IP Hardcoded on NIC Linux_RDP SSH

Last updated by | Heath Rensink | Sep 28, 2022 at 9:02 AM PDT

Tags

cw.TSG cw.RDP-SSH

Contents

Symptoms

1. There's no connectivity to the virtual machine on its VIP or DIP, verified with VM Port Scanner.
2. On the **Console Serial** Log of the Linux VM you see there is a different Primary DIP IP address than the one listed in Get-Sub

Gateway State	
VIP	52.168.137.3
DIP	10.120.208.44
PA	10.89.108.79
VNET Name	Ashburn Azure DMZ Zone

```
2017/04/12 14:02:48 ERROR:    return builder.parseString(string)
2017/04/12 14:02:48 ERROR:  File "/usr/lib/python2.7/xml/dom/expatbuilder.py", line 223, in parseString
2017/04/12 14:02:48 ERROR:    parser.Parse(string, True)
2017/04/12 14:02:48 ERROR:TypeError: must be string or read-only buffer, not None
2017/04/12 14:02:48 ERROR:
2017/04/12 14:02:48 ERROR:Exception: must be string or read-only buffer, not None
2017/04/12 14:02:48 Restart agent in 15 seconds
2017/04/12 14:03:02 Azure Linux Agent Version: WALinuxAgent-2.0.17
2017/04/12 14:03:02 Linux Distribution Detected      : Ubuntu
2017/04/12 14:03:02 Module /lib/modules/3.19.0-65-generic/kernel/drivers/ata/ata_piix.ko driver for ATAPI CD-ROM does not exist.
2017/04/12 14:03:02 VMM Init script not found.  Provisioning for Azure
2017/04/12 14:03:02 IPv4 address: 10.120.208.38
2017/04/12 14:03:02 MAC  address: 00:0D:3A:19:CF:1A
2017/04/12 14:03:02 Probing for Azure environment.
2017/04/12 14:03:02 DoDhcpWork: Setting socket.timeout=10, entering recv
2017/04/12 14:03:02 Set default gateway: 10.120.208.1
2017/04/12 14:03:02 Discovered Azure endpoint: 168.63.129.16
2017/04/12 14:03:03 Azure Linux Agent Version: WALinuxAgent-2.0.17
2017/04/12 14:03:03 Linux Distribution Detected      : Ubuntu
2017/04/12 14:03:03 Module /lib/modules/3.19.0-65-generic/kernel/drivers/ata/ata_piix.ko driver for ATAPI CD-ROM does not exist.
2017/04/12 14:03:03 VMM Init script not found.  Provisioning for Azure
2017/04/12 14:03:03 IPv4 address: 10.120.208.38
2017/04/12 14:03:03 MAC  address: 00:0D:3A:19:CF:1A
2017/04/12 14:03:03 Probing for Azure environment.
2017/04/12 14:03:03 DoDhcpWork: Setting socket.timeout=10, entering recv
2017/04/12 14:03:03 Set default gateway: 10.120.208.1
2017/04/12 14:03:03 Discovered Azure endpoint: 168.63.129.16
2017/04/12 14:03:12 ERROR:Socket IOError timed out, args:('timed out',)
2017/04/12 14:03:12 ERROR:Retry=0
2017/04/12 14:03:12 ERROR:HTTP Req: GET /?comp=versions
```

3. The Network Card configuration file has a primary static IP address configured that is different from the one in the portal. Once you queried for the Inspect IAAS disk from ASC or ACIS, you'll see something like the following:

For Red Hat / CentOS / Oracle

1. File **/etc/sysconfig/network-scripts/ifcfg-eth0**

   Static IP address

   ```
   DEVICE=eth0
   BOOTPROTO=static
   BROADCAST=XXX.XXX.XXX.255
   IPADDR=XXX.XXX.XXX.XXX
   NETMASK=255.255.255.0
   NETWORK=XXX.XXX.XXX.0
   ONBOOT=yes
   ```

   DHCP client configuration

   ```
   DEVICE=eth0
   ONBOOT=yes
   BOOTPROTO=dhcp
   ```

For SUSE

1. File **/etc/sysconfig/network/ifcfg-eth-id-XX:XX:XX:XX:XX**

Static IP address

```
DEVICE=eth0
BOOTPROTO=static
BROADCAST=XXX.XXX.XXX.255
IPADDR=XXX.XXX.XXX.XXX
NETMASK=255.255.255.0
NETWORK=XXX.XXX.XXX.0
ONBOOT=yes
```

DHCP client configuration

```
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=dhcp
```

For Ubuntu

1. File **/etc/network/interfaces**

Static IP address

```
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet static
        address 208.88.34.106
        netmask 255.255.255.248
        broadcast 208.88.34.111
        network 208.88.34.104
        gateway 208.88.34.110
```

DHCP client configuration

```
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet dhcp
```

For Ubuntu 18.04 and higher

1. File **/etc/netplan/50-cloud-init.yaml**

Static IP Address

```
network:
 version: 2
 renderer: networkd
 ethernets:
     eth0:
         addresses:
         - 10.10.10.2/24
     nameservers:
         addresses: [10.10.10.1, 1.1.1.1]
```

DHCP client configuration

```
network:
    ethernets:
        eth0:
            dhcp4: true
            dhcp4-overrides:
                route-metric: 100
            dhcp6: false
            match:
                driver: hv_netvsc
                macaddress: 00:0d:3a:8c:46:c5
            set-name: eth0
version: 2
```

Root Cause Analysis

There's a mismatch between the primary IP that is set on the primary network interface between the one setup in the portal for and locally hardcoded on the network configuration file on the Guest OS. All the NIC settings (IP, DNS, WINS, etc) should be set from the Azure Portal view. The only scenario when you could have an IP hardcoded on the Guest OS is when you are trying to setup multiple IPs on that NIC otherwise, the primary interface on the Guest OS should be dynamic.

Multiple IP addresses per NIC

The only valid scenario for hardcoding the IP address in the OS configuration is when having Multiple IP addresses in the same NIC. That needs to be validated before performing the following steps.

If that is the case, **before starting**, document the static IP addresses, and after the VM access is restored assist the customer to revert the configuration with the steps detailed in this article

References

- How to Assign a Private Static IP to an Azure VM
- How To Set Static IP On Azure VM
- How To Setup a Linux Machine to DHCP

Tracking close code for this volume

Root Cause	Product	Support Topic	Cause Tracking code	Bug
1	*Azure Virtual Machine Linux*	**For existing VMs:** *Routing Azure Virtual Machine V3\Cannot Connect to my VM\My configuration change impacted connectivity*	*Root Cause - Windows Azure\Virtual Machine\Guest OS - Linux\Isolated\Misconfigured NIC (OS level)*	
	Azure Virtual Machine Linux	**For machines migrated with ASR:** *Routing Azure Virtual Machine V3\Cannot create a VM\I need guidance preparing an image*	*Root Cause - Windows Azure\Virtual Machine\Guest OS - Linux\Isolated\Misconfigured NIC (OS level)*	

To know how to flag a bug on a case please refer to How to do Proper Case Coding

Refresher / Training Template

- For the purpose of training or following along with this TSG, you can use the following link to deploy a VM with this scenario built-in. You will need to enable JIT for the VM. This lab is not to be shared with customers.

  Deploy to Azure

Customer Enablement

N/A

Mitigation

Online mitigation

ONLINE Approaches

Please be aware that the Serial Console Feature option will be today possible in:

1. Single instances (VM)
2. Azure Resource Management VMs (ARM)
3. Public cloud

Whenever you are in a middle of a troubleshooting and you find the step **<<<<<<INSERT MITIGATION>>>>>>**, proceed to replace that steps with the mitigation section that you need referred below

Using *Serial Console Feature*

▼ Click here to expand or collapse this section

Applies only for ARM VMs

1. In the portal on the VM blade you will have an extra option called *Serial Console* click there
2. To interrupt the boot process and enter in *single user mode*, please refer to Use Serial Console to access GRUB and Single User Mode
3. **<<<<<INSERT MITIGATION>>>>>**

Using *Custom Script Extension* or *RunCommands Feature*

▶ Click here to expand or collapse this section

1. Change into the directory where the Network Card configuration file resides, make a backup copy of the file and edit it. For this, please refer to vi Cheat Sheet

   - **For Red Hat / CentOS / Oracle**

     ```
     cd /etc/sysconfig/network-scripts/
     cp ifcfg-eth0 ifcfg-eth0_orig
     vi ifcfg-eth0
     ```

     Edit the file to match this:

     ```
     DEVICE=eth0
     ONBOOT=yes
     BOOTPROTO=dhcp
     ```

   - **For SUSE**

     ```
     cd /etc/sysconfig/network/
     cp ifcfg-eth-id-XX:XX:XX:XX:XX ifcfg-eth-id-XX:XX:XX:XX:XX_orig
     vi ifcfg-eth-id-XX:XX:XX:XX:XX
     ```

     Edit the file to match this:

     ```
     DEVICE=eth0
     ONBOOT=yes
     BOOTPROTO=dhcp
     ```

   - **For Debian / Ubuntu**

     ```
     cd /etc/network/
     cp interfaces interfaces_orig
     vi interfaces
     ```

     Edit the file to match this:

```
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet dhcp
```

- **For Ubuntu 18.04 or higher**

  NOTE: This file is generated from information provided by the datasource more details. Changes to it will **not** persist across an instance reboot. If the customer did not disable cloud-init's network configuration capabilities, by writing a file /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following:

  ```
  network: {config: disabled}
  ```

  you can reboot the system and it will revert back to the dhcp configuration for standar market place images.

  You can also revert the configuration as follows if cloud-init capabilities are not valid in customer environment (Example: Specialized image):

  ```
  cd /etc/netplan/
  cp 50-cloud-init.yaml 50-cloud-init.yaml_orig
  vi 50-cloud-init.yaml
  ```

  Edit the file to match this:

  ```
  network:
      ethernets:
           eth0:
              dhcp4: true
  ```

Offline mitigation

OFFLINE Troubleshooting

▼ Click here to expand or collapse this section

- This section applies for RDFE machines and CRP machines where *Serial Access Console* was not enabled.
- In case where the VM is a CRP machine and the feature *Serial Access Console* was not enabled then by the end of your troubleshooting offer the customer to proactively enable this on his VMs. For more information and different ways to enable this out, please refer to Serial Console on the *How to enable this feature* section.

1. Before doing anything, please validate if this is an encrypted VM. On ASC check on the Resource Explorer on the VMCard for the value *OS Disk Encrypted*

OS Disk Lease Id	0db9a55c-0317-40fa-a032-61f3550f3775
OS Disk Lease Acquired	True
OS Disk Billing Validated	True
OS Disk Encrypted	False
Billing Code	Windows_IaaS
Billing is Created from Marketplace Image	N/A
Billing Tag GUID	00000000-0000-0000-0000-000000000000

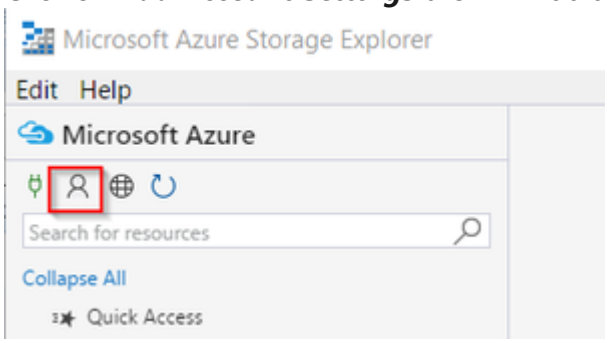
2. If the OS Disk is encrypted, then first proceed to Unlock an encrypted disk

3. Now proceed to do a copy of the OS disk, this will help in case of a rollback for recovery or RCA in a later stage

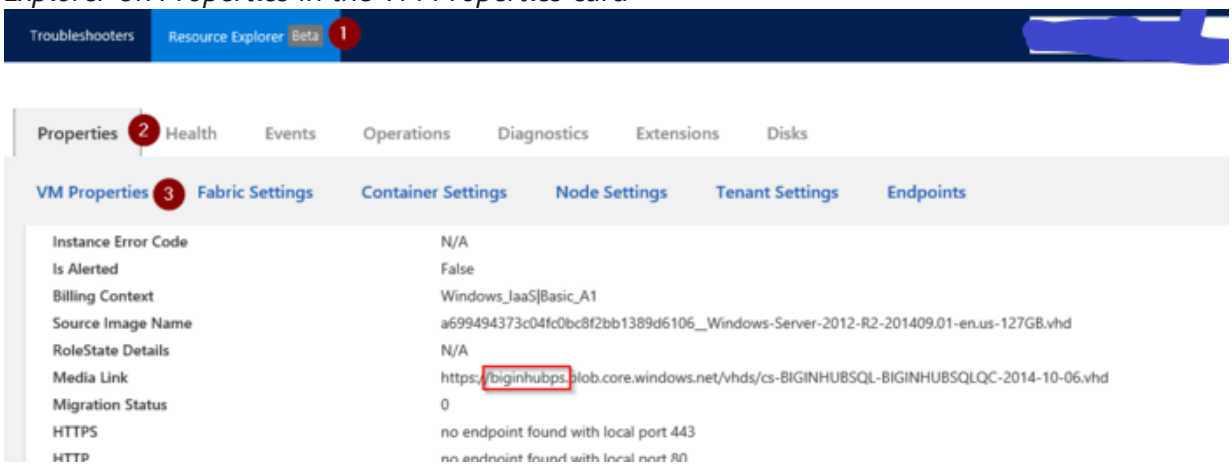
4. Power the machine down and once it is stopped de-allocated to do the copy.

5. Create a snapshot

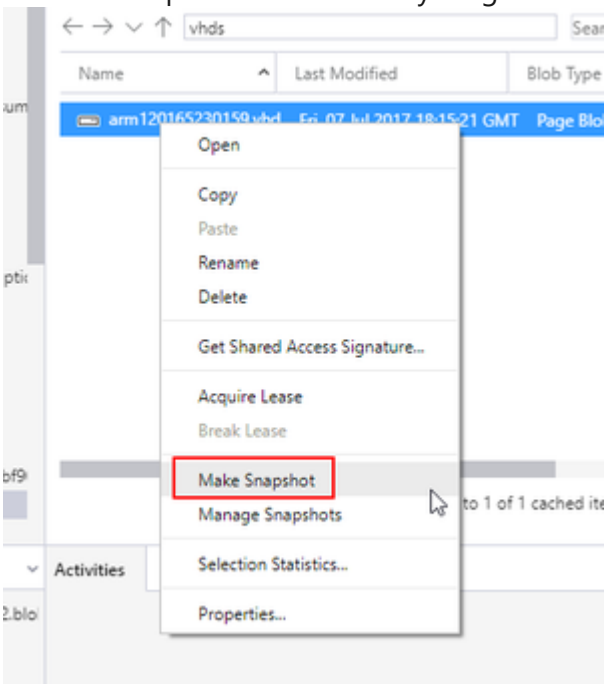
    1. If the **disk is unmanaged**, this could be done by using Microsoft Azure Storage Explorer or Azure Powershell
        1. Using Microsoft Azure Storage Explorer
            1. Once the customer download the tool, proceed to add the Azure account details so you can access the storage accounts
            2. Click on ***Add Account Settings*** then ***Add an account...***



            3. Go to the storage account where the OS disk is, you can see this on ASC under *Resource Explorer* on *Properties* in the *VM Properties* card



4. Create a snapshot of this disk by a right click over the disk and select *Make Snapshot*



2. Using Azure Powershell
    1. You can follow How to Clone a disk using Powershell

2. If the **disk is managed**, use Azure portal to take a snapshot
    1. Sign in to the Azure portal.
    2. Starting in the upper-left, click New and search for snapshot.
    3. In the Snapshot blade, click Create.
    4. Enter a Name for the snapshot.
    5. Select an existing Resource group or type the name for a new one.
    6. Select an Azure datacenter Location.
    7. For Source disk, select the Managed Disk to snapshot.
    8. Select the Account type to use to store the snapshot. We recommend Standard_LRS unless you need it stored on a high performing disk.
    9. Click Create.

6. Now prepare your environment to work with your disk:

    1. For CRP (ARM) VMs which **are encrypted**, refer to Unlock an encrypted disk
    2. For CRP (ARM) VMs which **are not encrypted** and RDFE VMs, go ahead and delete your VM *keeping the disks*
        1. For CRP (ARM) **not encrypted** VMs refer to Recreate an ARM Virtual Machine
        2. For RDFE VMs, refer to Recreate an RDFE Virtual Machine

7. From now on lets refer to the following naming convention

    - **A** = Original VM (Inaccessible VM)
    - **B** = New VM (New Recovery VM) which needs to be the same version as the impacted VM or at least the same distribution

8. Stop VM **A** via Azure Portal

    1. For Resource Manager VM, we recommend to save the current VM information before deleting

- Azure CLI v1:

  ```
  azure vm show ResourceGroupName LinuxVmName > ORIGINAL_VM.txt
  ```

- Azure CLI v2 - Cloud Shell:

  ```
  az vm show -g ResourceGroupName -n LinuxVMName > ORIGINAL_VM.txt
  ```

- Azure PowerShell:

  ```
  Get-AzureRmVM -ResourceGroupName $rgName -Name $vmName
  ```

9. Delete VM **A** BUT select ***keep the attached disks***

   NOTE: The option to keep the attached disks is only available for classic deployments, for Resource Manager deleting a VM will always keep its OSDisk by default.

10. Once the lease (it could take 1-3mins) is cleared, attach the Data Disk from **A** to VM **B** via the Azure Portal, Virtual Machines, Select **B**, Attach Disk

11. On VM **B** eventually the disk will attach and you can then mount it.

12. Get root access

    ```
    sudo su
    ```

13. Locate the drive name to mount, on VM **B** look in relevant log file note each Linux is slightly different.

    - **For Ubuntu/debian**:

      ```
      grep SCSI /var/log/kern.log
      ```

    - **For Centos/Suse/Oracle/Redhat**:

      ```
      grep SCSI /var/log/messages
      ```

14. Mount the attached disk onto mountpoint **/rescue**

    ```
    df -h
    mkdir /rescue
    ```

    - **For Red Hat 7.2+**

      ```
      mount -o nouuid /dev/sdc2 /rescue
      ```

    - **For CentOS 7.2+**

      ```
      mount -o nouuid /dev/sdc1 /rescue
      ```

    - **For Debian 8.2+, Ubuntu 16.04+, SUSE 12 SP4+**

      ```
      mount /dev/sdc1 /rescue
      ```

15. Change into the directory where the Network Card configuration file resides, make a backup copy of the file and edit it. For this, please refer to vi Cheat Sheet

    - **For Red Hat / CentOS / Oracle**

      ```
      cd /rescue/etc/sysconfig/network-scripts/
      cp ifcfg-eth0 ifcfg-eth0_orig
      vi ifcfg-eth0
      ```

      Edit the file to match this:

```
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=dhcp
```

- **For SUSE**

```
cd /rescue/etc/sysconfig/network/
cp ifcfg-eth-id-XX:XX:XX:XX:XX ifcfg-eth-id-XX:XX:XX:XX:XX_orig
vi ifcfg-eth-id-XX:XX:XX:XX:XX
```

Edit the file to match this:

```
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=dhcp
```

- **For Debian / Ubuntu**

```
cd /rescue/etc/network/
cp interfaces interfaces_orig
vi interfaces
```

Edit the file to match this:

```
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet dhcp
```

- **For Ubuntu 18.04 or higher**

NOTE: This file is generated from information provided by the datasource. Changes to it will **not** persist across an instance reboot. If the customer did not disable cloud-init's network configuration capabilities, by writing a file /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following:

```
network: {config: disabled}
```

you can reboot the system and it will revert back to the dhcp configuration for standar market place images.

If not you can revert the configuration as follows or incase of standard market place images remove the file /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg after taking backup:

```
cd /rescue/etc/netplan/
cp 50-cloud-init.yaml 50-cloud-init.yaml_orig
vi 50-cloud-init.yaml
```

Edit the file to match this:

```
network:
    ethernets:
         eth0:
            dhcp4: true
```

16. Now that you have made the required changes to the config file, you can unmount the disk from the OS.

```
cd /
umount /rescue
```

17. Detach the disk from VM **B** via the Azure portal
18. Recreate the original VM **A** from the repaired VHD
19. Educate the customer to always keep DHCP setting on the OS side, static IP address can be configured through the Azure Portal

After work - Cleanup

If you are uncertain that we may need this snapshot by the end of this case for RCA purposes, then just leave it.

1. If the issue is already fix and no further RCA analysis is needed, then proceed to remove the OS Disk backup we created at the beginning of the case
    1. If the **disk is managed** using the portal so the snapshot section and select the snapshot you created previously as a backup.
    2. If the **disk is unmanaged** then
        1. If this is an CRP Machine - ARM, then no further action is required
        2. If this is an Classic - RDFE machine, then
            1. Check the storage account where the OS disk of this machine is hosted using Microsoft Azure Storage Explorer right click over the disk and select *Managed Snapshots*
            2. Proceed to delete the snapshot of the broken machine

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