

Host your domain on Azure DNS

1. Introduction

<https://learn.microsoft.com/en-us/training/modules/host-domain-azure-dns/1-introduction>

Introduction

Completed

Azure DNS lets you host your Domain Name System (DNS) records for your domains on Azure infrastructure. With Azure DNS, you can use the same credentials, APIs, tools, and billing as your other Azure services.

Let's say that your company recently bought the custom domain name `wideworldimporters.com` from a third-party domain-name registrar. The domain name is for a new website that your organization plans to launch. You need a hosting service for DNS domains. This hosting service would resolve the `wideworldimporters.com` domain to your web server's IP address.

You're already using Azure to build your website, so you decide to use Azure DNS to manage your domain.

This module shows you how to configure Azure DNS to host your domain. You also see how to add an alias and other DNS records to resolve your domain name to a website.

Learning objectives

In this module, you will:

- Configure Azure DNS to host your domain.

Prerequisites

- Knowledge of networking concepts like name resolution and IP addresses.

2. What is Azure DNS?

What is Azure DNS?

Completed

3. Configure Azure DNS to host your domain

<https://learn.microsoft.com/en-us/training/modules/host-domain-azure-dns/3-configure-azure-dns-host-domain>

Configure Azure DNS to host your domain

Completed

The new company website is in final testing. You're working on the plan to deploy the wideworldimports.com domain by using Azure DNS. You need to understand what steps are involved.

In this unit, you learn how to:

- Create and configure a DNS zone for your domain by using Azure DNS.
- Understand how to link your domain to an Azure DNS zone.
- Create and configure a private DNS zone.

Configure a public DNS zone

You use a DNS zone to host the DNS records for a domain, such as wideworldimports.com.

Step 1: Create a DNS zone in Azure

You used a third-party domain-name registrar to register the wideworldimports.com domain. The domain doesn't point to your organization's website yet.

To host the domain name with Azure DNS, you first need to create a DNS zone for that domain. A DNS zone holds all the DNS entries for your domain.

When creating a DNS zone, you need to supply the following details:

- **Subscription:** The subscription to be used.

- **Resource group:** The name of the resource group to hold your domains. If one doesn't exist, create one to allow for better control and management.
- **Name:** Your domain name, which in this case is wideworldimports.com.
- **Resource group location:** The location defaults to the location of the resource group.

Home > DNS zones >

Create DNS zone ...

Basics Tags Review + create

A DNS zone is used to host the DNS records for a particular domain. For example, the domain 'contoso.com' may contain a number of DNS records such as 'mail.contoso.com' (for a mail server) and 'www.contoso.com' (for a web site). Azure DNS allows you to host your DNS zone and manage your DNS records, and provides name servers that will respond to DNS queries from end users with the DNS records that you create. [Learn more.](#)

Project details

Subscription *

Resource group * [Create new](#)

Instance details

☐ This zone is a child of an existing zone already hosted in Azure DNS ⓘ

Name *

Resource group location ⓘ

Step 2: Get your Azure DNS name servers

After you create a DNS zone for the domain, you need to get the name server details from the name servers (NS) record. You use these details to update your domain registrar's information and point to the Azure DNS zone.

Home > worldwideimports.com DNS zone

Search < + Record set + Child zone Delete zone Move Refresh

Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Properties
- Locks

Monitoring

- Alerts
- Metrics

Automation

- Tasks (preview)
- Export template

Help

- Resource health
- Support + Troubleshooting

Essentials

Resource group (move) : myresourcegroup

Subscription (move) :

Subscription ID :

Tags (edit) : Add tags

You can search for record sets that have been loaded on this page. If you don't see what you're looking for, you can try scrolling to allow more record sets to load.

Search record sets

Name	Type	TTL	Value	Alias resource type	Alias target
@	NS	172800	ns1-35.azure-dns.com. ns2-35.azure-dns.net. ns3-35.azure-dns.org. ns4-35.azure-dns.info.		...
@	SOA	3600	Email: azure-dns-hostmast... Host: ns1-35.azure-dns.co... Refresh: 3600 Retry: 300 Expire: 2419200 Minimum TTL: 300 Serial number: 1		...

Step 3: Update the domain registrar setting

As the domain owner, you need to sign in to the domain-management application provided by your domain registrar. In the management application, edit the NS record and change the NS details to match your Azure DNS name server details.

Changing the NS details is called *domain delegation*. When you delegate the domain, you must use all four name servers provided by Azure DNS.

Step 4: Verify delegation of domain name services

The next step is to verify that the delegated domain now points to the Azure DNS zone you created for the domain. This process can take as few as 10 minutes, but might take longer.

To verify the success of the domain delegation, query the start of authority (SOA) record. The SOA record is automatically created when the Azure DNS zone is set up. You can verify the SOA record using a tool like nslookup.

The SOA record represents your domain and becomes the reference point when other DNS servers are searching for your domain on the internet.

To verify the delegation, use nslookup like this:

```
nslookup -type=SOA wideworldimports.com
```

Step 5: Configure your custom DNS settings

The domain name is wideworldimports.com. When it's used in a browser, the domain resolves to your website. But what if you want to add in web servers or load balancers? These resources need to have their own custom settings in the DNS zone, either as an A record or a CNAME.

A record

Each A record requires the following details:

- **Name:** The name of the custom domain, for example *webserver1*.
- **Type:** In this instance, it's A.
- **TTL:** Represents the "time-to-live" as a whole unit, where 1 is one second. This value indicates how long the A record lives in a DNS cache before it expires.
- **IP address:** The IP address of the server to which this A record should resolve.

CNAME record

The CNAME is the canonical name, or the alias for an A record. Use CNAME when you have different domain names that all access the same website. For example, you might need a CNAME in the *wideworldimports* zone if you want both *www.wideworldimports.com* and *wideworldimports.com* to resolve to the same IP address.

You'd create the CNAME record in the *wideworldimports* zone with the following information:

- NAME: *www*
- TTL: 600 seconds
- Record type: CNAME

If you exposed a web function, you'd create a CNAME record that resolves to the Azure function.

Configure a private DNS zone

Another type of DNS zone that you can configure and host in Azure is a private DNS zone. Private DNS zones aren't visible on the Internet, and don't require that you use a domain registrar. You can use private DNS zones to assign DNS names to virtual machines (VMs) in your Azure virtual networks.

Step 1: Create a private DNS zone

In the Azure portal, search for *private DNS zones*. To create the private zone, you need enter a resource group and the name of the zone. For example, the name might be something like *private.wideworldimports.com*.

Create Private DNS zone ...

Basics Tags Review create

A Private DNS zone provides name resolution services within virtual networks. A Private DNS zone is accessible only from the virtual networks that it is linked to and can't be accessed over internet. For example you can create a Private DNS zone named contoso.com and then create DNS records like www.contoso.com in this zone. You can then link the zone to a one or more virtual networks. [Learn more.](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *	
Resource group *	
	Create new

Instance details

Name * ⓘ	
Resource group location ⓘ	

i You can link virtual networks to this Private DNS zone after zone has been created.

Step 2: Identify virtual networks

Let's assume that your organization already created your VMs and virtual networks in a production environment. Identify the virtual networks associated with VMs that need name-resolution support. To link the virtual networks to the private zone, you need the virtual network names.

Step 3: Link your virtual network to a private DNS zone

To link the private DNS zone to a virtual network, you create a virtual network link. In the Azure portal, go to the private zone, and select **Virtual network links**.

Home > NoMarketplace-20230920225936 | Overview > private.wideworldimports.com

private.wideworldimports.com | Virtual network links

Private DNS zone

Search << + Add Refresh

Search virtual network links

Link Name	Link status	Virtual network	Auto-Registration
No results.			

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Virtual network links

Properties

Locks

Monitoring

Alerts

Metrics

Automation

Tasks (preview)

Export template

Help

Support + Troubleshooting

Select **Add** to pick the virtual network you want to link to the private zone.

Home > NoMarketplace-20230920225936 | Overview > private.wideworldimports.com

Add virtual network link

private.wideworldimports.com

Link name *

Virtual network details

i Only virtual networks with Resource Manager deployment model are supported for linking with Private DNS zones. Virtual networks with Classic deployment model are not supported.

☐ I know the resource ID of virtual network ⓘ

Subscription * ⓘ

Virtual network *

Configuration

☐ Enable auto registration ⓘ

You add a virtual network link record for each virtual network that needs private name-resolution support.

In the next unit, you learn how to create a public DNS zone.

4. Exercise - Create a DNS zone and an A record by using Azure DNS

<https://learn.microsoft.com/en-us/training/modules/host-domain-azure-dns/4-exercise-create-dns-zone-a-record>

Exercise - Create a DNS zone and an A record by using Azure DNS

Completed

In the previous unit, we described setting up and configuring the wideworldimports.com domain to point to your Azure hosting on Azure DNS.

In this unit, you'll:

- Set up an Azure DNS and create a public DNS zone.
- Create an A record.
- Verify that the A record resolves to an IP address.

Note

This exercise is optional. If you want to complete this exercise, you'll need to create an Azure subscription before you begin. If you don't have an Azure account or you don't want to create one at this time, you can read through the instructions so you understand the information that's being presented.

Note

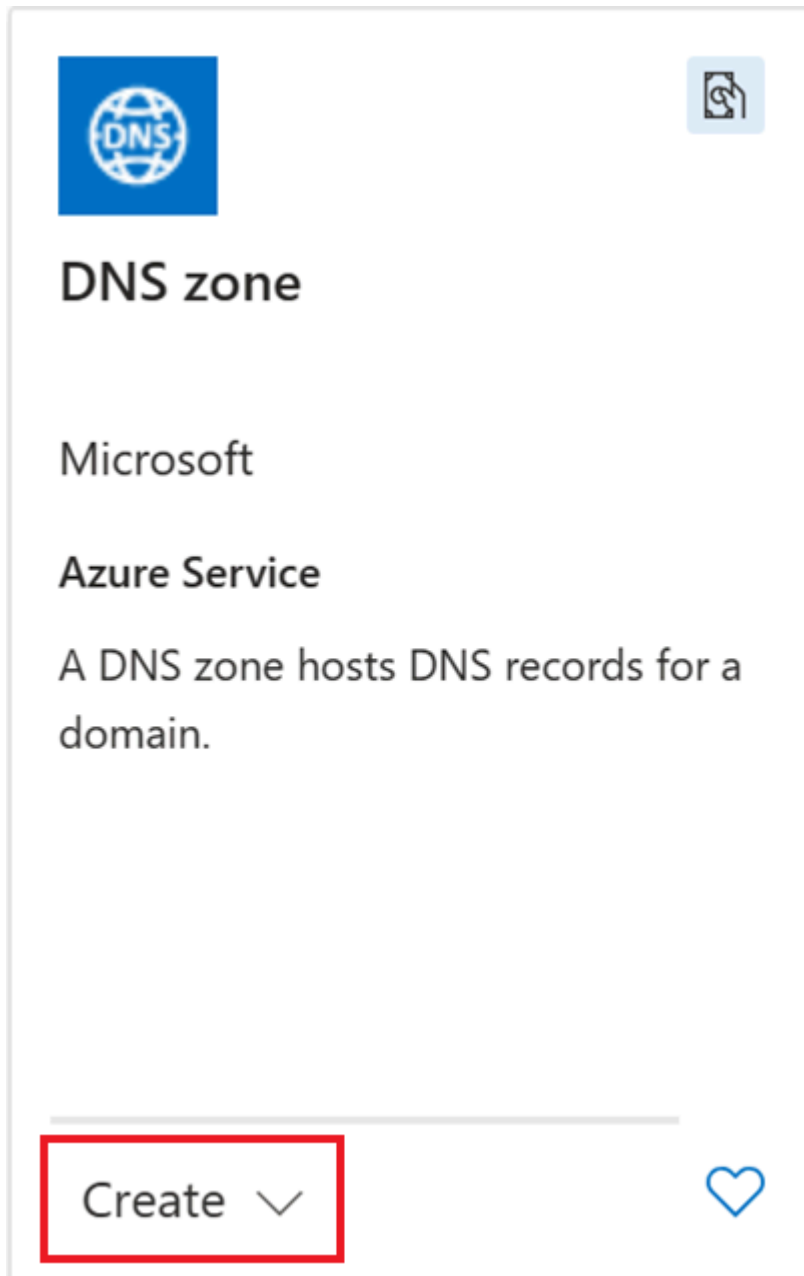
You need to use a resource group to complete the steps in this exercise. You can use a resource group that you already created, or you can create a new resource group specifically for this exercise. If you choose to create a new resource group, that will make it easier to clean up any resources that you create as you complete the exercise. If you don't have an existing resource group or you want to create a new one specifically for this exercise, you can follow the steps in [Use the Azure portal and Azure Resource Manager to manage resource groups](#) to create a resource group by using the Azure portal, or you can follow the steps in [Manage Azure resource groups by using Azure CLI](#) to create a resource group by using the the Azure CLI.

Create a DNS zone in Azure DNS

Before you can host the wideworldimports.com domain on your servers, you need to create a DNS zone. The DNS zone holds all the configuration records associated with your domain.

To create your DNS zone:

1. Sign in to the [Azure portal](#) with the account you used to activate the sandbox.
2. On the Azure **home** page, under **Azure services**, select **Create a resource**. The **Create a resource** pane appears.
3. In the *Search services and marketplace* search box, search for and select **DNS zone** by Microsoft. The **DNS zone** pane appears.
4. Select **Create > DNS zone**.



The **Create DNS zone** pane appears.

5. On the **Basics** tab, enter the following values for each setting.

Setting	Value
Project details	
Subscription	Choose your subscription
Resource group	From the dropdown list, select the resource group you want to use for this exercise.
Instance details	

Setting	Value
Name	The name needs to be unique in the sandbox. Use <code>wideworldimportsXXXX.com</code> , and replace the "Xs" with letters or numbers.

Create DNS zone

[Basics](#)
[Tags](#)
[Review + create](#)

A DNS zone is used to host the DNS records for a particular domain. For example, the domain 'contoso.com' may contain a number of DNS records such as 'mail.contoso.com' (for a mail server) and 'www.contoso.com' (for a web site). Azure DNS allows you to host your DNS zone and manage your DNS records, and provides name servers that will respond to DNS queries from end users with the DNS records that you create. [Learn more.](#)

Project details

Subscription *

Concierge Subscription

Resource group *

learn-a7287f0c-710a-45c2-b032-eb3430eab5c0

[Create new](#)

Instance details

☐ This zone is a child of an existing zone already hosted in Azure DNS ⓘ

Name *

worldwideimportsXXXX.com

Resource group location ⓘ

West US

6. Select **Review + create**.

7. After validation passes, select **Create**. It takes a few minutes to create the DNS zone.

8. When deployment is complete, select **Go to resource**. The **Overview** pane for your **DNS zone** appears.

9. Select **Record Sets** from the top menu bar.

By default, the NS and SOA record sets are automatically created whenever a DNS zone is created, and automatically deleted whenever a DNS zone is deleted. The NS record set defines the Azure DNS namespaces and contains the four Azure DNS records. You use all four records when you update the registrar.

The SOA record represents your domain, and is used when other DNS servers are searching for your domain.

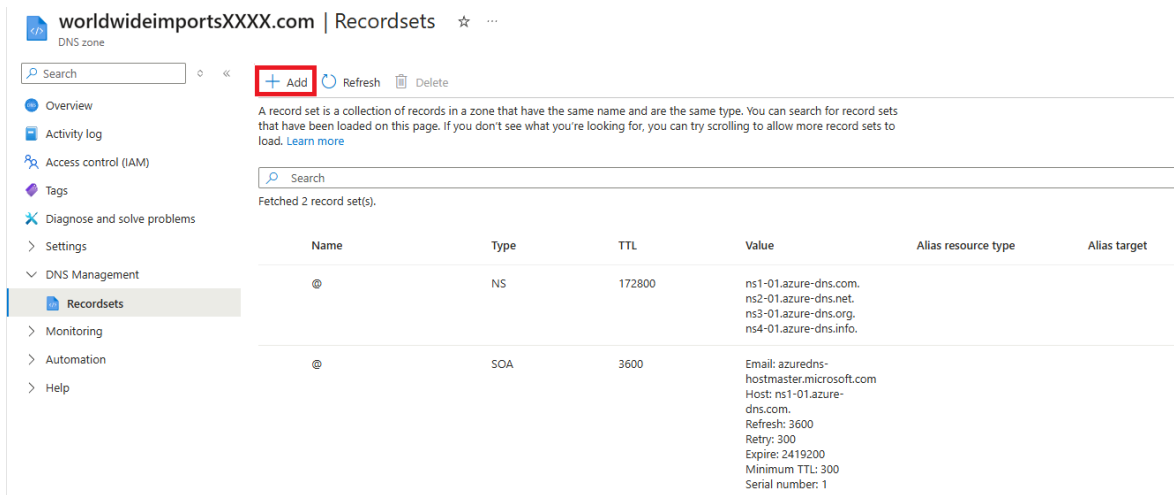
10. Make a note of the NS record values. You need them in the next section.

Create a DNS record

Now that the DNS zone exists, you need to create the necessary records to support the domain.

The primary record set to create is the A record. The A record set is used to point traffic from a logical domain name to the hosting server's IP address. An A record set can have multiple records. In a record set, the domain name remains constant, while the IP addresses differ.

1. If you're not already on the **Record Sets** screen, then open the **DNS zone** pane for *wideworldimportsXXXX.com*. In the top menu bar, select **Record sets**.
2. On the **Record Sets** pane, select **+ Add** in the top menu bar.
3. Select **Add** at the top of the Record sets page.



The **Add record set** pane appears.

4. Enter the following values for each setting.

Setting	Value	Description
Name	www	The host name that you want to resolve to an IP address.
Type	A	The A record is the most commonly used. If you're using IPv6, select the AAAA type.
Alias record set	No	This setting can only be applied to A, AAAA, and CNAME record types.
TTL	1	The time to live, which specifies the period of time each DNS server caches the resolution before being purged.
TTL unit	Hours	This value can be seconds, minutes, hours, days, or weeks. Here, you're selecting hours.
IP Address	10.10.10.10	The IP address the record name resolves to. In a real-world scenario, you'd enter the public IP address for your web server.

5. Select **Add** to add the record to your zone.

Name	Type	TTL	Value	Alias resource type	Alias target
@	NS	172800	ns1-01.azure-dns.com, ns2-01.azure-dns.net, ns3-01.azure-dns.org, ns4-01.azure-dns.info.		
@	SOA	3600	Email: azuredns-hostmaster.microsoft.com Host: ns1-01.azure-dns.com. Refresh: 3600 Retry: 300 Expire: 2419200 Minimum TTL: 300 Serial number: 1		
www	A	3600	10.10.10.10		

It's possible to have more than one IP address set up for your web server. In that case, you add all the associated IP addresses as records in the A record set. After the record set is created, you can update it with more IP addresses.

Verify your global Azure DNS

In a real-world scenario, after you create the public DNS zone, you update the NS records of the domain-name registrar to delegate the domain to Azure.

Even though we don't have a registered domain, it's still possible to verify that the DNS zone works as expected by using the `nslookup` tool.

Use nslookup to verify the configuration

Here's how to use `nslookup` to verify the DNS zone configuration.

1. Use Cloud Shell to run the following command. Replace the DNS zone name with the zone you created, and replace `<name server address>` with one of the NS values you copied after you created the DNS zone.

```
nslookup www.wideworldimportsXXXX.com <name server address>
```

The command should look something like the following example:

```
nslookup www.wideworldimportsXXXX.com ns1-04.azure-dns.com
```

2. You should see that your host name `www.wideworldimportsXXXX.com` resolves to 10.10.10.10.

```
Bash
phil@Azure:~$ nslookup www.wideworldimports.com ns1-04.azure-dns.com
Server:      ns1-04.azure-dns.com
Address:

Name:   www.wideworldimports.com
Address: 10.10.10.10

phil@Azure:~$
```

Congratulations! You successfully set up a DNS zone and created an A record.

5. Dynamically resolve resource name by using alias record

<https://learn.microsoft.com/en-us/training/modules/host-domain-azure-dns/5-resolve-name-alias-record>

Dynamically resolve resource name by using alias record

Completed

In the previous exercise, you successfully delegated the domain from the domain registrar to your Azure DNS and configured an A record to link the domain to your web server.

The next phase of the deployment is to improve resiliency by using a load balancer. Load balancers distribute inbound data requests and traffic across one or more servers. They reduce the load on any one server and improve performance. This technology is well established. You can use it throughout your on-premises network.

You know that the A record and CNAME record don't support direct connection to Azure resources like your load balancers. You're tasked with finding out how to link the apex domain with a load balancer.

What is an apex domain?

The apex domain is your domain's highest level. In our case, that's wideworldimports.com. The apex domain is also sometimes referred to as the *zone apex* or *root apex*. The @ symbol often represents the apex domain in your DNS zone records.

If you check the DNS zone for `wideworldimports.com`, you see that there are two apex domain records: NS and SOA. The NS and SOA records are automatically created when you created the DNS zone.

CNAME records that you might need for an Azure Traffic Manager profile or Azure Content Delivery Network endpoints aren't supported at the zone apex level. However, other *alias records* are supported at the zone apex level.

What are alias records?

Azure alias records enable a zone apex domain to reference other Azure resources from the DNS zone. You don't need to create complex redirection policies. You can also use an Azure alias to route all traffic through Traffic Manager.

The Azure alias record can point to the following Azure resources:

- A Traffic Manager profile
- Azure Content Delivery Network endpoints
- A public IP resource
- A front-door profile

Alias records provide lifecycle tracking of target resources, ensuring that changes to any target resource are automatically applied to the DNS zone. Alias records also provide support for load-balanced applications in the zone apex.

The alias record set supports the following DNS zone record types:

- **A**: The IPv4 domain name-mapping record.
- **AAAA**: The IPv6 domain name-mapping record.
- **CNAME**: The alias for your domain, which links to the A record.

Uses for alias records

The following are some of the advantages of using alias records:

- **Prevents dangling DNS records**: A dangling DNS record occurs when the DNS zone records aren't up to date with changes to IP addresses. Alias records prevent dangling references by tightly coupling the lifecycle of a DNS record with an Azure resource.
- **Updates DNS record set automatically when IP addresses change**: When the underlying IP address of a resource, service, or application is changed, the alias record ensures that any associated DNS records are automatically refreshed.
- **Hosts load-balanced applications at the zone apex**: Alias records allow for zone apex resource routing to Traffic Manager.
- **Points zone apex to Azure Content Delivery Network endpoints**: With alias records, you can now directly reference your Azure Content Delivery Network instance.

An alias record allows you to link the zone apex (wideworldimports.com) to a load balancer. It creates a link to the Azure resource rather than a direct IP-based connection. So, if the IP address of your load balancer changes, the zone apex record continues to work.

6. Exercise - Create alias records for Azure DNS

<https://learn.microsoft.com/en-us/training/modules/host-domain-azure-dns/6-exercise-create-alias-records>

Exercise - Create alias records for Azure DNS

Completed

Your new website's deployment was a huge success. Usage volumes are higher than anticipated. The single web server on which the website runs is showing signs of strain. Your organization wants to increase the number of servers and distribute the load using a load balancer.

You now know you can use an Azure alias record to provide a dynamic, automatically refreshing link between the zone apex and the load balancer.

In this unit, you'll:

- Set up a virtual network with two VMs and a load balancer.
- Learn how to configure an Azure alias at the zone apex to direct to the load balancer.
- Verify that the domain name resolves to one or either of the VMs on your virtual network.

Note

This exercise is optional. If you want to complete this exercise, you'll need to create an Azure subscription before you begin. If you don't have an Azure account or you don't want to create one at this time, you can read through the instructions so you understand the information that's being presented.

Set up a virtual network, load balancer, and VMs in Azure

When you manually create a virtual network, load balancer, and two VMs, it takes some time. To reduce this time, you can use a Bash setup script that's available on GitHub. Follow these instructions to create a test environment for your alias record.

1. In Azure Cloud Shell, run the following setup script:

```
git clone https://github.com/MicrosoftDocs/mslearn-host-domain-azure-dns.git
```


2. To run the setup script, run the following commands:

```
cd mslearn-host-domain-azure-dns
chmod +x setup.sh
./setup.sh
```

The setup script takes a few minutes to run. The script:

- Creates a network security group.
- Creates two network interface controllers (NICs) and two VMs.
- Creates a virtual network and assigns the VMs.
- Creates a public IP address and updates the configuration of the VMs.
- Creates a load balancer that references the VMs, including rules for the load balancer.
- Links the NICs to the load balancer.

After the script completes, it shows you the public IP address for the load balancer. Copy the IP address to use it later.

Create an alias record in your zone apex

Now that you created a test environment, you're ready to set up the Azure alias record in your zone apex.

1. In the [Azure portal](#), select **Resource groups**. The **Resource groups** pane appears.
2. Select your resource group. The **Resource group** pane appears.
3. In the list of resources, select the DNS zone you created in the previous exercise, `wideworldimportsXXXX.com`. The **wideworldimportsXXXX.com DNS zone** pane appears.
4. In the menu bar, select **+ Record set**. The **Add record set** pane appears.
5. Enter the following values for each setting to create an alias record.

Setting	Value
Name	Leave the name blank. Blank indicates the DNS zone for <code>wideworldimportsXXXX.com</code> .
Type	A. Even though we're creating an alias, the base record type must still be either A, AAAA, or CNAME.
Alias record set	Yes
Alias type	Azure resource
Azure resource	From the list of resources, select myPublicIP . It can take up to 15 minutes for the deployments to propagate. If this resource isn't listed, wait several minutes, refresh the portal, and try again.

Add record set

×

worldwideimportsXXXX.com

Name

.worldwideimportsXXXX.com

Type

A – Address record

Alias record set ⓘ

Yes

Alias type

Azure resource

Choose a subscription *

Concierge Subscription

Azure resource *

myPublicIP

TTL * TTL unit

1

Hours

AddCancel

6. Select **OK** to add the record to your zone.

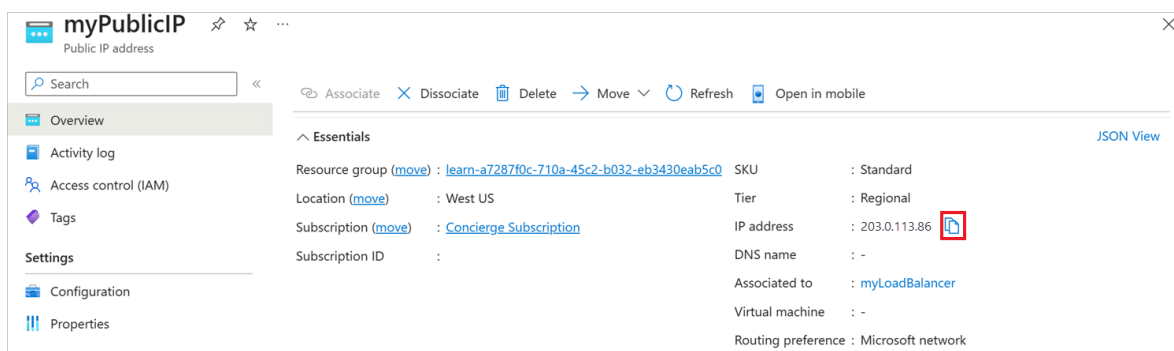
When the new alias record is created, it should look something like this:

NAME	TYPE	TTL	VALUE	ALIAS RESOURCE TYPE	ALIAS TARGET
@	A	3600	-	Public IP Address	myPublicIP

Verify that the alias resolves to the load balancer

Now, you need to verify that the alias record is set up correctly. In a real-world scenario, you'd have an actual domain, and would complete the domain delegation to Azure DNS. You'd use the registered domain name for this exercise. Because this unit assumes there's no registered domain, you use the public IP address.

1. In the Azure portal, go to the resource group, select **myPublicIP**, then select the **Copy** icon next to the IP address.



2. In a web browser, paste the Public IP address as the URL.
3. You see a basic web page that shows the name of the virtual machine (VM) to which the load balancer sent the request.

7. Summary

<https://learn.microsoft.com/en-us/training/modules/host-domain-azure-dns/7-summary>

Summary

Completed

Your company recently bought the custom domain name `wideworldimporters.com` from a third-party domain-name registrar. The domain name is for a new website your organization plans to launch. You need a hosting service for DNS domains. This hosting service would resolve the `wideworldimporters.com` domain to your Azure-based web server's IP address.

Your company wanted to manage all their infrastructure and related domain name information in one place. You saw how easy it was to manage Domain Name System (DNS) information by using an Azure DNS zone. First, you created an Azure DNS zone, and then you updated the NS records at your domain registrar to point at it.

You learned the uses of the different record sets, A, AAAA, CNAME, NS, and SOA. You also learned how you can use Azure aliases to override the static A/AAAA/CNAME record to provide a dynamic reference to your resources. Using an Azure DNS zone improved your company's administration of resources, because your staff only needed one place to manage DNS-related tasks.

The Azure DNS zone allows better control and integration with your Azure resources. It's possible to achieve some of the more basic record set functions by using the domain registrar's management console. However, linking to any of your Azure resources becomes difficult or impossible without a high degree of complex redirection.

By using an Azure DNS zone to host your domain, your organization benefits by having all the resources managed through a single, common interface. This solution provides better integration with existing Azure resources, improved security, and monitoring tools.

Important

In the optional exercises for this module, you created resources by using your own Azure subscription. Clean up these resources so that you won't continue to be charged for them.

Learn more

- [Quickstart: Create an Azure private DNS zone by using the Azure portal](#)
- [Overview of DNS zones and records](#)