

# Troubleshoot AnyConnect DNS Queries to mus.cisco.com

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## Introduction

This document describes the behavior of the Anyconnect VPN Core module when it queries the fully qualified domain name (FQDN) mus.cisco.com in specific scenarios. This query occurs when the AnyConnect client attempts to determine if the endpoint has internet access and there is no VPN in use.

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## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- AnyConnect module installation.
- AnyConnect Diagnostic and Reporting Tool (DART) Bundle creation.
- Wireshark sniffer captures.

### Components Used

The information in this document is based on these software and hardware versions:

- Anyconnect core VPN module version 4.8.03052
- Windows 10 Enterprise 10.0.18363 Build 18363

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

This document can also be used with these hardware and software versions:

- Any Operating system (MacOS, Windows, Linux).
- Any AnyConnect version prior to 4.10.

## Background Information

AnyConnect queries to mus.cisco.com are expected by design.

**Note:** There is an enhancement defect created for this behaviour. Cisco bug ID [CSCvu39643](#). Queries to mus.cisco.com from the VPN core must not be performed if VPN module is not used.

## Problem

When the AnyConnect VPN core module is not in use (no XML profile is configured for VPN connections), queries to mus.cisco.com are generated every 15 seconds.

## Solution 1

Add a Domain Name System (DNS) entry on your DNS server, in order to resolve name queries to mus.cisco.com. If you do not manage a DNS server, forward such requests to a public DNS server.

Once mus.cisco.com FQDN is able to be resolved, AnyConnect stops the query attempt.

## Solution 2

Add a DNS entry to your Operative System (OS) hosts file in order to resolve the FQDN mus.cisco.com.

### Windows

1. Press the Windows key.
2. Type Notepad in the search **field**.
3. In the search results, right-click **Notepad** and select **Run as administrator**.
4. From Notepad, open the file: "C:\Windows\System32\Drivers\etc\hosts".
5. Make the necessary changes to the file.
6. Select **File > Save** in order to save your changes.

### Mac

1. Open a **Terminal** window.
2. Enter this command in order to open the **hosts** file with the **nano** text editor embedded in the OS: "sudo nano /etc/**hosts**".

3. Enter your domain user and password.
4. Make the necessary changes to the **file**.

## Linux

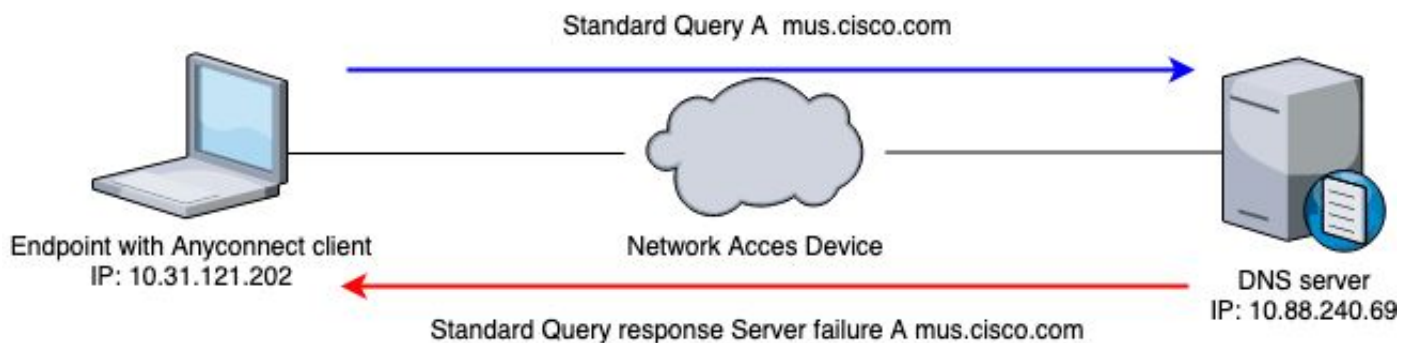
1. Open a **Terminal** window.
2. Enter the this command in order to open the **hosts** file with the **nano** text editor embedded in the OS: "sudo nano /etc/**hosts**".
3. Enter your domain user and password.
4. Make the necessary changes to the **file**.

## AnyConnect queries to mus.cisco.com

### Configure

The instalation of AnyConnect VPN core module.

### Network Diagram



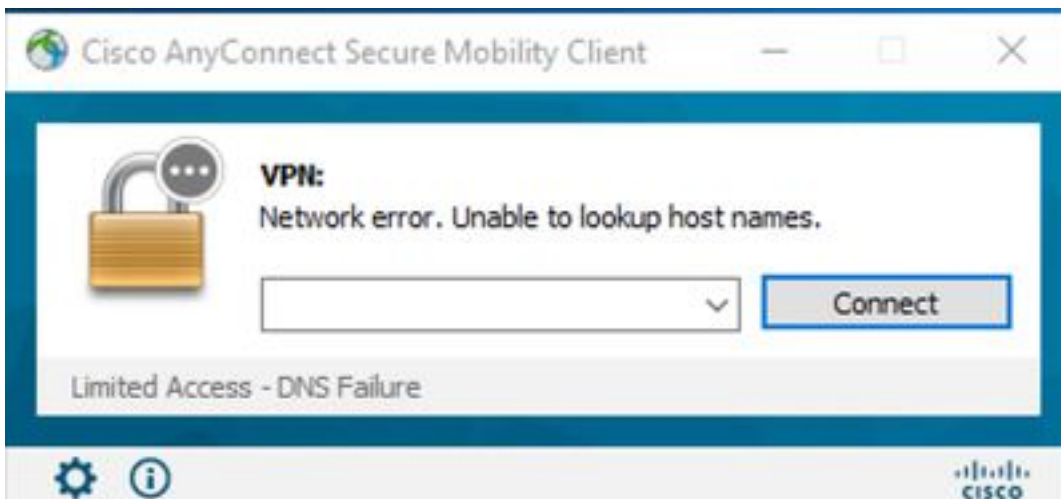
```
*****
Date : 06/17/2020
Time : 20:21:57
Type : Warning
Source : acvpnagent
Description : Function : CDNSRequest::OnSocketReadComplete
File:
c:\temp\build\thehoff\negasonic_mr30.297045120452\negasonic_mr3\vpn\common\ip\dnsrequest.cpp
Line: 1147
Timeout (per request) while trying to resolve [A] query mus.cisco.com via DNS server
10.88.240.69 (timeout interval = 10 sec)
*****
```

### Troubleshoot

In order to confirm the proper operation, you can enable a packet capture on the egress interface of the endpoint with the use of Wireshark.

No.	Time	Source	Destination	Protocol	Length	Info
2	2020-06-17 20:21:32.289178	10.31.121.202	10.88.240.69	DNS	73	Standard query 0x03a7 A mus.cisco.com
18	2020-06-17 20:21:43.662753	10.88.240.69	10.31.121.202	DNS	73	Standard query response 0x03a7 Server failure A mus.cisco.com
26	2020-06-17 20:21:47.336418	10.31.121.202	10.88.240.69	DNS	73	Standard query 0x03d8 A mus.cisco.com
59	2020-06-17 20:21:59.069648	10.88.240.69	10.31.121.202	DNS	73	Standard query response 0x03d8 Server failure A mus.cisco.com
66	2020-06-17 20:22:02.385726	10.31.121.202	10.88.240.69	DNS	73	Standard query 0x0409 A mus.cisco.com
88	2020-06-17 20:22:13.570386	10.88.240.69	10.31.121.202	DNS	73	Standard query response 0x0409 Server failure A mus.cisco.com
96	2020-06-17 20:22:17.426213	10.31.121.202	10.88.240.69	DNS	73	Standard query 0x043a A mus.cisco.com
117	2020-06-17 20:22:28.977132	10.88.240.69	10.31.121.202	DNS	73	Standard query response 0x043a Server failure A mus.cisco.com
135	2020-06-17 20:22:32.478764	10.31.121.202	10.88.240.69	DNS	73	Standard query 0x046b A mus.cisco.com
159	2020-06-17 20:22:43.477717	10.88.240.69	10.31.121.202	DNS	73	Standard query response 0x046b Server failure A mus.cisco.com
167	2020-06-17 20:22:47.526516	10.31.121.202	10.88.240.69	DNS	73	Standard query 0x049c A mus.cisco.com
197	2020-06-17 20:22:59.790911	10.88.240.69	10.31.121.202	DNS	73	Standard query response 0x049c Server failure A mus.cisco.com
203	2020-06-17 20:23:02.572275	10.31.121.202	10.88.240.69	DNS	73	Standard query 0x04cd A mus.cisco.com
225	2020-06-17 20:23:14.291503	10.88.240.69	10.31.121.202	DNS	73	Standard query response 0x04cd Server failure A mus.cisco.com
232	2020-06-17 20:23:17.615747	10.31.121.202	10.88.240.69	DNS	73	Standard query 0x04fe A mus.cisco.com
251	2020-06-17 20:23:29.698518	10.88.240.69	10.31.121.202	DNS	73	Standard query response 0x04fe Server failure A mus.cisco.com

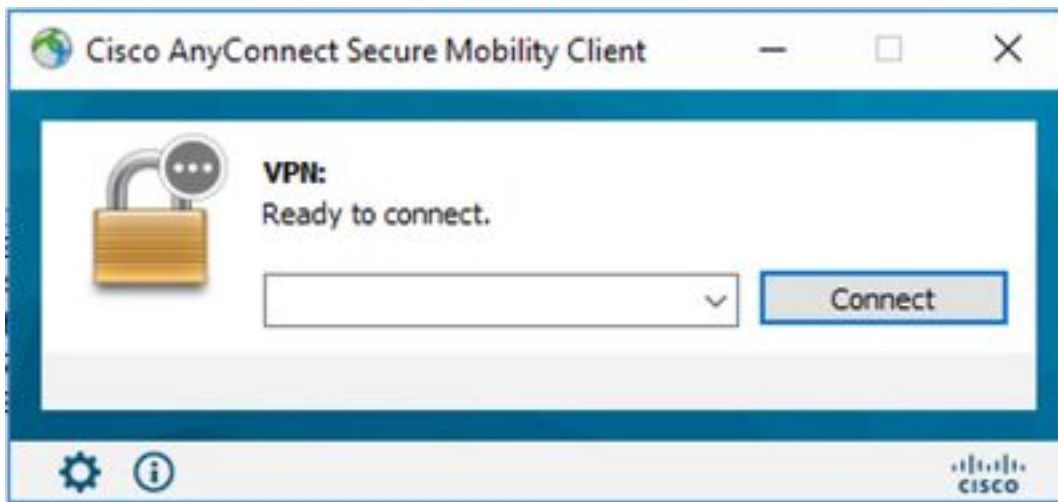
On the Graphic User Interface (GUI) of the AnyConnect client, the message "**Network error. Unable to lookup host names**" is displayed (as shown in the image).



When any of the workarounds are applied you can also make a packet capture on Wireshark and use the DNS filter in order to confirm the constant queries to mus.cisco.com:

No.	Time	Source	Destination	Protocol	Length	Info
16389	866.042487	10.4.9.62	10.4.9.1	DNS	84	Standard query 0xc729 A sls.update.microsoft.com
16392	866.151743	10.4.9.62	10.4.9.1	DNS	91	Standard query 0xad6f A settings-win.data.microsoft.com
16406	867.058085	10.4.9.62	10.4.9.1	DNS	84	Standard query 0xc729 A sls.update.microsoft.com
16414	867.151917	10.4.9.62	10.4.9.1	DNS	91	Standard query 0xad6f A settings-win.data.microsoft.com
16449	869.058089	10.4.9.62	10.4.9.1	DNS	84	Standard query 0xc729 A sls.update.microsoft.com
16451	869.167454	10.4.9.62	10.4.9.1	DNS	91	Standard query 0xad6f A settings-win.data.microsoft.com
16500	873.058065	10.4.9.62	10.4.9.1	DNS	84	Standard query 0xc729 A sls.update.microsoft.com
16507	873.183053	10.4.9.62	10.4.9.1	DNS	91	Standard query 0xad6f A settings-win.data.microsoft.com
16562	877.080933	10.4.9.62	10.4.9.1	DNS	84	Standard query 0x9902 A sls.update.microsoft.com
16587	878.073865	10.4.9.62	10.4.9.1	DNS	84	Standard query 0x9902 A sls.update.microsoft.com
16598	879.073732	10.4.9.62	10.4.9.1	DNS	84	Standard query 0x9902 A sls.update.microsoft.com
16635	881.089368	10.4.9.62	10.4.9.1	DNS	84	Standard query 0x9902 A sls.update.microsoft.com
16684	885.104894	10.4.9.62	10.4.9.1	DNS	84	Standard query 0x9902 A sls.update.microsoft.com

On the GUI interface of AnyConnect client, the message "**Ready to connect**" is displayed (as shown in the image).



**Tip:** Even if you do not see the AnyConnect VPN core module on the GUI interface it does not mean the vpn core module is not in operation, search for the file `VPNDisable_ServiceProfile.xml` under the directory "`C:\programdata\cisco` on Windows", and "`/opt/cisco/anyconnect/profile`" on Apple devices. On Linux this is not supported.