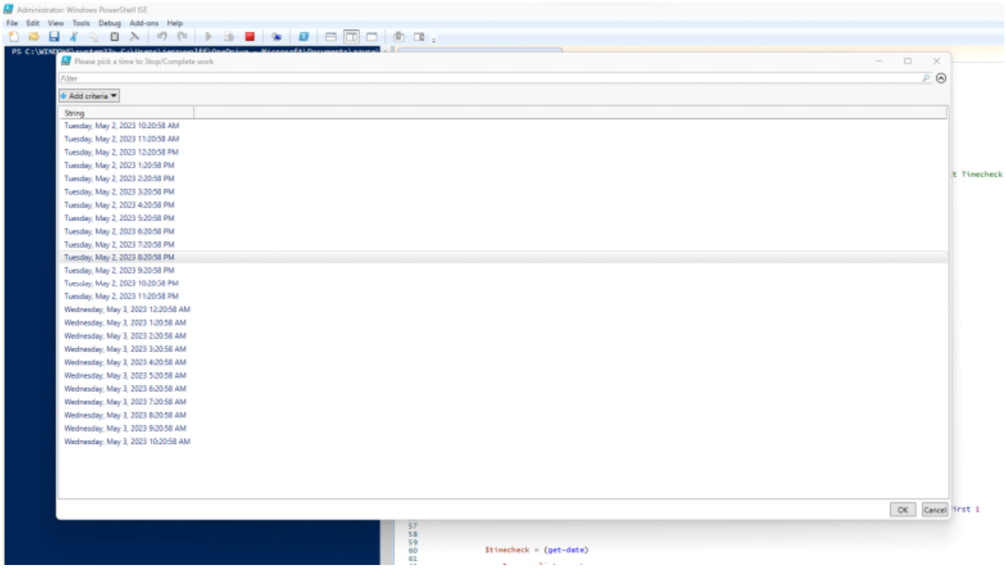
Name	Status	Triggers
MANAGE_S...	Ready	At 7:00 AM on 5/1/2023 - After triggered, repeat every 00:20

Name: MANAGE_SHUTDOWN_TimeBase_monitor.ps1

b. For end user:
    i. Execute c:\users\xxxx\documents\tools\Manage_shutdown_Timebased_set
    ii. ***Select desired date/Time/hours from selection provided in the UI (see screen shot below)***

Screen shots

Manage_shutdown_Timebased_set

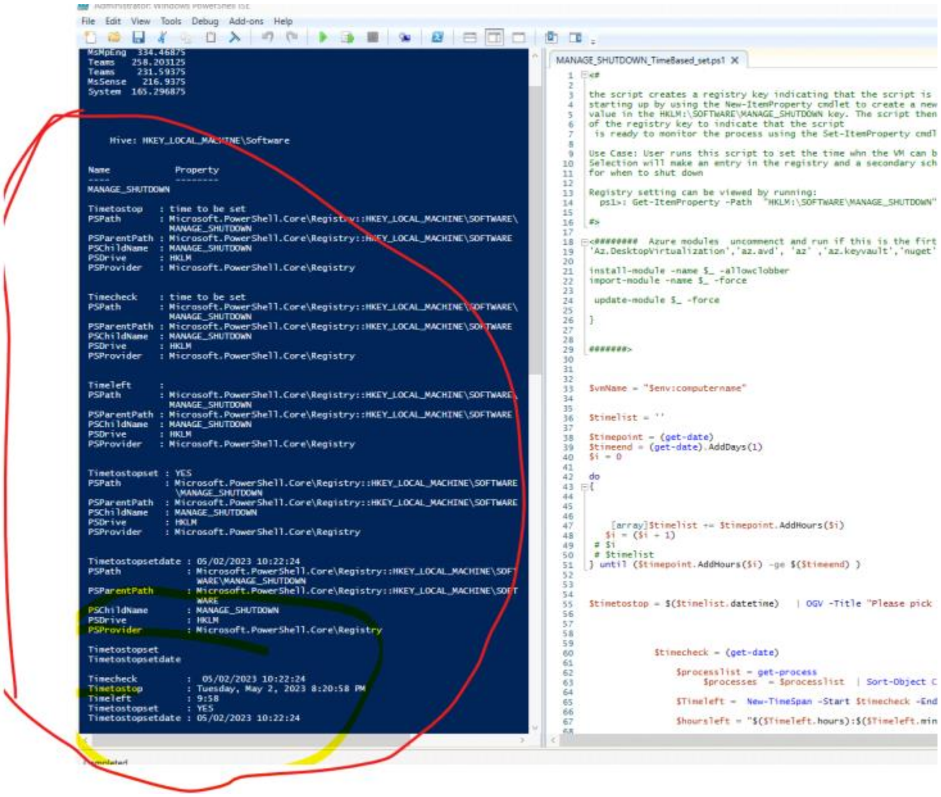


Please pick a time to Stop/Complete work

```
String
Tuesday, May 2, 2023 10:20:58 AM
Tuesday, May 2, 2023 11:20:58 AM
Tuesday, May 2, 2023 12:20:58 PM
Tuesday, May 2, 2023 1:20:58 PM
Tuesday, May 2, 2023 2:20:58 PM
Tuesday, May 2, 2023 3:20:58 PM
Tuesday, May 2, 2023 4:20:58 PM
Tuesday, May 2, 2023 5:20:58 PM
Tuesday, May 2, 2023 6:20:58 PM
Tuesday, May 2, 2023 7:20:58 PM
Tuesday, May 2, 2023 8:20:58 PM
Tuesday, May 2, 2023 9:20:58 PM
Tuesday, May 2, 2023 10:20:58 PM
Tuesday, May 2, 2023 11:20:58 PM
Wednesday, May 3, 2023 12:20:58 AM
Wednesday, May 3, 2023 1:20:58 AM
Wednesday, May 3, 2023 2:20:58 AM
Wednesday, May 3, 2023 3:20:58 AM
Wednesday, May 3, 2023 4:20:58 AM
Wednesday, May 3, 2023 5:20:58 AM
Wednesday, May 3, 2023 6:20:58 AM
Wednesday, May 3, 2023 7:20:58 AM
Wednesday, May 3, 2023 8:20:58 AM
Wednesday, May 3, 2023 9:20:58 AM
Wednesday, May 3, 2023 10:20:58 AM
```

```
$timecheck = (get-date)
```

c. A verification of the time selected for the **auto shutdown** will be printed to the results screen (see sample below)


Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Completed

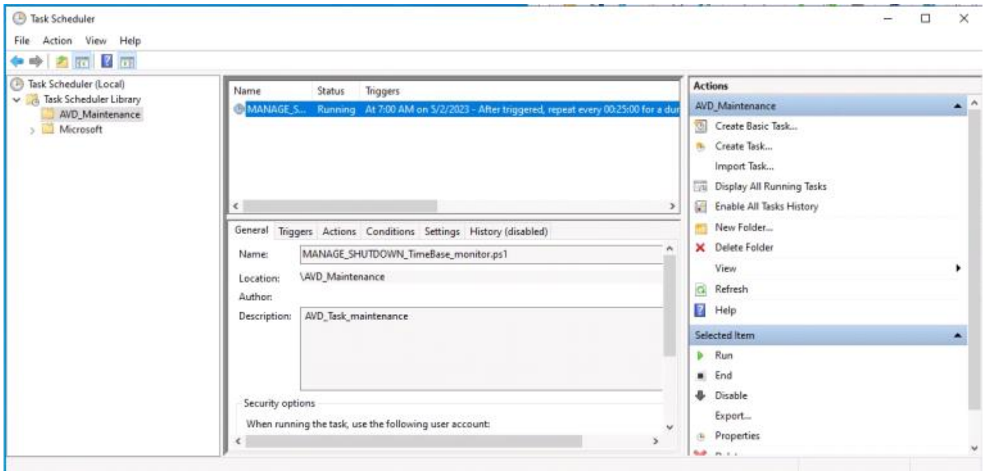
```
MsMpEng  334.46875
Teams    258.203125
Teams    231.59375
MsSense   216.9375
System  165.296875



    Hive: HKEY_LOCAL_MACHINE\Software


Name                           Property
----                           --------
MANAGE_SHUTDOWN

Timetostop   : time to be set
PSPath       : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFTWARE\
               MANAGE_SHUTDOWN
PSParentPath : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFTWARE
PSChildName  : MANAGE_SHUTDOWN
PSDrive      : HKLM
PSProvider   : Microsoft.PowerShell.Core\Registry


Timecheck    : time to be set
PSPath       : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFTWARE\
               MANAGE_SHUTDOWN
PSParentPath : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFTWARE
PSChildName  : MANAGE_SHUTDOWN
PSDrive      : HKLM
PSProvider   : Microsoft.PowerShell.Core\Registry


Timeleft     :
PSPath       : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFTWARE\
               MANAGE_SHUTDOWN
PSParentPath : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFTWARE
PSChildName  : MANAGE_SHUTDOWN
PSDrive      : HKLM
PSProvider   : Microsoft.PowerShell.Core\Registry


Timetostopset : YES
PSPath        : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFTWARE
                \MANAGE_SHUTDOWN
PSParentPath  : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFTWARE
PSChildName   : MANAGE_SHUTDOWN
PSDrive       : HKLM
PSProvider    : Microsoft.PowerShell.Core\Registry


Timetostopsetdate : 05/02/2023 10:22:24
PSPath            : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFT
                    WARE\MANAGE_SHUTDOWN
PSParentPath      : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\SOFT
                    WARE
PSChildName       : MANAGE_SHUTDOWN
PSDrive           : HKLM
PSProvider        : Microsoft.PowerShell.Core\Registry

Timetostopset
Timetostopsetdate

Timecheck         :  05/02/2023 10:22:24
Timetostop        : Tuesday, May 2, 2023 8:20:58 PM
Timeleft          : 9:58
Timetostopset     : YES
Timetostopsetdate : 05/02/2023 10:22:24
```

MANAGE_SHUTDOWN_TimeBased_set.ps1

```
<#

the script creates a registry key indicating that the script is
starting up by using the New-ItemProperty cmdlet to create a new
value in the HKLM:\SOFTWARE\MANAGE_SHUTDOWN key. The script then
of the registry key to indicate that the script
 is ready to monitor the process using the Set-ItemProperty cmdl

Use Case: User runs this script to set the time whn the VM can b
Selection will make an entry in the registry and a secondary sch
for when to shut down

Registry setting can be viewed by running:
  ps1>: Get-ItemProperty -Path  "HKLM:\SOFTWARE\MANAGE_SHUTDOWN"

#>

<#########  Azure modules  uncommenct and run if this is the firt
'Az.DesktopVirtualization','az.avd', 'az' ,'az.keyvault','nuget'

install-module -name $_ -allowclobber
import-module -name $_ -force

 update-module $_ -force

}


#######>



$vmName = "$env:computername"


$timelist = ''

$timepoint = (get-date)
$timeend = (get-date).AddDays(1)
$i = 0

do
{



    [array]$timelist += $timepoint.AddHours($i)
   $i = ($i + 1)
 # $i
 # $timelist
} until ($timepoint.AddHours($i) -ge $($timeend) )



$timetostop = $($timelist.datetime)   | OGV -Title "Please pick




            $timecheck = (get-date)

                $processlist = get-process
                     $processes  = $processlist  | Sort-Object C

                $Timeleft =  New-TimeSpan -Start $timecheck -End

                $hoursleft = "$($Timeleft.hours):$($Timeleft.min
```

Reference Screen shots

Task Scheduler Job



Name	Status	Triggers
MANAGE_S...	Running	At 7:00 AM on 5/2/2023 - After triggered, repeat every 00:25:00 for a dur

Name: MANAGE_SHUTDOWN_TimeBase_monitor.ps1

Location: \AVD_Maintenance

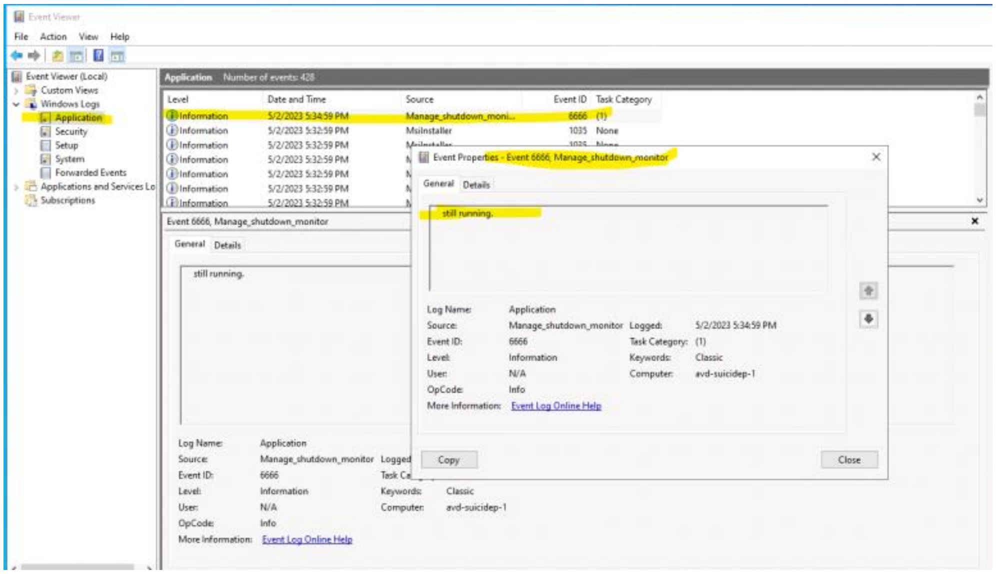
Author:

Description: AVD_Task_maintenance

Security options

When running the task, use the following user account:

Event Viewer logs



Application Number of events: 428

Level	Date and Time	Source	Event ID	Task Category
Information	5/2/2023 5:34:59 PM	Manage_shutdown_moni...	6666	(1)
Information	5/2/2023 5:32:59 PM	MsiInstaller	1035	None
Information	5/2/2023 5:32:59 PM	MsiInstaller	1035	None
Information	5/2/2023 5:32:59 PM	M		
Information	5/2/2023 5:32:59 PM	M		
Information	5/2/2023 5:32:59 PM	M		
Information	5/2/2023 5:32:59 PM	M		
Information	5/2/2023 5:32:59 PM	M		

Event Properties - Event 6666, Manage_shutdown_monitor

General Details

still running.

Log Name: Application
Source: Manage_shutdown_monitor Logged: 5/2/2023 5:34:59 PM
Event ID: 6666 Task Category: (1)
Level: Information Keywords: Classic
User: N/A Computer: avd-suicidep-1
OpCode: Info
More Information: Event Log Online Help

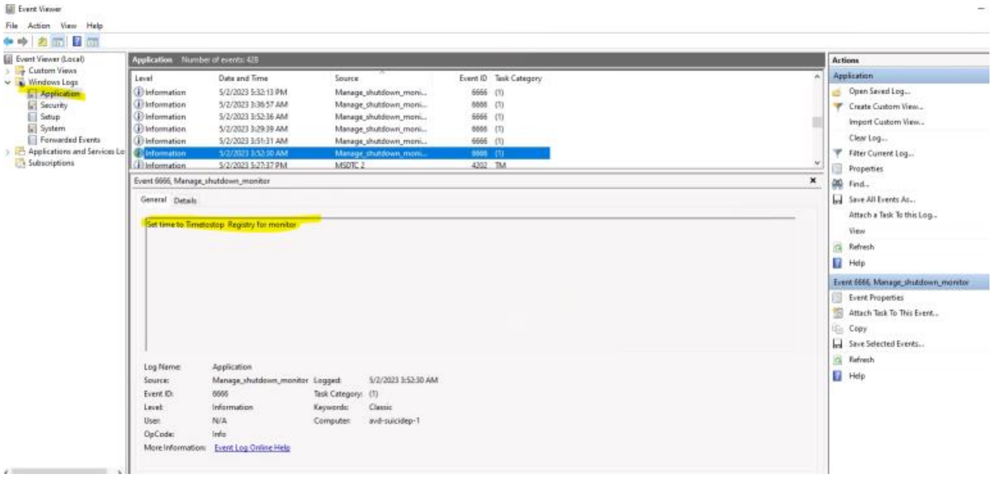
Copy Close

Event 6666, Manage_shutdown_monitor

General Details

still running.

Log Name: Application
Source: Manage_shutdown_monitor Logged
Event ID: 6666 Task Ca
Level: Information Keywords: Classic
User: N/A Computer: avd-suicidep-1
OpCode: Info
More Information: Event Log Online Help



Application Number of events: 428

Level	Date and Time	Source	Event ID	Task Category
Information	5/2/2023 5:32:13 PM	Manage_shutdown_moni...	6666	(1)
Information	5/2/2023 3:36:57 AM	Manage_shutdown_moni...	6666	(1)
Information	5/2/2023 3:52:36 AM	Manage_shutdown_moni...	6666	(1)
Information	5/2/2023 3:29:39 AM	Manage_shutdown_moni...	6666	(1)
Information	5/2/2023 3:51:31 AM	Manage_shutdown_moni...	6666	(1)
Information	5/2/2023 3:52:30 AM	Manage_shutdown_moni...	6666	(1)
Information	5/2/2023 5:27:37 PM	MSDTC 2	4202	TM

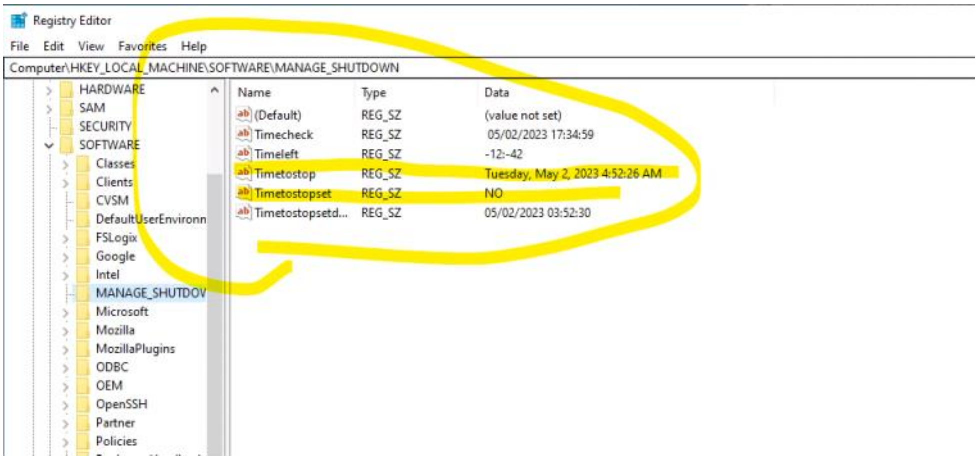
Event 6666, Manage_shutdown_monitor

General Details

Set time to Timetostop Registry for monitor

Log Name: Application
Source: Manage_shutdown_monitor Logged: 5/2/2023 3:52:30 AM
Event ID: 6666 Task Category: (1)
Level: Information Keywords: Classic
User: N/A Computer: avd-suicidep-1
OpCode: Info
More Information: Event Log Online Help

Registry entries



Computer\HKEY_LOCAL_MACHINE\SOFTWARE\MANAGE_SHUTDOWN

Name	Type	Data
(Default)	REG_SZ	(value not set)
Timecheck	REG_SZ	05/02/2023 17:34:59
Timeleft	REG_SZ	-12:-42
Timetostop	REG_SZ	Tuesday, May 2, 2023 4:52:26 AM
Timetostopset	REG_SZ	NO
Timetostopsetd...	REG_SZ	05/02/2023 03:52:30

Source folder

deploy_job
_to_task_...

MANAGE_S
HUTDOW...

MANAGE_S
HUTDOW...