# Enable connectivity via public endpoint

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**Contents**

- Issue
- Investigation/Analysis
- Mitigation
- Root Cause Classification

## Issue

Customer is not able to connect via public endpoint.

## Investigation/Analysis

Asking for [Azure SQL Connectivity Checker](#) test is a good starting point.

Lack of connectivity is usually caused by a client-side networking issue (like DNS issue or a port being blocked) that customer will need to pursue with their local network administrator.

Some validations you may do together are:

- The host name contains **.public.** and that port used in the connection string is **3342**, format is <mi_name>.public.<dns_zone>.database.windows.net,3342

- You have Public Endpoint enabled, see [https://docs.microsoft.com/azure/azure-sql/managed-instance/public-endpoint-configure#enabling-public-endpoint-for-a-managed-instance-in-the-azure-portal](https://docs.microsoft.com/azure/azure-sql/managed-instance/public-endpoint-configure#enabling-public-endpoint-for-a-managed-instance-in-the-azure-portal) ⧉

- You have allowed public endpoint traffic on the network security group, see [https://docs.microsoft.com/azure/azure-sql/managed-instance/public-endpoint-configure#allow-public-endpoint-traffic-on-the-network-security-group](https://docs.microsoft.com/azure/azure-sql/managed-instance/public-endpoint-configure#allow-public-endpoint-traffic-on-the-network-security-group) ⧉

- Network traffic to this endpoint and port is allowed from the source and any networking appliances you may have (firewalls, etc.).

- Routing is properly configured, and asymmetric routing is avoided.
  A route with the 0.0.0.0/0 address prefix instructs Azure how to route traffic destined for an IP address that is not within the address prefix of any other route in a subnet's route table. When a subnet is created, Azure creates a default route to the 0.0.0.0/0 address prefix, with the **Internet** next hop type. Check if this route was overridden. See the details about impact of changes on this default route at [https://docs.microsoft.com/azure/virtual-network/virtual-networks-udr-overview#default-route](https://docs.microsoft.com/azure/virtual-network/virtual-networks-udr-overview#default-route) ⧉

Routes can be seen in ASC:

Microsoft.Sql/managedInstances

| Properties | Availability | Connectivity | Maintenance | Networking | Provisioning | Read Scale Out | Security |
|---|---|---|---|---|---|---|---|
| Geo DR | SQL Agent | Data Virtualization | Network Diagnostics | Metrics | Troubleshooter | Resource Change Histo |

| General | DNS Servers | Effective Routes | Test tcp connections from node agent | Network Resource Provider (NRP) |
|---|---|---|---|---|

Check MonEffectiveRoutes telemetry        Management Traffic Routing        Changes in Effective Routes

Alternatively, you may run the following Kusto query:

```
MonEffectiveRoutes
| where subnet_resource_id == "X"
| where TIMESTAMP >= datetime(2020-07-30)
| summarize count(), min(originalEventTimestamp), max(originalEventTimestamp)
by name, source, status, address_prefixes, type, ip_addresses
```

And verify if customer has a 0.0.0.0/0 pointing to something other than internet, the connectivity will fail and get above error. Ref doc:- https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-udr-overview#default-route ☒

| name | source | status | address_prefixes | type | ip_addresses | count_ | min_originalEventTimestamp ▲ | max_originalEventTimestamp ▲ |
|---|---|---|---|---|---|---|---|---|
| Microsoft.Sql-managedInstances_UseOnly_mi-207-68-128-18-nexthop-inter... | User | Active | ,207.68.128.0/18 | Internet | , | 45 | 2020-07-30 00:34:19.8495595 | 2020-07-31 22:51:40.5018186 |
| Microsoft.Sql-managedInstances_UseOnly_mi-208-68-136-21-nexthop-inter... | User | Active | ,208.68.136.0/21 | Internet | , | 45 | 2020-07-30 00:34:19.8517925 | 2020-07-31 22:51:40.5044769 |
| Microsoft.Sql-managedInstances_UseOnly_mi-208-76-44-22-nexthop-internet | User | Active | ,208.76.44.0/22 | Internet | , | 45 | 2020-07-30 00:34:19.8539458 | 2020-07-31 22:51:40.5071592 |
| Microsoft.Sql-managedInstances_UseOnly_mi-208-84-21-nexthop-internet | User | Active | ,208.84.0.0/21 | Internet | , | 45 | 2020-07-30 00:34:19.8559581 | 2020-07-31 22:51:40.5099773 |
| Microsoft.Sql-managedInstances_UseOnly_mi-209-240-192-19-nexthop-inte... | User | Active | ,209.240.192.0/19 | Internet | , | 45 | 2020-07-30 00:34:19.8581526 | 2020-07-31 22:51:40.5120987 |
| Microsoft.Sql-managedInstances_UseOnly_mi-213-199-128-18-nexthop-inte... | User | Active | ,213.199.128.0/18 | Internet | , | 45 | 2020-07-30 00:34:19.8602902 | 2020-07-31 22:51:40.5142192 |
| Microsoft.Sql-managedInstances_UseOnly_mi-216-32-180-22-nexthop-inter... | User | Active | ,216.32.180.0/22 | Internet | , | 45 | 2020-07-30 00:34:19.8623471 | 2020-07-31 22:51:40.5164154 |
| Microsoft.Sql-managedInstances_UseOnly_mi-216-220-208-20-nexthop-inte... | User | Active | ,216.220.208.0/20 | Internet | , | 45 | 2020-07-30 00:34:19.8647195 | 2020-07-31 22:51:40.5187282 |
| Microsoft.Sql-managedInstances_UseOnly_mi-23-96-13-nexthop-internet | User | Active | ,23.96.0.0/13 | Internet | , | 45 | 2020-07-30 00:34:19.8669560 | 2020-07-31 22:51:40.5210130 |
| Microsoft.Sql-managedInstances_UseOnly_mi-42-159-16-nexthop-internet | User | Active | ,42.159.0.0/16 | Internet | , | 45 | 2020-07-30 00:34:19.8691715 | 2020-07-31 22:51:40.5232457 |
| Microsoft.Sql-managedInstances_UseOnly_mi-51-13-17-nexthop-internet | User | Active | ,51.13.0.0/17 | Internet | , | 45 | 2020-07-30 00:34:19.8712975 | 2020-07-31 22:51:40.5254216 |
| Microsoft.Sql-managedInstances_UseOnly_mi-51-107-16-nexthop-internet | User | Active | ,51.107.0.0/16 | Internet | , | 45 | 2020-07-30 00:34:19.8732861 | 2020-07-31 22:51:40.5274433 |
| Microsoft.Sql-managedInstances_UseOnly_mi-51-116-16-nexthop-internet | User | Active | ,51.116.0.0/16 | Internet | , | 45 | 2020-07-30 00:34:19.8754294 | 2020-07-31 22:51:40.5294785 |
| Microsoft.Sql-managedInstances_UseOnly_mi-51-120-16-nexthop-internet | User | Active | ,51.120.0.0/16 | Internet | , | 45 | 2020-07-30 00:34:19.8778445 | 2020-07-31 22:51:40.5316346 |
| Microsoft.Sql-managedInstances_UseOnly_mi-51-120-128-17-nexthop-inter... | User | Active | ,51.120.128.0/17 | Internet | , | 45 | 2020-07-30 00:34:19.8802434 | 2020-07-31 22:51:40.5337233 |
| Microsoft.Sql-managedInstances_UseOnly_mi-51-124-16-nexthop-internet | User | Active | ,51.124.0.0/16 | Internet | , | 45 | 2020-07-30 00:34:19.8825454 | 2020-07-31 22:51:40.5363146 |
| Microsoft.Sql-managedInstances_UseOnly_mi-102-37-18-nexthop-internet | User | Active | ,102.37.0.0/18 | Internet | , | 45 | 2020-07-30 00:34:19.8846491 | 2020-07-31 22:51:40.5384353 |
| Microsoft.Sql-managedInstances_UseOnly_mi-102-133-16-nexthop-internet | User | Active | ,102.133.0.0/16 | Internet | , | 45 | 2020-07-30 00:34:19.8867926 | 2020-07-31 22:51:40.5406229 |
| Microsoft.Sql-managedInstances_UseOnly_mi-199-30-16-20-nexthop-internet | User | Active | ,199.30.16.0/20 | Internet | , | 45 | 2020-07-30 00:34:19.8890885 | 2020-07-31 22:51:40.5431371 |
| Microsoft.Sql-managedInstances_UseOnly_mi-204-79-180-24-nexthop-inter... | User | Active | ,204.79.180.0/24 | Internet | , | 45 | 2020-07-30 00:34:19.8914928 | 2020-07-31 22:51:40.5453474 |
| defaultroute | User | Active | ,0.0.0.0/0 | VirtualAppliance | ,10.0.0.4 | 3 | 2020-07-30 00:34:19.8939642 | 2020-07-30 02:38:52.4215706 |

## Mitigation

If default route was overridden, customer may consider modifying the existing 0.0.0.0/0 address next hop to Internet in Managed Instance route table in Portal. Alternative is to make sure that traffic is allowed on the Virtual Appliance.

OLD Route: Name: defaultroute AddressPrefix:0.0.0.0/0 Next Hop Type: VirtualAppliance Next Hop Ip Address:10.0.0.4

NEW Route : Name: defaultroute AddressPrefix:0.0.0.0/0 Next Hop Type: Internet Next Hop Ip Address: N/A

After changing next hop to internet, customer should be able to connect to MI using Public Endpoint.

## Root Cause Classification

Root Cause: Azure SQL DB MI\Availability/Connectivity\User Issue/Error\Login Failures\Network issue

## How good have you found this content?