Naming conventions for Azure resources

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This article is a summary of the naming rules and restrictions for Azure resources and a baseline set of recommendations for naming conventions. You can use these recommendations as a starting point for your own conventions specific to your needs.

The choice of a name for any resource in Microsoft Azure is important because:

- It is difficult to change a name later.
- Names must meet the requirements of their specific resource type.

Consistent naming conventions make resources easier to locate. They can also indicate the role of a resource in a solution.

The key to success with naming conventions is establishing and following them across your applications and organizations.

Naming subscriptions

When naming Azure subscriptions, verbose names make understanding the context and purpose of each subscription clear. When working in an environment with many subscriptions, following a shared naming convention can improve clarity.

A recommended pattern for naming subscriptions is:

<Company> <Department (optional)> <Product Line (optional)> <Environment>

- Company would usually be the same for each subscription. However, some companies may have child companies within the organizational structure. These companies may be managed by a central IT group. In these cases, they could be differentiated by having both the parent company name (*Contoso*) and child company name (*Northwind*).
- Department is a name within the organization that contains a group of individuals. This item within the namespace is optional.
- Product line is a specific name for a product or function that is performed from within the department. This is typically optional for internal-facing services and applications. However, it is highly recommended to use for public-facing services that require easy separation and identification (such as for clear separation of billing records).
- Environment is the name that describes the deployment lifecycle of the applications or services, such as Dev, QA, or Prod.

Company	Department	Product Line or Service	Environment	Full Name	

Company	Department	Product Line or Service	Environment	Full Name
Contoso	SocialGaming	AwesomeService	Production	Contoso SocialGaming AwesomeService Production
Contoso	SocialGaming	AwesomeService	Dev	Contoso SocialGaming AwesomeService Dev
Contoso	IT	InternalApps	Production	Contoso IT InternalApps Production
Contoso	IT	InternalApps	Dev	Contoso IT InternalApps Dev

For more information on how to organize subscriptions for larger enterprises, see <u>Azure enterprise scaffold - prescriptive subscription governance</u>.

Use affixes to avoid ambiguity

When naming resources in Azure, it is recommended to use common prefixes or suffixes to identify the type and context of the resource. While all the information about type, metadata, context, is available programmatically, applying common affixes simplifies visual identification. When incorporating affixes into your naming convention, it is important to clearly specify whether the affix is at the beginning of the name (prefix) or at the end (suffix).

For instance, here are two possible names for a service hosting a calculation engine:

- SvcCalculationEngine (prefix)
- CalculationEngineSvc (suffix)

Affixes can refer to different aspects that describe the particular resources. The following table shows some examples typically used.

Aspect	Example	Notes
Environment	dev, prod, QA	Identifies the environment for the resource
Location	uw (US West), ue (US East)	Identifies the region into which the resource is deployed
Instance	1, 2,	For resources that have more than one named instance such as VMs or NICs.
Product or Service	service	Identifies the product, application, or service that the resource supports
Role	sql, web, messaging	Identifies the role of the associated resource

When developing a specific naming convention for your company or projects, it is important to choose a common set of affixes and their position (suffix or prefix).

Naming rules and restrictions

Each resource or service type in Azure enforces a set of naming restrictions and scope. Any naming convention or pattern must adhere to the required naming rules and scope. For example, while the name of a virtual machine maps to a DNS name (and is thus required to be unique across all of Azure), the name of a virtual network is scoped to the resource group in which it resides.

In general, avoid having any special characters (- or _) as the first or last character in any name. These characters will cause most validation rules to fail.

General

Entity	Scope	Length	Casing	Valid Characters	Suggested Pattern	Example
Resource Group	Subscription	1-90	Case insensitive	Alphanumeric, underscore, parentheses, hyphen, period (except at end), and Unicode characters that match the regex documented here.	<pre><service name="" short="">- <environment>- rg</environment></service></pre>	profx-prod- rg
Availability Set	Resource Group	1-80	Case insensitive	Alphanumeric, underscore, and hyphen	<pre><service- short-name="">- <context>-as</context></service-></pre>	profx-sql- as
Tag	Associated Entity	512 (name), 256 (value)	Case insensitive	Alphanumeric including Unicode characters; special characters except <, >, %, &, ?, /. See limitations here.	"key" : "value"	"department" : "Central IT"
Web App	Global	1-60	Case insensitive	Alphanumeric and hyphen	<app_name>- <source-slot- name></source-slot- </app_name>	contoso- staging
API Management	Global	1-50	Case insensitive	Alphanumeric and hyphen	<apim- service-name></apim- 	contoso

Compute

Entity	Scope	Length	Casing	Valid Characters	Suggested Pattern	Example
Virtual Machine	Resource Group	1-15 (Windows), 1- 64 (Linux)	Case insensitive	Alphanumeric and hyphen	<name>-<role>- vm<number></number></role></name>	profx-sql- vm1
Function App	Global	1-60	Case insensitive	Alphanumeric and hyphen	<name>-func</name>	calcprofit- func

① Note

Virtual machines in Azure have two distinct names: virtual machine name, and host name. When you create a VM in the portal, the same name is used for both the host name, and the virtual machine resource name. The restrictions above are for the host name. The actual resource name can have up to 64 characters.

Storage

Valid Entity Scope Length Casing Characters Suggested Pattern Example

Entity	Scope	Length	Casing	Valid Characters	Suggested Pattern	Example
Storage account name (data)	Global	3-24	Lowercase	Alphanumeric	<pre><globally name="" unique=""> <number> (use a function to calculate a unique guid for naming storage accounts)</number></globally></pre>	profxdata001
Storage account name (disks)	Global	3-24	Lowercase	Alphanumeric	<pre><vm hyphens="" name="" without="">st<number></number></vm></pre>	profxsql001st0
Container name	Storage account	3-63	Lowercase	Alphanumeric and hyphen	<context></context>	logs
Blob name	Container	1-1024	Case sensitive	Any URL characters	<variable based="" blob="" on="" usage=""></variable>	<variable based="" blob="" on="" usage=""></variable>
Queue name	Storage account	3-63	Lowercase	Alphanumeric and hyphen	<pre><service name="" short="">- <context>-<num></num></context></service></pre>	awesomeservice- messages-001
Table name	Storage account	3-63	Case insensitive	Alphanumeric	<pre><service name="" short=""> <context></context></service></pre>	awesomeservicelogs
File name	Storage account	3-63	Lowercase	Alphanumeric	<variable based="" blob="" on="" usage=""></variable>	<variable based="" blob="" on="" usage=""></variable>
Data Lake Store	Global	3-24	Lowercase	Alphanumeric	<name>dls</name>	telemetrydls
Managed Disk name	Resource Group	1-80	Case insensitive	Alphanumeric, hyphen and underscore but not on character 1	<disktype>disk<number></number></disktype>	0Sdisk1

Networking

Entity	Scope	Length	Casing	Valid Characters	Suggested Pattern	Example
Virtual Network (VNet)	Resource Group	2-64	Case insensitive	Alphanumeric, hyphen, underscore, and period	<pre><service name="" short="">=vnet</service></pre>	profx- vnet
Subnet	Parent VNet	2-80	Case insensitive	Alphanumeric, hyphen, underscore, and period	<descriptive context></descriptive 	web
Network Interface	Resource Group	1-80	Case insensitive	Alphanumeric, hyphen, underscore, and period	<vmname>-nic<num></num></vmname>	profx- sql1-vm1- nic1
Network Security Group	Resource Group	1-80	Case insensitive	Alphanumeric, hyphen, underscore, and period	<pre><service name="" short="">-<context>- nsg</context></service></pre>	profx- app-nsg

Entity	Scope	Length	Casing	Valid Characters	Suggested Pattern	Example
Network Security Group Rule	Resource Group	1-80	Case insensitive	Alphanumeric, hyphen, underscore, and period	<descriptive context></descriptive 	sql- allow
Public IP Address	Resource Group	1-80	Case insensitive	Alphanumeric, hyphen, underscore, and period	<vm or="" service<br="">name>—pip</vm>	profx- sql1-vm1- pip
Load Balancer	Resource Group	1-80	Case insensitive	Alphanumeric, hyphen, underscore, and period	<service or="" role="">-lb</service>	profx-lb
Load Balanced Rules Config	Load Balancer	1-80	Case insensitive	Alphanumeric, hyphen, underscore, and period	<descriptive context=""></descriptive>	http
Azure Application Gateway	Resource Group	1-80	Case insensitive	Alphanumeric, hyphen, underscore, and period	<service or="" role="">-agw</service>	profx- agw
Traffic Manager Profile	Resource Group	1-63	Case insensitive	Alphanumeric, hyphen, and period	<descriptive context=""></descriptive>	app1

Containers

Entity	Scope	Length	Casing	Valid Characters	Suggested Pattern	Example
Container Registry	Global	5-50	Case insensitive	Alphanumeric	<pre><service name="" short="">registry</service></pre>	app1registry

Service Bus

Entity	Scope	Length	Casing	Valid Characters	Suggested Pattern	Example
Service Bus Namespace	Global	6-50	Case insensitive	Alphanumeric, hyphen, must start with a letter; see here for details.	<pre><service name="" short="">- bus</service></pre>	app1– bus

Organize resources with tags

The Azure Resource Manager supports tagging entities with arbitrary text strings to identify context and streamline automation. For example, the tag "sqlVersion"="sql2014ee" could identify VMs running SQL Server 2014 Enterprise Edition. Tags should be used to augment and enhance context along side of the naming conventions chosen.

∏ Tip

One other advantage of tags is that tags span resource groups, allowing you to link and correlate entities across disparate deployments.

Each resource or resource group can have a maximum of **15** tags. The tag name is limited to 512 characters, and the tag value is limited to 256 characters.

For more information on resource tagging, see <u>Using tags to organize your Azure resources</u>.

Some of the common tagging use cases are:

- Billing. Grouping resources and associating them with billing or chargeback codes.
- **Service Context Identification**. Identify groups of resources across Resource Groups for common operations and grouping.
- Access Control and Security Context. Administrative role identification based on portfolio, system, service, app, instance, or other factors.



Tag early, tag often. Better to have a baseline tagging scheme in place and adjust over time rather than having to retrofit after the fact.

An example of some common tagging approaches:

Tag Name	Key	Example	Comment
Bill To / Internal Chargeback ID	billTo	IT-Chargeback-1234	An internal I/O or billing code
Operator or Directly Responsible Individual (DRI)	managedBy	joe@contoso.com	Alias or email address
Project Name	projectName	myproject	Name of the project or product line
Project Version	projectVersion	3.4	Version of the project or product line
Environment	environment	<production, qa="" staging,=""></production,>	Environmental identifier
Tier	tier	Front End, Back End, Data	Tier or role/context identification
Data Profile	dataProfile	Public, Confidential, Restricted, Internal	Sensitivity of data stored in the resource

Tips and tricks

Some types of resources may require additional care on naming and conventions.

Virtual machines

Especially in larger topologies, carefully naming virtual machines streamlines identifying the role and purpose of each machine, and enabling more predictable scripting.

Storage accounts and storage entities

There are two primary use cases for storage accounts: backing disks for VMs, and storing data in blobs, queues and tables. Storage accounts used for VM disks should follow the naming convention of associating them with the parent VM name (and with the potential need for multiple storage accounts for high-end VM SKUs, also apply a number suffix).



Storage accounts—whether for data or disks—should follow a naming convention that allows for multiple storage accounts to be leveraged (that is, always using a numeric suffix).

It's possible to configure a custom domain name for accessing blob data in your Azure Storage account. The default endpoint for the Blob service is https://<name>.blob.core.windows.net.

But if you map a custom domain (such as www.contoso.com) to the blob endpoint for your storage account, you can also access blob data in your storage account by using that domain. For example, with a custom domain name, https://mystorage.blob.core.windows.net/mycontainer/myblob could be accessed as https://www.contoso.com/mycontainer/myblob.

For more information about configuring this feature, see <u>Configure a custom domain name for your Blob storage endpoint</u>.

For more information on naming blobs, containers and tables, see the following list:

- Naming and Referencing Containers, Blobs, and Metadata
- Naming Queues and Metadata
- Naming Tables

A blob name can contain any combination of characters, but reserved URL characters must be properly escaped. Avoid blob names that end with a period (.), a forward slash (/), or a sequence or combination of the two. By convention, the forward slash is the *virtual* directory separator. Do not use a backward slash (\) in a blob name. The client APIs may allow it, but then fail to hash properly, and the signatures will not match.

It is not possible to modify the name of a storage account or container after it has been created. If you want to use a new name, you must delete it and create a new one.



We recommend that you establish a naming convention for all storage accounts and types before embarking on the development of a new service or application.