Persistent Systems’ (“Persistent”)

User Guide for

Microsoft Azure Data Center Migration Tool

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# Introduction

Data Center migration tool version 1.0 is used to migrate the assets

* From one subscription to another subscription in same data center(region)
* From one subscription to another subscription in different data center.
* In same subscription with different data center.
* In same subscription with same data center.

This version of the tool supports migration of following assets:

* All Affinity Groups irrespective of virtual machines.
* Virtual Networks irrespective of virtual machines.
* Cloud Services irrespective of virtual machines.
* Storage Accounts (All storage accounts irrespective of virtual machines will be created on destination however only blob related to virtual machine will be copied).
* Virtual Machines

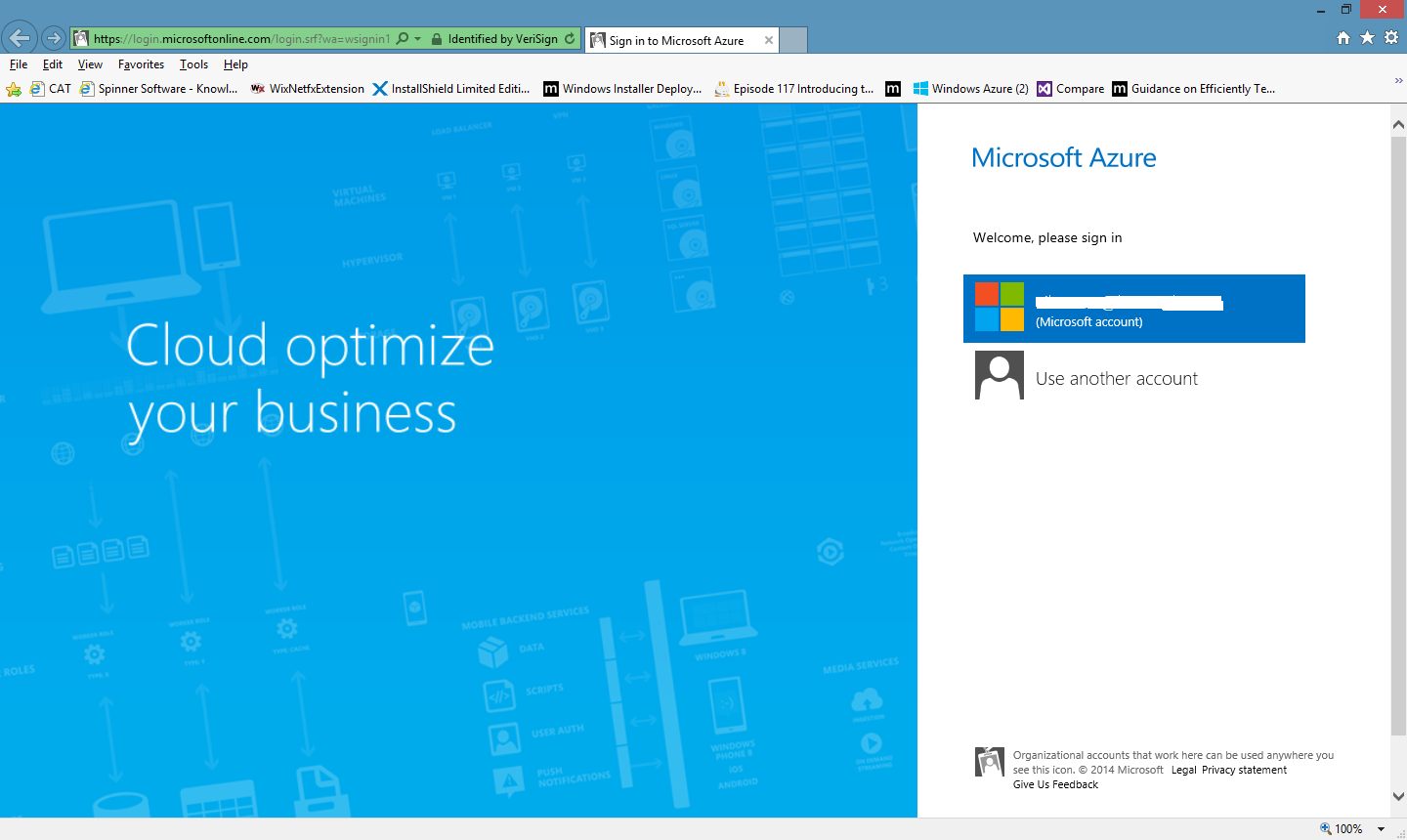
# Download Publishsettings File

A publishsettings file contains information about your subscription and management certificate which can be used to authenticate Windows Azure Service Management API requests. This publishsettings file is used to migrate data from one data center to another.

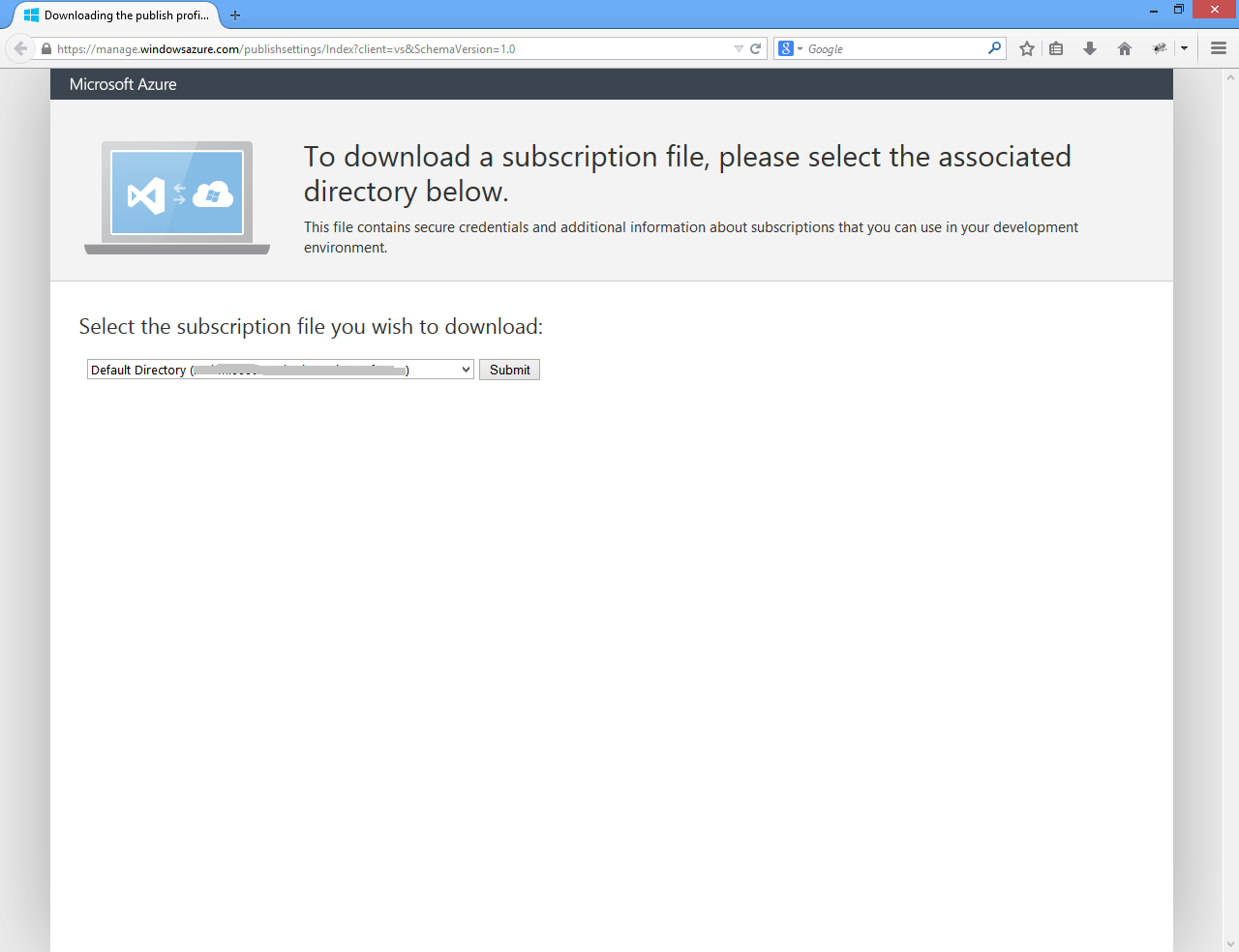
There are two ways to get publishsettings file.

## Using Microsoft Azure Portal

* To get publishsettings profile visit the link below: <https://windows.azure.com/download/publishprofile.aspx>



* Login to Microsoft Azure, using your azure subscription credentials.

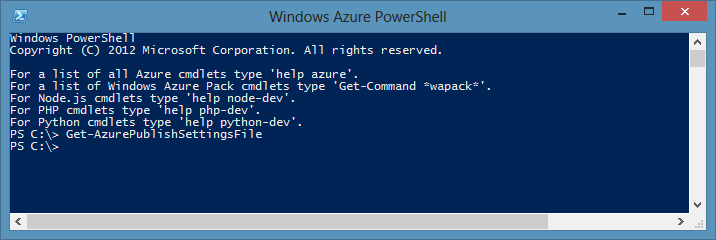


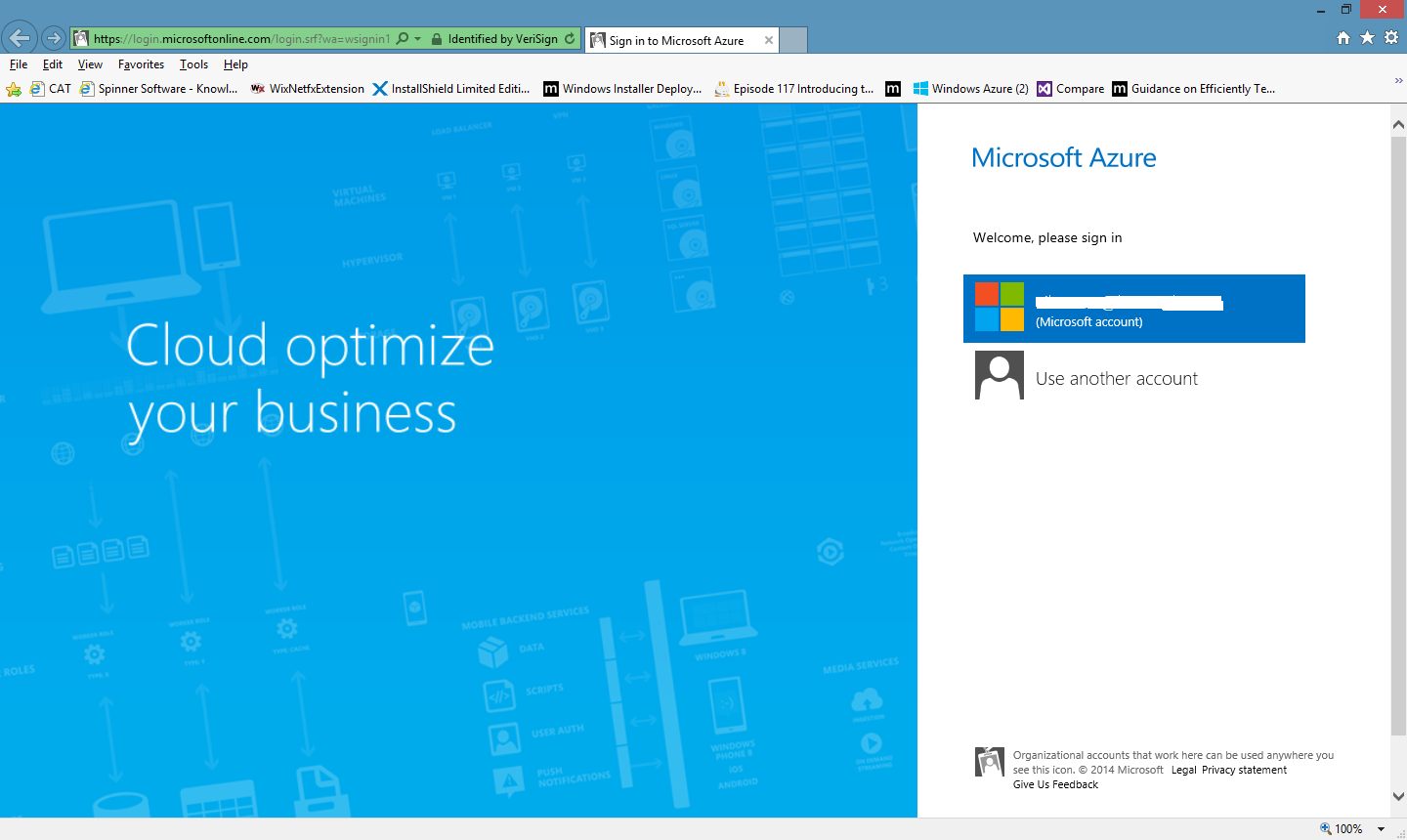
* Select the subscription from dropdown for which the azure subscription file should be downloaded.
* Provide file name with .publishsettings extension and save the file.

## Using Windows Azure Powershell

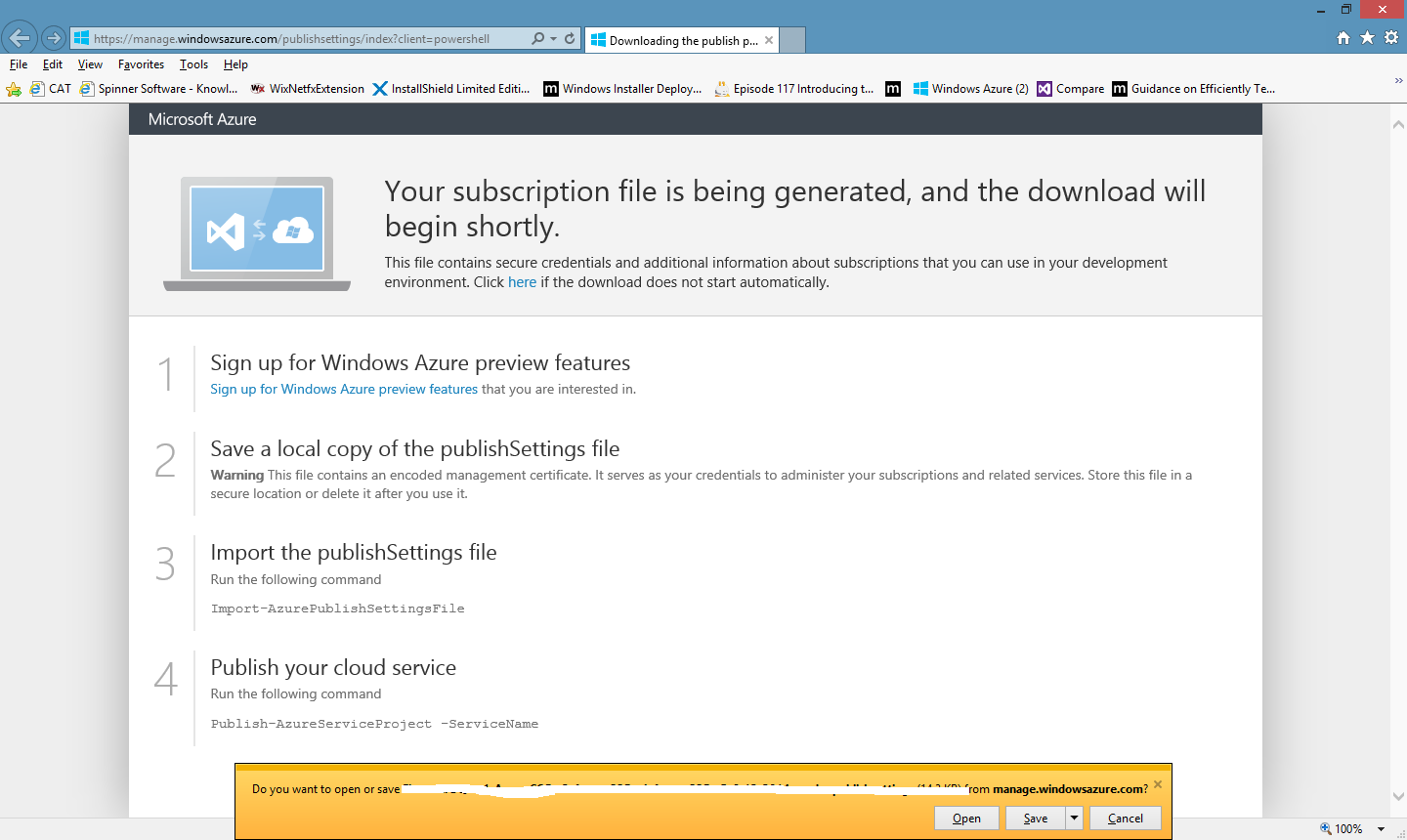
* Download the publishsettings files using “Windows Azure PowerShell”, use the command as below

PS C:\> Get-AzurePublishSettingsFile

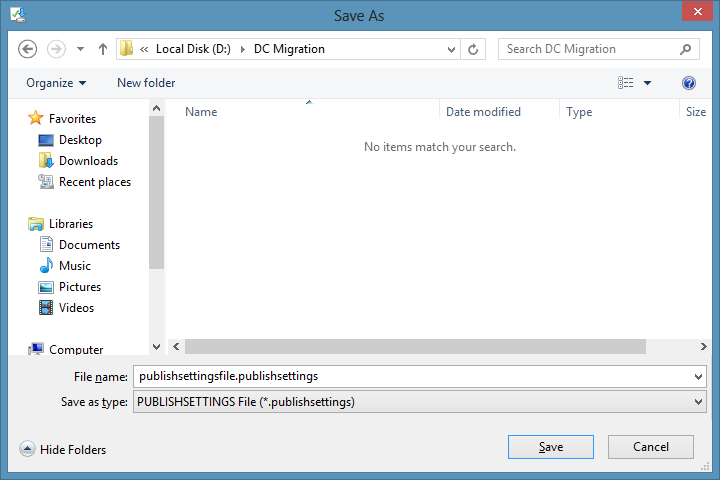




* Login to Microsoft Azure, using your azure subscription credentials. Provide user name and password to login.



* Provide file name with .publishsettings extension and save the file.



# Execution

There are two ways to execute the data center migration tool. Please find the details in [Executing the tool](#ExecutingTheTool) section.

## Configuration Parameter Details

There are three operations allowed on the resources for data center tool usage.

* [Export Resources](#_Export_Resources)
* [Import Resources](#_Import_Resources)
* [Migrate Resources](#_Migrate_Resources_)

The details about the parameters required for these operations are described below.

### Export Resources

Export the resources (affinity group, virtual network, storage account, virtual machine) from the provided subscription for specific data center.

|  |  |  |
| --- | --- | --- |
| Key | Description | Is Mandatory |
| SourceSubscriptionID | Source Subscription ID from the publishsettings file mentioned in SourcePublishSettingsFilePath. | √ |
| SourcePublishSettingsFilePath | Path of the source publishsettings file.  This file can be downloaded using steps mentioned in [Download Publishsettings File](#_Download_Publishsettings_File) section. | √ |
| SourceDCName | Data center Name from which you want to migrate the resources | √ |
| ExportMetadataFolderPath | Folder path to save exported metadata file.  This file will contain all the resources in the specified subscription for given data center.  Json file name will be in the format  [Source DC Name Here]-[Date Time of execution].json | √ |
| Operation | Operation to be performed.  Value should be   * Export | √ |
| QuietMode | True: export progress messages will not be printed on the console.  False: messages will be printed.  **Possible Values**   * True * False   **Default Value**   * False |  |

### Import Resources

Import the previously exported resource into specified destination subscription.

|  |  |  |
| --- | --- | --- |
| Key | Description | Is Mandatory |
| SourceSubscriptionID | Source Subscription ID from the publishsettings file mentioned in SourcePublishSettingsFilePath. | √ |
| SourcePublishSettingsFilePath | Path of the source publishsettings file.  This file can be downloaded using steps mentioned in [Download Publishsettings File](#_Download_Publishsettings_File) section. | √ |
| DestinationSubscriptionID | Destination Subscription ID from the publishsettings file mentioned in DestinationPublishSettingsFilePath. | √ |
| DestinationDCName | Data center Name to which you want to migrate the resources | √ |
| ImportMetadataFilePath | Path of the [exported](#ExportMetadataFolderPath) file. | √ |
| DestinationPublishSettingsFilePath | Path of the destination publishsettings file.  This file can be downloaded using steps mentioned in [Download Publishsettings File](#_Download_Publishsettings_File) section. | √ |
| ­DestinationPrefixName | Prefix to be appended to resource name in the destination subscription to maintain unique resource name. Details about naming conversion followed will be available in [Resource Naming Conversions](#ResourceNamingConversions) section.  **Recommendation:** less than 5 characters for prefix | √ |
| ResumeImport | In case of failure during import, set this to true to continue the import and provide the [importmetadatafilepath](#ImportMetadataFilePath) as {ImportMetadataFilePath}\_ImportStatus.json  If false, the import status will be updated in the new json file with name format {ImportMetadataFilePath}\_ImportStatus.json  **Possible Values**   * True * False   **Default Value**   * False |  |
| Operation | Operation to be performed.  Value should be   * Import | √ |
| RollBackOnFailure | Roll back all deployment if import failure occurs.  **Possible Values**   * True * False   **Default Value**   * False |  |
| QuietMode | True: Import progress messages will not be printed on the console.  False: messages will be printed.  **Possible Values**   * True * False   **Default Value**   * False |  |

### Migrate Resources (Export + Import)

Export the resources from the given source subscription for specified data center and import the same resources into specified destination subscription.

|  |  |  |
| --- | --- | --- |
| Key | Description | Is Mandatory |
| SourceSubscriptionID | Source Subscription ID from the publishsettings file mentioned in SourcePublishSettingsFilePath. | √ |
| SourcePublishSettingsFilePath | Path of the source publishsettings file.  This file can be downloaded using steps mentioned in [Download Publishsettings File](#_Download_Publishsettings_File) section. | √ |
| SourceDCName | Data center Name from which you want to migrate the resources | √ |
| ExportMetadataFolderPath | Folder path to save exported metadata file.  This file will contain all the resources in the specified subscription for given location.  Json file name will be in the format  [Source DC Name Here]-[Date Time of execution].json | √ |
| DestinationSubscriptionID | Destination Subscription ID from the publishsettings file mentioned in DestinationPublishSettingsFilePath. | √ |
| DestinationDCName | Data center Name to which you want to migrate the resources | √ |
| DestinationPublishSettingsFilePath | Path of the destination publishsettings file.  This file can be downloaded using steps mentioned in [Download Publishsettings File](#_Download_Publishsettings_File) section. | √ |
| DestinationPrefixName | Prefix to be appended to resource name in the destination subscription to maintain unique resource name. Details about naming conversion followed will be available in [Resource Naming Conversions](#ResourceNamingConversions) section.  **Recommendation:** less than 5 characters for prefix | √ |
| Operation | Operation to be performed.  Value should be   * Migrate | √ |
| RollBackOnFailure | Roll back all deployment if import failure occurs.  **Possible Values**   * True * False   **Default Value**   * False |  |
| QuietMode | True: Migrate progress messages will not be printed on the console.  False: messages will be printed.  **Possible Values**   * True * False   **Default Value**   * False |  |

## Executing the tool

There are two ways to give input to this tool.

* [Update the configuration file](#_2.2.1_Update_the)
* [Command line parameters](#_2.2.2_Command_line)

### Update the configuration file

Update ‘Azure.DataCenterMigration.App.exe.config’ file from the installation location (C:\Program Files\Azure Data Center Migration 1.0\Tools) of an application. Change the parameters in <appSettings> section.

|  |
| --- |
| <appSettings>  <!-- Required for: Export/Import/Migrate -->  <add key="SourceSubscriptionID" value="########-########-########-########"/>  <!-- Required for: Export/Migrate -->  <add key="SourceDCName" value="Southeast Asia"/>  <!-- Required for: Export/Migrate -->  <add key="ExportMetadataFolderPath" value="D:\DC migration\"/>  <!-- Required for: Export/Import/Migrate -->  <add key="SourcePublishSettingsFilePath" value="D:\DC migration\publishsettingsfile.publishsettings"/>    <!-- Required for: Import/Migrate -->  <add key="DestinationSubscriptionID" value="########-########-########-########"/>  <!-- Required for: Import/Migrate -->  <add key="DestinationDCName" value="Southeast Asia"/>  <!-- Required for: Import -->  <add key="ImportMetadataFilePath" value="D:\DC migration \Southeast Asia-07-03-2014-08-14.json"/>  <!-- Required for: Import/Migrate -->  <add key="DestinationPublishSettingsFilePath" value="D:\DC migration\publishsettingsfile.publishsettings"/>  <!-- Required for: Import/Migrate -->  <add key="DestinationPrefixName" value="dcmig"/>  <!-- Required for: Import -  False: Will make a copy of Import Metadata File and update import status in the same.  True : Will update import status in Import Metadata File -->  <add key="ResumeImport" value="false"/>  <!-- Required for: Import/Migrate -  True if roll back all deployment if failure occurs-->  <add key="RollBackOnFailure" value="False"/>  <!--Common Parameters-->  <add key="QuietMode" value="False"/>  <add key="Operation" value="Import"/>  </appSettings> |

After updating the config file, launch the execution by clicking on Azure.DataCenterMigration.App.exe from the installation location (C:\Program Files\Azure Data Center Migration 1.0\Tools).

### Command line parameters

To run the application using command line parameters, use the following steps.

* + Open the command prompt
  + Go to the installation location (C:\Program Files\Azure Data Center Migration 1.0\).
  + To pass the parameters to the “Azure.DataCenterMigration.App.exe” file, refer following sample commands. Check the details about the parameters in [Configuration Parameter Details](#ConfigurationParameterDetails) section.
  + Note: In the command line parameters please provide the directory path with \\ instead of \.

e.g.

Azure.DataCenterMigration.App.exe -Operation "Export" -SourceSubscriptionID "########-########-########-########" -SourceDCName "East Asia" -ExportMetadataFolderPath "D:\\DataCenterMigration" -PublishSettingsFilePath "D:\\PublishSettings.PublishSettings" -QuietMode "True"

|  |
| --- |
| **Example1 (Export)** : Azure.DataCenterMigration.App.exe -Operation "Export" -SourceSubscriptionID "########-########-########-########" -SourceDCName "East Asia" -ExportMetadataFolderPath "D:\\DataCenterMigration" -PublishSettingsFilePath "D:\\PublishSettings.PublishSettings" -QuietMode "True"  **Example2 (Import)**: Azure.DataCenterMigration.App.exe -Operation "Import" -SourceSubscriptionID "########-########-########-######## " –DestinationSubscriptionID "########-########-########-######## " -DestinationDCName "West US" –SourcePublishSettingsFilePath "D:\\PublishSettings.PublishSettings" -DestinationPublishSettingsFilePath "D:\\PublishSettings.PublishSettings" -ImportMetadataFilePath "D:\\DataCenterMigration\\mydata.json" -DestinationPrefixName "dc" - QuietMode "True" -RollBackOnFailure "True" -ResumeImport "True"  **Example3 (Migrate)** : Azure.DataCenterMigration.App.exe -Operation "Migrate" -SourceSubscriptionID "########-########-########-######## " -DestinationSubscriptionID "########-########-########-########" -SourceDCName "East Asia" -DestinationDCName "West US" -SourcePublishSettingsFilePath "D:\\PublishSettings.PublishSettings" -DestinationPublishSettingsFilePath "D:\\PublishSettings.PublishSettings" -ExportMetadataFolderPath "D:\\DataCenterMigration" -DestinationPrefixName "dc" - QuietMode "True" -RollBackOnFailure "True" |

## Logging Configurations

Data center migration tool supports two types of logging.

* [File System](#_File_System_Configuration)
* [Database](#_Database)

To change the settings, modify the below section of “Azure.DataCenterMigration.App.exe.config” file from the installation location (C:\Program Files\Azure Data Center Migration 1.0\Tools).

|  |
| --- |
| <connectionStrings>  <add name="DbConnection" connectionString="data source=[data source here];initial catalog=DataCenterDB;user id=[user id here];password=[password here];MultipleActiveResultSets=True;" providerName="System.Data.SqlClient"/>  </connectionStrings>  <log4net>  <root>  <level value="All"/>  <!--send all logs to appenders-->  <appender-ref ref="AdoNetAppender"/>  <appender-ref ref="LogFileAppender"/>  </root>  <appender name="AdoNetAppender" type="log4net.Appender.AdoNetAppender">  <bufferSize value="1"/>  <connectionType value="System.Data.SqlClient.SqlConnection,  System.Data, Version=1.0.3300.0, Culture=neutral, PublicKeyToken=b77a5c561934e089"/>  <connectionString value="data source=[data source here];initial catalog=DataCenterDB; user id=[user id here];password=[password here];" />  <commandText value="INSERT INTO DataCenterLogs ([Date],[Level],[Logger],[Message],[Exception]) VALUES (@log\_date, @log\_level,@logger, @message, @exception)"/>  <parameter>  <parameterName value="@log\_date"/>  <dbType value="DateTime"/>  <layout type="log4net.Layout.RawTimeStampLayout"/>  </parameter>  <parameter>  <parameterName value="@log\_level"/>  <dbType value="String"/>  <size value="50"/>  <layout type="log4net.Layout.PatternLayout">  <conversionPattern value="%level"/>  </layout>  </parameter>  <parameter>  <parameterName value="@logger"/>  <dbType value="String"/>  <size value="255"/>  <layout type="log4net.Layout.PatternLayout">  <conversionPattern value="%logger"/>  </layout>  </parameter>  <parameter>  <parameterName value="@message"/>  <dbType value="String"/>  <size value="4000"/>  <layout type="log4net.Layout.PatternLayout">  <conversionPattern value="%message"/>  </layout>  </parameter>  <parameter>  <parameterName value="@exception"/>  <dbType value="String"/>  <size value="2000"/>  <layout type="log4net.Layout.ExceptionLayout"/>  </parameter>  </appender>  <appender name="LogFileAppender" type="log4net.Appender.FileAppender">  <file type="log4net.Util.PatternString"  value="D:\DCMigrationDemo\Logs\DCMigrationLog -%property{id}.txt" />  <lockingModel type="log4net.Appender.FileAppender+MinimalLock" />  <appendToFile value="true" />  <layout type="log4net.Layout.PatternLayout">  <param name="ConversionPattern" value="%date &#9; %-5level &#9; %logger &#9; %property{ResourceType} &#9; %property{ResourceName} &#9; %message%newline"/>  </layout>  </appender>  </log4net> |

### File System Configuration

Log file will be created with name format “DCMigrationLog - [DateTimeOfExecution].txt”.

* Change Log folder path or file name: To change log folder path or file name, modify [this](#LogFilePath) value in config file. -%property{id} will be replaced by date time of the execution.
* Disable file system logging: To disable file system logging comment [this](#LogFileAppender) line in config file.

### Database

Log information will be added into the database (SQL Server).

* Change connection string: For successful logging into the database, change [this](#ConnectionString) connection string in config file. Also modify the [log4net](#log4NetConnectionString) connection string.
* Disable database logging: To disable database logging comment [this](#AdoNetAppender) line in config file.

# Troubleshooting

|  |  |
| --- | --- |
| Exception | Troubleshoot |
| Insufficient Space - Cloud Services | Increase the quota for “Cloud Services” in destination subscription. |
| Insufficient Space - Cores | Increase the quota for “Cores” in destination subscription. |
| Insufficient Space – Dns Servers | Increase the quota for “Dns Servers” in destination subscription. |
| Insufficient Space – Local Network | Increase the quota for “Local Networks“ in destination subscription. |
| Insufficient Space – Storage Account | Increase the quota for “Storage Account” in destination subscription. |
| Insufficient Space – Virtual Network | Increase the quota for “Virtual Network” in destination subscription. |
| Invalid Affinity Group Name | Check the affinity group name.  The name must start with a letter or a number and can contain only letters, numbers, and dashes. |
| Affinity Group Name already exists | Affinity Group with same name already exists in the destination subscription. Please change the name. |
| Invalid Destination Prefix Name | Destination prefix name must contain 1 to 5 characters. |
| Invalid Parameter Value {Parameter name} | Parameter value for specified parameter name is invalid. |
| Cloud Service Name already exists | Cloud Service with same name already exists in the destination subscription. Please change the name. |
| Source Data Disk does not exist | Check if source data disk exists. |
| Source OS Disk does not exist | Check if source OS disk exists. |
| Invalid Storage Account | Check the storage account name. The name can contain only lowercase letters and numbers. |
| Storage Account Name already exists | Storage Account with same name already exists in the destination subscription. Please change the name. |
| Invalid Service Name | Check the cloud service name.  The name can contain only letters, numbers, and hyphens. The first and last character in the field must be a letter or number. Trademarks, reserved words and offensive words are not allowed. |
| Virtual Machine already exists | Virtual machine with same name already exists in the cloud service at destination subscription. Please change the name of virtual machine. |
| Invalid Virtual Machine Name | Check the virtual machine name.  The name can contain only letters, numbers, and hyphens. The name must start with a letter and must end with a letter or a number. |
| Generated new resource name contains duplicate Affinity Group Name(s). | New affinity group name with prefix is generating duplicate names. Reducing the prefix name characters might solve this issue. |
| Generated new resource name contains duplicate Dns Name(s). | New Dns name with prefix is generating duplicate names. Reducing the prefix name characters might solve this issue. |
| Generated new resource name contains duplicate Local Network Name(s). | New local network name with prefix is generating duplicate names. Reducing the prefix name characters might solve this issue. |
| Generated new resource name contains duplicate Cloud Service Name(s). | New cloud service name with prefix is generating duplicate names. Reducing the prefix name characters might solve this issue. |
| Generated new resource name contains duplicate Storage Account Name(s). | New storage account name with prefix is generating duplicate names. Reducing the prefix name characters might solve this issue. |
| Generated new resource name contains duplicate Virtual Machine Name(s). | New virtual machine name with prefix is generating duplicate names. Reducing the prefix name characters might solve this issue. |
| Generated new resource name contains duplicate Virtual Network Name(s). | New virtual network name with prefix is generating duplicate names. Reducing the prefix name characters might solve this issue. |

# Post Migration Steps

After successful migration, please verify following steps manually.

* During migration process, source virtual machines will be shut down. Please start these virtual machines as per requirement. Note : Virtual machines in any state consumes computing unless its is Stopped (deallocated).
* Tool will migrate all Affinity Groups, Virtual Networks, Storage Accounts(blob related to virtual machines), Cloud Services and Virtual Machines from source subscription to destination subscription. Verify that all the resources are migrated successfully. Please check the resource name details in [Resource Naming Conversions](#ResourceNamingConversions) section.
* User can verify the resources imported successfully by looking into {ExportedMetadataFile}\_ImportedStatus.json file. IsImported flag of individual resource in metdata file indicates that whether the resource is imported in destination or not.
* For storage account in the source subscription, if “SecondaryReadEnabled” property is set, please set this property on the destination subscription manually.
* If the import functionality failure occurs due to any reason, user can resume the functionality by setting the ImportedMetdataFilePath to {ExportedMetadataFile}\_ImportedStatus.json. Make sure the RollBackOnFailure flag is set to false and ResumeImport flag is set to true.

# Limitations

* For storage account, Azure Management API does not support “SecondaryReadEnabled” property. So in migration this property will not be cosidered. If required, then set it mannually. Link to MS report
* All the services will get created at parallel level whereas all the virtual machines of same service will get created sequentially since creation of multiple virtual machines in single service at same time throws an exception as

Windows Azure is currently performing an operation on this hosted service that requires exclusive access.

Virtual machines of different services will be created at parallel level.

# Assumptions

* DC Migration tool will migrate only those resources whose status is completed. The in-creating status resources will may not get migrated completely. The resources which are created in/after export functionality will not get migrated in the ongoing run.
* If any new Azure VMSize published in future, user will need to add the RoleSize – RoleCore mapping in resource file named as ‘StringResources.resx’ of Azure.DataCenterMigration project.

## ­Resource Naming Conversions

The details about the resource naming conversions followed during the data center migration is described below.

|  |  |
| --- | --- |
| Resource Type | Migrated Resource Name |
| Affinity Group | [DestinationPrefixName](#DestinationPrefixName) + original affinity group name.  Get first 63 characters of the above string. |
| Virtual Network | [DestinationPrefixName](#DestinationPrefixName) + original virtual network name.  Get first 63 characters of the above string. |
| Local Network | [DestinationPrefixName](#DestinationPrefixName) + original local network name.  Get first 63 characters of the above string. |
| DNS Servers | [DestinationPrefixName](#DestinationPrefixName) + original DNS server name.  Get first 63 characters of the above string. |
| Storage Account | [DestinationPrefixName](#DestinationPrefixName) + original storage account name.  Get first 23 characters of the above string. |
| Cloud Service | [DestinationPrefixName](#DestinationPrefixName) + original cloud service name.  Get first 63 characters of the above string. |
| Virtual Machine | Same as original virtual machine name |