

DASH Configuration Guide

ThinkStation P620



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Introduction

DASH, also known as desktop and mobile architecture for system hardware, is a set of specifications developed by DMTF aims to provide open standards-based web service management for desktop and mobile client systems. DASH is a comprehensive framework that provides a new generation of standards to protect the security of out of band and remote management of desktop and mobile systems in multi-vendor, distributed enterprise environments. DASH uses the same tools, syntax, semantics, and interfaces across the product line (traditional desktop systems, mobile and laptop computers, blade PCs, and thin clients).

The new Lenovo P620 platform offers this remote management solution called DASH. The DASH software enables users to remotely change power state settings, remote into their desktop, as well as boot the system into the BIOS setup menu.

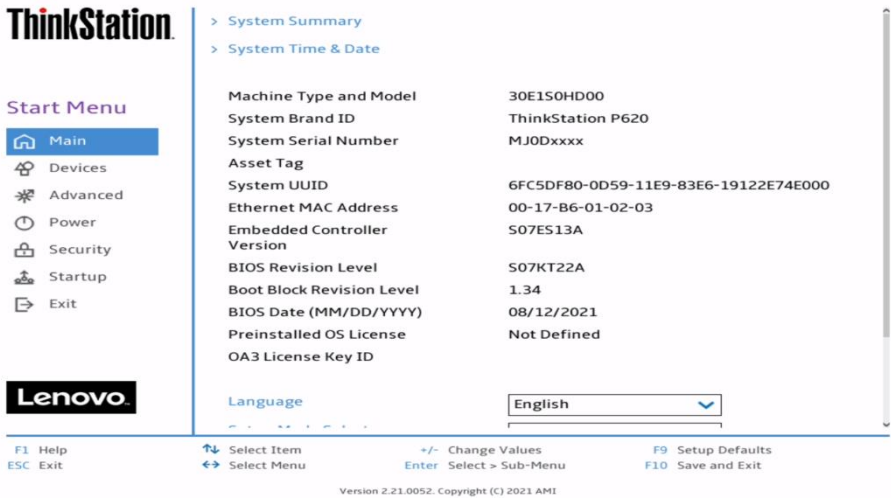
For more information, please refer to the following link:

<https://www.dmtf.org/standards/dash>

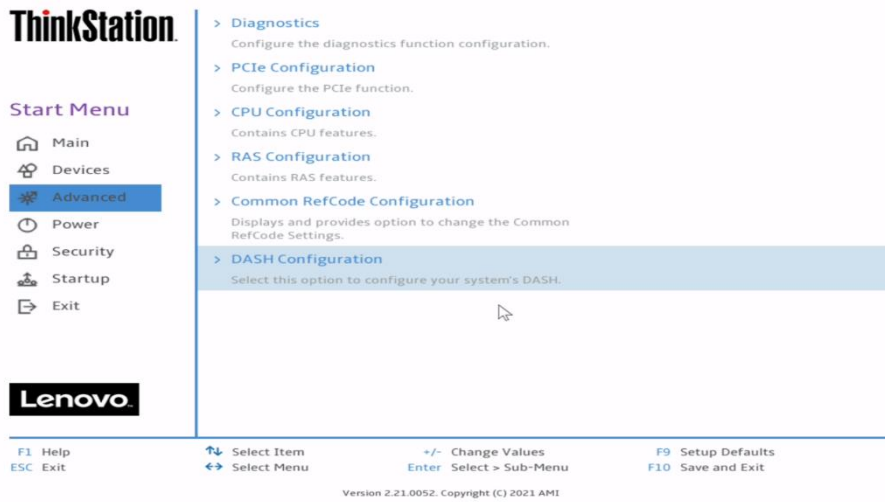
DASH Enablement

As a first step, DASH will need to be enabled within the BIOS setup menu. Here are some quick step-by-step instructions on how to enable DASH from within the BIOS setup menu.

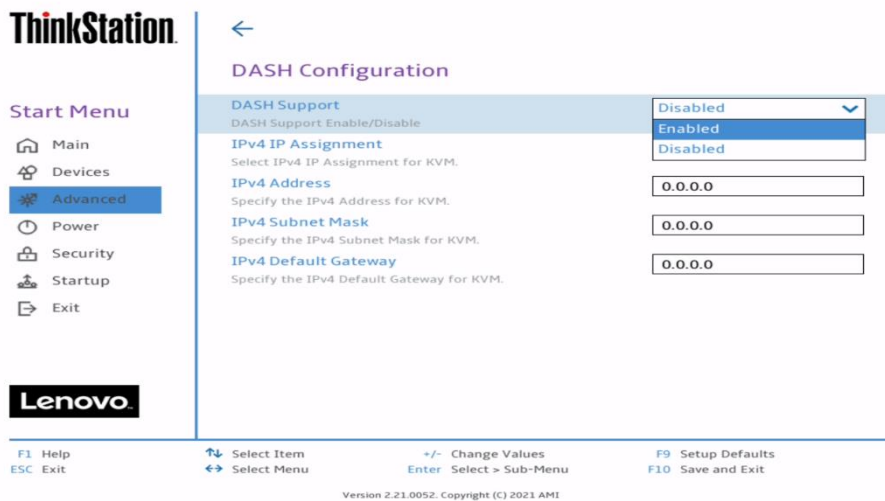
- As the P620 system is booting, press the function F1 key at the Lenovo splash screen to enter BIOS setup.

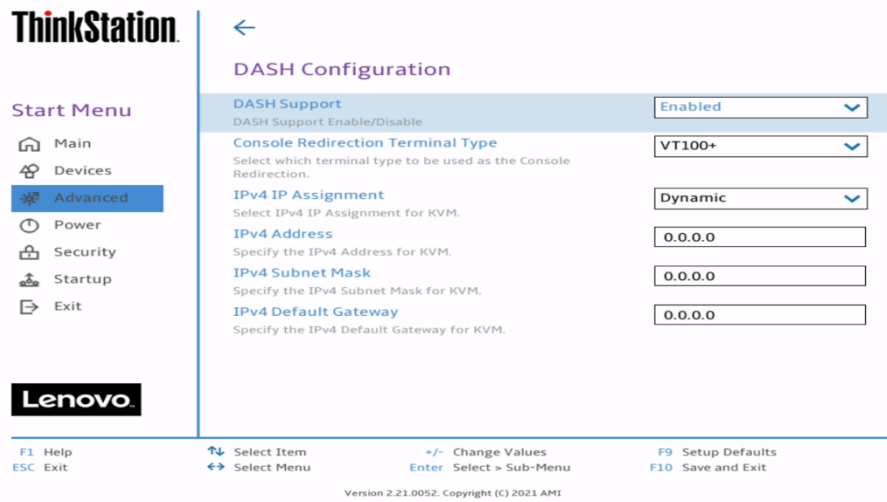


- Select the ‘Advanced’ menu option, followed by the “DASH Configuration” option.

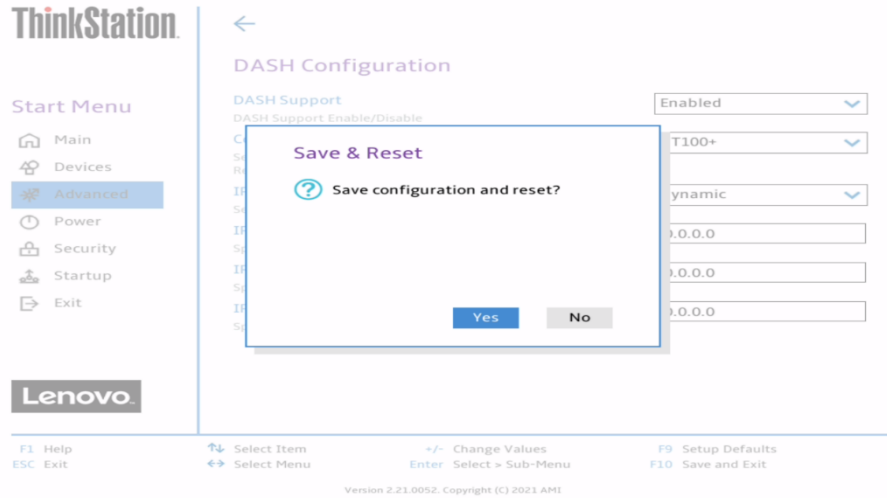


- Select the drop-down menu for ‘DASH Support’ and set this to ‘Enabled’.





- Press F10 to Save and Exit the BIOS setup menu.

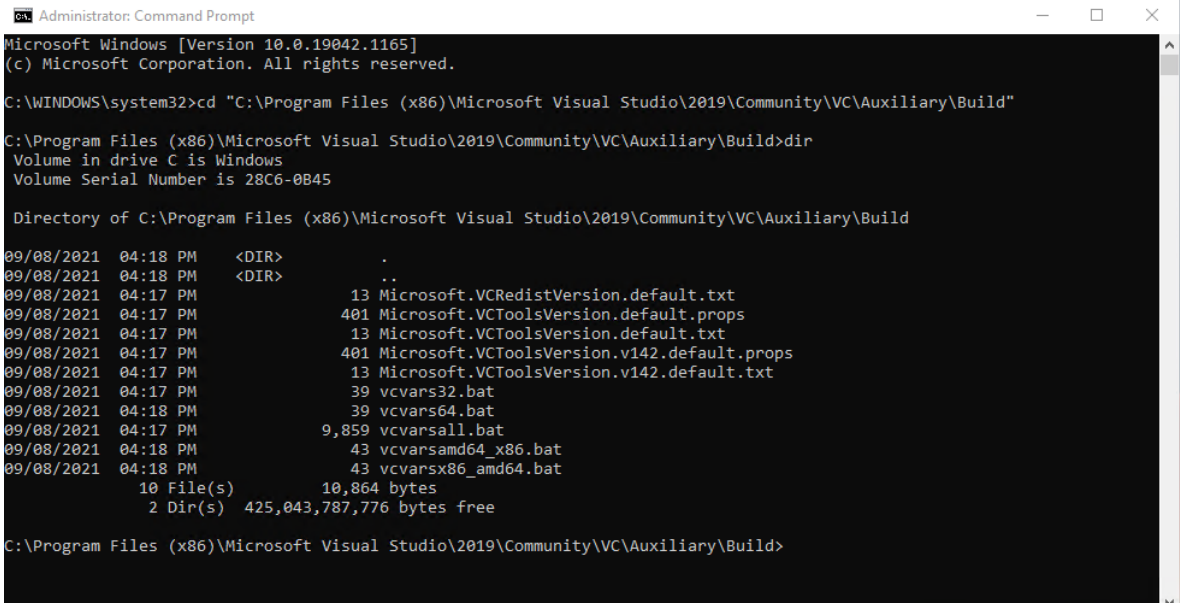


DASH Certificate Files

Once DASH has been enabled within the P620 BIOS setup menu, the next step is to create certificate files to use to install the DASH configuration agent on the system. Here are some quick step-by-step instructions on how to create the DASH certificate files.

- Download and install 'Visual Studio' from <https://visualstudio.microsoft.com/downloads/>.
- Download and install 'Perl' from <https://strawberryperl.com>.
- Download and install 'NASM' from <https://www.nasm.us/pub/nasm/releasebuilds/>.
- Reboot the system.
- From an Administrative Command Prompt Window, browse to the following directory below, and run "vcvarsall.bat x86_amd64".

C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Auxiliary\Build



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd "C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Auxiliary\Build"

C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Auxiliary\Build>dir
Volume in drive C is Windows
Volume Serial Number is 28C6-0B45

Directory of C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Auxiliary\Build

09/08/2021  04:18 PM    <DIR>          .
09/08/2021  04:18 PM    <DIR>          ..
09/08/2021  04:17 PM                13 Microsoft.VCRedistVersion.default.txt
09/08/2021  04:17 PM             401 Microsoft.VCToolsVersion.default.props
09/08/2021  04:17 PM                13 Microsoft.VCToolsVersion.default.txt
09/08/2021  04:17 PM             401 Microsoft.VCToolsVersion.v142.default.props
09/08/2021  04:17 PM                13 Microsoft.VCToolsVersion.v142.default.txt
09/08/2021  04:17 PM                39 vcvars32.bat
09/08/2021  04:18 PM                39 vcvars64.bat
09/08/2021  04:17 PM             9,859 vcvarsall.bat
09/08/2021  04:18 PM                43 vcvarsamd64_x86.bat
09/08/2021  04:18 PM                43 vcvarsx86_amd64.bat
                10 File(s)          10,864 bytes
                2 Dir(s)    425,043,787,776 bytes free

C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Auxiliary\Build>
```

```
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Auxiliary\Build>vcvarsall.bat x86_amd64
*****
** Visual Studio 2019 Developer Command Prompt v16.11.2
** Copyright (c) 2021 Microsoft Corporation
*****
[vcvarsall.bat] Environment initialized for: 'x86_x64'
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Auxiliary\Build>
```

- Download and extract the latest available OpenSSL package from <https://www.openssl.org>.

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\openssl-master

C:\openssl-master>dir
Volume in drive C is Windows
Volume Serial Number is 28C6-0B45

Directory of C:\openssl-master

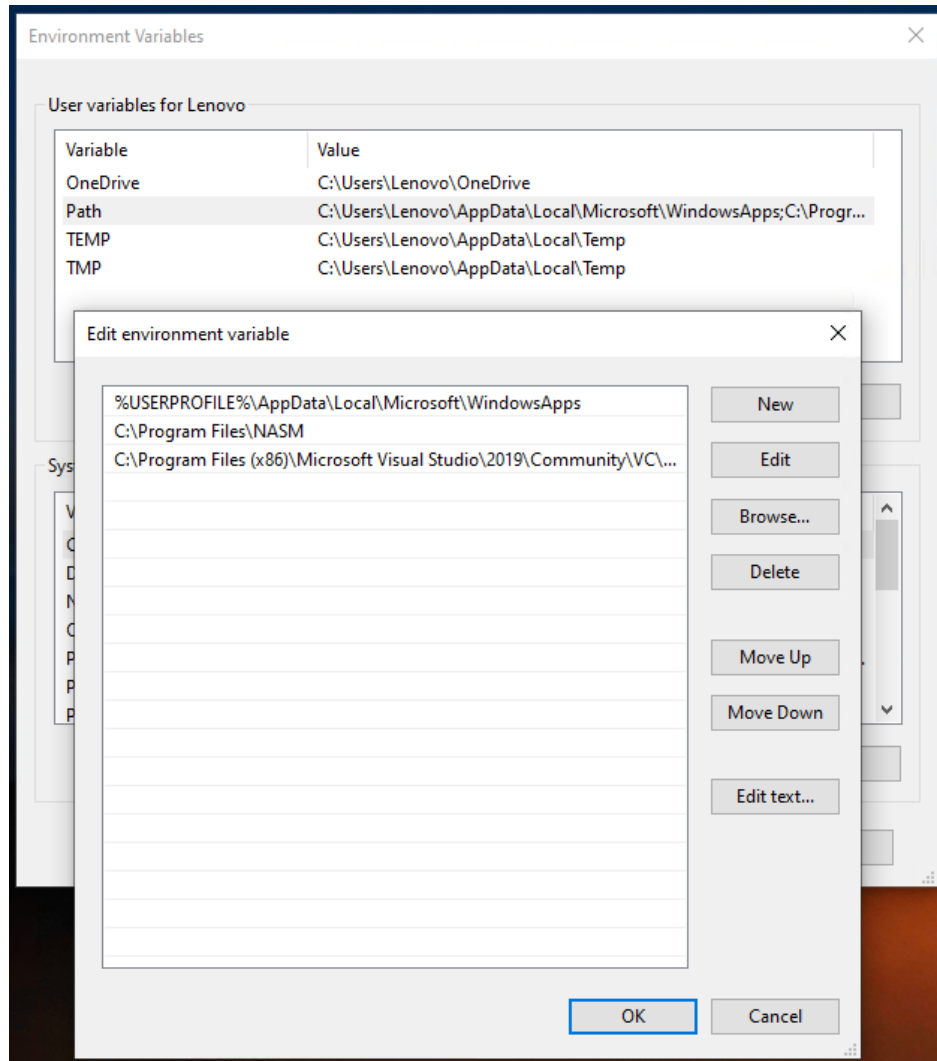
09/09/2021  10:09 AM    <DIR>          .
09/09/2021  10:09 AM    <DIR>          ..
09/09/2021   09:32 AM                157 ACKNOWLEDGEMENTS.md
09/09/2021   09:32 AM    <DIR>          apps
09/09/2021   09:32 AM                2,042 appveyor.yml
09/09/2021   09:32 AM                990 AUTHORS.md
09/09/2021   09:32 AM                3,661 build.info
09/09/2021   09:32 AM            715,625 CHANGES.md
09/09/2021   09:32 AM                378 config
09/09/2021   09:32 AM                2,516 config.com
09/09/2021   09:32 AM            14,384 configdata.pm.in
09/09/2021   09:32 AM    <DIR>          Configurations
09/09/2021   09:32 AM            135,550 Configure
09/09/2021   09:32 AM                4,349 CONTRIBUTING.md
09/09/2021   09:32 AM    <DIR>          crypto
09/09/2021   09:32 AM    <DIR>          demos
09/09/2021   09:32 AM    <DIR>          doc
09/09/2021   09:32 AM    <DIR>          engines
09/09/2021   09:32 AM    <DIR>          external
09/09/2021   09:32 AM            12,511 e_os.h
09/09/2021   09:32 AM                197 FAQ.md
09/09/2021   09:32 AM    <DIR>          fuzz
09/09/2021   09:32 AM                1,228 HACKING.md
09/09/2021   09:32 AM    <DIR>          include
09/09/2021   09:32 AM            62,285 INSTALL.md
09/09/2021   09:32 AM            10,175 LICENSE.txt
09/09/2021   09:32 AM    <DIR>          ms
09/09/2021   09:32 AM            69,008 NEWS.md
09/09/2021   09:32 AM                4,592 NOTES-ANDROID.md
09/09/2021   09:32 AM                2,112 NOTES-DJGPP.md
09/09/2021   09:32 AM            10,054 NOTES-NONSTOP.md
09/09/2021   09:32 AM                4,994 NOTES-PERL.md
09/09/2021   09:32 AM                5,685 NOTES-UNIX.md
09/09/2021   09:32 AM                2,741 NOTES-VALGRIND.md
09/09/2021   09:32 AM                4,148 NOTES-VMS.md
09/09/2021   09:32 AM            9,026 NOTES-WINDOWS.md
09/09/2021   09:32 AM    <DIR>          os-dep
09/09/2021   09:32 AM    <DIR>          providers
09/09/2021   09:32 AM            15,670 README-ENGINES.md
09/09/2021   09:32 AM                2,826 README-FIPS.md
09/09/2021   09:32 AM                5,478 README-PROVIDERS.md
09/09/2021   09:32 AM                6,565 README.md
09/09/2021   09:32 AM    <DIR>          ssl
09/09/2021   09:32 AM            3,740 SUPPORT.md
09/09/2021   09:33 AM    <DIR>          test
09/09/2021   09:33 AM    <DIR>          tools
09/09/2021   09:33 AM    <DIR>          util
09/09/2021   09:32 AM                92 VERSION.dat
09/09/2021   09:32 AM    <DIR>          VMS
09/09/2021   03:07 AM    <DIR>          wycheproof
          30 File(s)      1,112,779 bytes
          20 Dir(s)  429,434,241,024 bytes free

C:\openssl-master>
```


- Before proceeding, make sure NASM and VC is in the correct %PATH%.

C:\Program Files\NASM

C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Auxiliary\Build



- From an Administrative Developer Command Prompt Window, browse to the root of the 'OpenSSL' source directory and run the following commands:
 - perl Configure VC-WIN32

```

Administrator: Developer Command Prompt for VS 2019

C:\openssl-master>perl Configure VC-WIN32
Configuring OpenSSL version 3.1.0-dev for target VC-WIN32
Using os-specific seed configuration
Creating configdata.pm
Running configdata.pm
Creating makefile.in
Creating makefile

*****
***                                     ***
***   OpenSSL has been successfully configured   ***
***                                     ***
***   If you encounter a problem while building, please open an   ***
***   issue on GitHub <https://github.com/openssl/openssl/issues> ***
***   and include the output from the following command:   ***
***                                     ***
***       perl configdata.pm --dump   ***
***                                     ***
***   (If you are new to OpenSSL, you might want to consult the   ***
***   'Troubleshooting' section in the INSTALL.md file first)   ***
***                                     ***
*****

C:\openssl-master>
C:\openssl-master>

```

- nmake

Note: This may take several minutes to complete!

```

Administrator: Developer Command Prompt for VS 2019

PENSSL" -D"OPENSSL_SYS_WIN32" -D"WIN32_LEAN_AND_MEAN" -D"UNICODE" -D" _UNICODE" -D" _CRT_SECURE_NO_DEPRECATED" -D" _WINSOCK_
DEPRECATED_NO_WARNINGS" -D"NDEBUG" -c /Fotest\x509_time_test-bin-x509_time_test.obj "test\x509_time_test.c"
x509_time_test.c
cmd /C ""c1"" /Zs/showIncludes /Zi /Fdapp.pdb /Gs0 /GF /Gy /MD /W3 /wd4090 /nologo /O2 -I"include" -I"apps\in
clude" -D"OPENSSL_BUILDING_OPENSSL" -D"OPENSSL_SYS_WIN32" -D"WIN32_LEAN_AND_MEAN" -D"UNICODE" -D" _UNICODE" -D" _CRT_SECURE
_NO_DEPRECATED" -D" _WINSOCK_DEPRECATED_NO_WARNINGS" -D"NDEBUG" "test\x509_time_test.c" > test\x509_time_test-bin-x509_
time_test.d 2>&1"
IF EXIST test\x509_time_test.exe.manifest DEL /F /Q test\x509_time_test.exe.manifest
"link" /nologo /debug setargv.obj /subsystem:console /opt:ref /nologo /debug @C:\Users\Lenovo\AppData\Local\Tem
p\nm662.tmp
IF EXIST test\x509_time_test.exe.manifest "mt" -nologo -manifest test\x509_time_test.exe.manifest -outputresour
ce:test\x509_time_test.exe
"c1" /Zi /Fdapp.pdb /Gs0 /GF /Gy /MD /W3 /wd4090 /nologo /O2 -I"include" -I"apps\include" -D"OPENSSL_BUILDING_O
PENSSL" -D"OPENSSL_SYS_WIN32" -D"WIN32_LEAN_AND_MEAN" -D"UNICODE" -D" _UNICODE" -D" _CRT_SECURE
DEPRECATED_NO_WARNINGS" -D"NDEBUG" -c /Fotest\x509aux-bin-x509aux.obj "test\x509aux.c"
x509aux.c
cmd /C ""c1"" /Zs/showIncludes /Zi /Fdapp.pdb /Gs0 /GF /Gy /MD /W3 /wd4090 /nologo /O2 -I"include" -I"apps\in
clude" -D"OPENSSL_BUILDING_OPENSSL" -D"OPENSSL_SYS_WIN32" -D"WIN32_LEAN_AND_MEAN" -D"UNICODE" -D" _UNICODE" -D" _CRT_SECURE
_NO_DEPRECATED" -D" _WINSOCK_DEPRECATED_NO_WARNINGS" -D"NDEBUG" "test\x509aux.c" > test\x509aux-bin-x509aux.d 2>&1"
IF EXIST test\x509aux.exe.manifest DEL /F /Q test\x509aux.exe.manifest
"link" /nologo /debug setargv.obj /subsystem:console /opt:ref /nologo /debug @C:\Users\Lenovo\AppData\Local\Tem
p\nm79B.tmp
IF EXIST test\x509aux.exe.manifest "mt" -nologo -manifest test\x509aux.exe.manifest -outputresource:test\x509au
x.exe
"C:\Strawberry\perl\bin\perl.exe" "-I." -Mconfigdata "util\dofile.pl" "-omakefile" "apps\CA.pl.in" > apps\CA.pl
.pl
"C:\Strawberry\perl\bin\perl.exe" "-I." -Mconfigdata "util\dofile.pl" "-omakefile" "apps\tsgen.in" > apps\tsgen
.c_rehash.pl
"C:\Strawberry\perl\bin\perl.exe" "-I." -Mconfigdata "util\dofile.pl" "-omakefile" "tools\c_rehash.in" > tools\
p.pl
C:\openssl-master>

```

- nmake test

Note: This may take several minutes to complete!

```
Administrator: Developer Command Prompt for VS 2019
90-test_sslapi.t ..... ok
90-test_sslbuffers.t ..... ok
90-test_store.t ..... ok
90-test_sysdefault.t ..... ok
90-test_threads.t ..... ok
90-test_time_offset.t ..... ok
90-test_tls13ccs.t ..... ok
90-test_tls13encryption.t ..... ok
90-test_tls13secrets.t ..... ok
90-test_v3name.t ..... ok
91-test_pkey_check.t ..... ok
95-test_external_gost_engine.t ..... skipped: No external tests in this configuration
95-test_external_krb5.t ..... skipped: No external tests in this configuration
95-test_external_pyca.t ..... skipped: No external tests in this configuration
99-test_ecstress.t ..... ok
99-test_fuzz_asn1.t ..... ok
99-test_fuzz_asn1parse.t ..... ok
99-test_fuzz_bignum.t ..... ok
99-test_fuzz_bndiv.t ..... ok
99-test_fuzz_client.t ..... ok
99-test_fuzz_cmp.t ..... ok
99-test_fuzz_cms.t ..... ok
99-test_fuzz_conf.t ..... ok
99-test_fuzz_crl.t ..... ok
99-test_fuzz_ct.t ..... ok
99-test_fuzz_server.t ..... ok
99-test_fuzz_x509.t ..... ok
All tests successful.
Files=241, Tests=3097, 916 wallclock secs ( 3.59 usr + 0.53 sys = 4.12 CPU)
Result: PASS

C:\openssl-master>
C:\openssl-master>
```

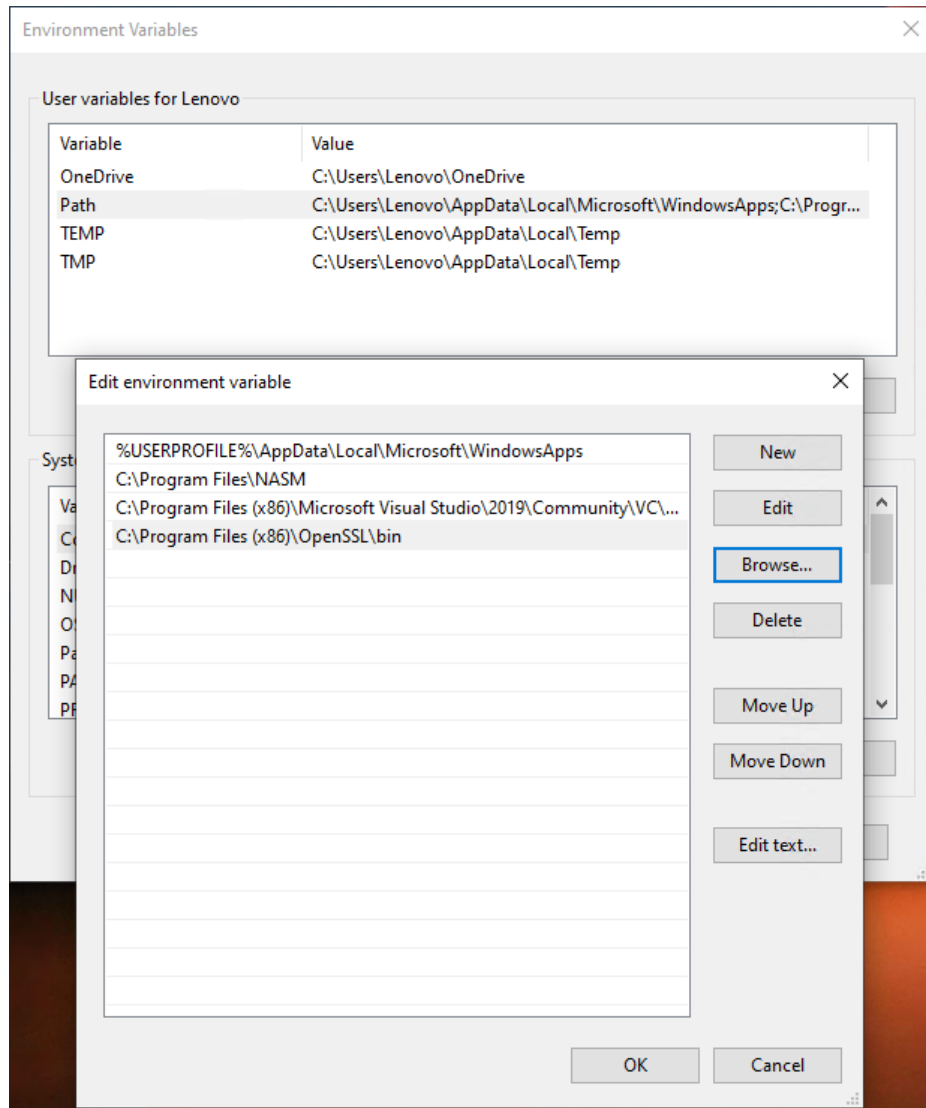
- nmake install

Note: This may take several minutes to complete!

```
Administrator: Developer Command Prompt for VS 2019
Copying: ./doc/html/man7/OSSL_PROVIDER-default.html to C:/Program Files (x86)/OpenSSL/html/man7/OSSL_PROVIDER-default.html
Copying: ./doc/html/man7/OSSL_PROVIDER-FIPS.html to C:/Program Files (x86)/OpenSSL/html/man7/OSSL_PROVIDER-FIPS.html
Copying: ./doc/html/man7/OSSL_PROVIDER-legacy.html to C:/Program Files (x86)/OpenSSL/html/man7/OSSL_PROVIDER-legacy.html
Copying: ./doc/html/man7/OSSL_PROVIDER-null.html to C:/Program Files (x86)/OpenSSL/html/man7/OSSL_PROVIDER-null.html
Copying: ./doc/html/man7/openssl-store-file.html to C:/Program Files (x86)/OpenSSL/html/man7/openssl-store-file.html
Copying: ./doc/html/man7/passphrase-encoding.html to C:/Program Files (x86)/OpenSSL/html/man7/passphrase-encoding.html
Copying: ./doc/html/man7/property.html to C:/Program Files (x86)/OpenSSL/html/man7/property.html
Copying: ./doc/html/man7/provider-asym_cipher.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-asym_cipher.html
Copying: ./doc/html/man7/provider-base.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-base.html
Copying: ./doc/html/man7/provider-cipher.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-cipher.html
Copying: ./doc/html/man7/provider-decoder.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-decoder.html
Copying: ./doc/html/man7/provider-digest.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-digest.html
Copying: ./doc/html/man7/provider-encoder.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-encoder.html
Copying: ./doc/html/man7/provider-kdf.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-kdf.html
Copying: ./doc/html/man7/provider-kem.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-kem.html
Copying: ./doc/html/man7/provider-keyexch.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-keyexch.html
Copying: ./doc/html/man7/provider-keymgmt.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-keymgmt.html
Copying: ./doc/html/man7/provider-mac.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-mac.html
Copying: ./doc/html/man7/provider-object.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-object.html
Copying: ./doc/html/man7/provider-rand.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-rand.html
Copying: ./doc/html/man7/provider-signature.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-signature.html
Copying: ./doc/html/man7/provider-storemgmt.html to C:/Program Files (x86)/OpenSSL/html/man7/provider-storemgmt.html
Copying: ./doc/html/man7/provider.html to C:/Program Files (x86)/OpenSSL/html/man7/provider.html
Copying: ./doc/html/man7/proxy-certificates.html to C:/Program Files (x86)/OpenSSL/html/man7/proxy-certificates.html
Copying: ./doc/html/man7/RAND.html to C:/Program Files (x86)/OpenSSL/html/man7/RAND.html
Copying: ./doc/html/man7/RSA-PSS.html to C:/Program Files (x86)/OpenSSL/html/man7/RSA-PSS.html
Copying: ./doc/html/man7/ssl.html to C:/Program Files (x86)/OpenSSL/html/man7/ssl.html
Copying: ./doc/html/man7/X25519.html to C:/Program Files (x86)/OpenSSL/html/man7/X25519.html
Copying: ./doc/html/man7/x509.html to C:/Program Files (x86)/OpenSSL/html/man7/x509.html

C:\openssl-master>
```

- Before proceeding, make sure the newly created *openssl.exe* is in the correct %PATH%.



- From an Administrative Command Prompt Window, run the following commands to setup the DASH certificates:

- Create folders and copy openssl.ini:



openssl.ini

Note: Optionally, feel free to edit per Company's IT settings.

- mkdir C:\DASHCert
 - cd C:\DASHCert
 - copy ..\openssl.ini DASHCert
 - mkdir newcerts private
-
- Create requisite files:
 - echo 01 > serial
 - copy /y nul index.txt
-
- Create root certificate:
 - openssl genrsa -out private/cakey.pem 1024
 - openssl req -new -x509 -extensions v3_ca -key private/cakey.pem -out cacert.pem -days 3650 -sha256 -config ./openssl.ini
 - openssl x509 -in cacert.pem -out DASHCA.crt
-
- Create certificate signing request:
 - openssl req -new -nodes -out req.pem -sha256 -extensions v3_req -config ./openssl.ini
-
- Sign certificate:
 - openssl ca -out cert.pem -extensions v3_req -config ./openssl.ini -infiles req.pem

- Strip readable text:
 - `move cert.pem tmp.pem`
 - `openssl x509 -in tmp.pem -out cert.pem`

Updating Marvell Firmware & Driver

Before configuring DASH, it's a good idea to make sure the Marvell NIC device driver and firmware is up to date. Here are some quick step-by-step instructions on how to update the Marvell NIC firmware and drivers onto the system.

- Download and extract the Marvell Firmware directory from the P620 support site:

Note: This is the latest Marvell Firmware at this time of creating the document.

https://download.lenovo.com/pccbbs/thinkcentre_drivers/marvell_aqc107_4240.zip

- From an Administrative Command Prompt Window, browse to the following directory within the 'marvell_aqc107_4240' directory to update the firmware using the following commands:
 - `cd atflashupdate_1.8.0_4.2.40_dash`
 - `atflashupdate.exe`
 - Enter 'y' to proceed with the update.
 - Select adapter number (typically '1').
- Download and install the Marvell Driver directory from the P620 support site:

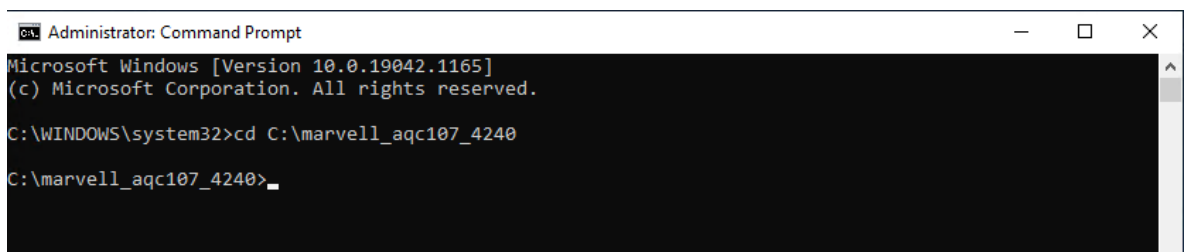
Note: This is the latest Marvell Driver at this time of creating the document.

https://download.lenovo.com/pccbbs/thinkcentre_drivers/u6etn07us14wsi.exe

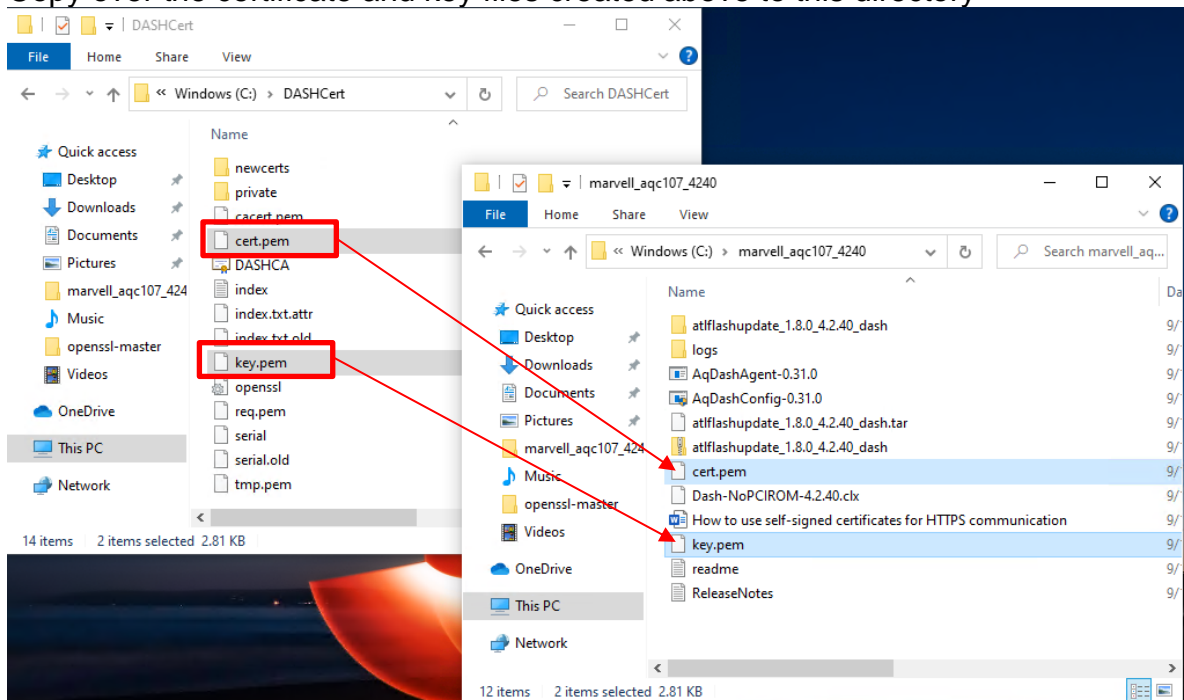
Installing & Configuring DASH in Shared Mode

Once the Marvell firmware and driver has been updated and the certificate files have been created from the previous steps, it's time to install and configure DASH on the system. Typically, if the system only contains the onboard NIC adapter, then it is recommended to setup DASH in a shared mode environment. Here are some quick step-by-step instructions on how to install and configure DASH in shared mode on the system:

- From an Administrative Command Prompt Window, browse to the Marvell Firmware directory from the previous step.
 - `cd C:\marvell_aqc107_4240\`



- Copy over the certificate and key files created above to this directory



- Install the Marvell DASH Agent using the command:
 - AqDashAgent-0.31.0.exe install

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\marvell_aqc107_4240

C:\marvell_aqc107_4240>AqDashAgent-0.31.0.exe install
Service 'AqDashSvc' started
Service 'AqDashSvc' installed successfully.

C:\marvell_aqc107_4240>_
```

- Configure the Marvell DASH Agent using the command:
 - AqDashConfig0.26.exe shared <user> <password> cert.pem key.pem

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\marvell_aqc107_4240

C:\marvell_aqc107_4240>AqDashAgent-0.31.0.exe install
Service 'AqDashSvc' started
Service 'AqDashSvc' installed successfully.

C:\marvell_aqc107_4240>AqDashConfig-0.31.0.exe shared Lenovo lenovo cert.pem key.pem
Aquantia DASH Configuration Tool v0.15.0 (bundle v0.31.0)
Found 4 ASF power control operations
Found 1 adapter(s):

Selected 'Marvell AQtion 10Gbit Network Adapter' adapter.
[*] DASH successfully configured!

C:\marvell_aqc107_4240>_
```

- Confirm the Marvell DASH configuration using the command:
 - AqDashConfig0.26.exe show

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\marvell_aqc107_4240

C:\marvell_aqc107_4240>AqDashAgent-0.31.0.exe install
Service 'AqDashSvc' started
Service 'AqDashSvc' installed successfully.

C:\marvell_aqc107_4240>AqDashConfig-0.31.0.exe shared Lenovo lenovo cert.pem key.pem
Aquantia DASH Configuration Tool v0.15.0 (bundle v0.31.0)
Found 4 ASF power control operations
Found 1 adapter(s):

Selected 'Marvell AQtion 10Gbit Network Adapter' adapter.
[*] DASH successfully configured!

C:\marvell_aqc107_4240>AqDashConfig-0.31.0.exe show
Aquantia DASH Configuration Tool v0.15.0 (bundle v0.31.0)
Found 1 adapter(s):
1. Marvell AQtion 10Gbit Network Adapter
- Mode: Shared
- Organization:

C:\marvell_aqc107_4240>_
```

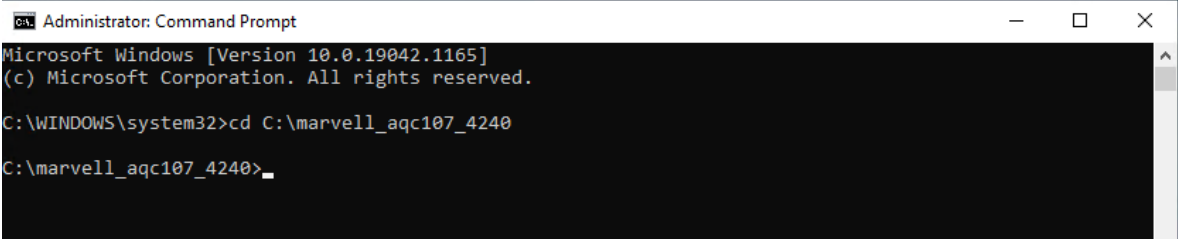
Installing & Configuring DASH in Exclusive Mode

Once the Marvell firmware and driver has been updated and the certificate files have been created from the previous steps, it's time to install and configure DASH on the system. Typically, if the system contains multiple NIC ports, then it is recommended to setup DASH in an exclusive mode environment to be able to dedicate the DASH software to a single NIC adapter.

*Note: For the current shipping Marvell Aquantia Firmware, 4.2.40, Exclusive Mode will only work if static IP addresses are set. DHCP will **not** work!*

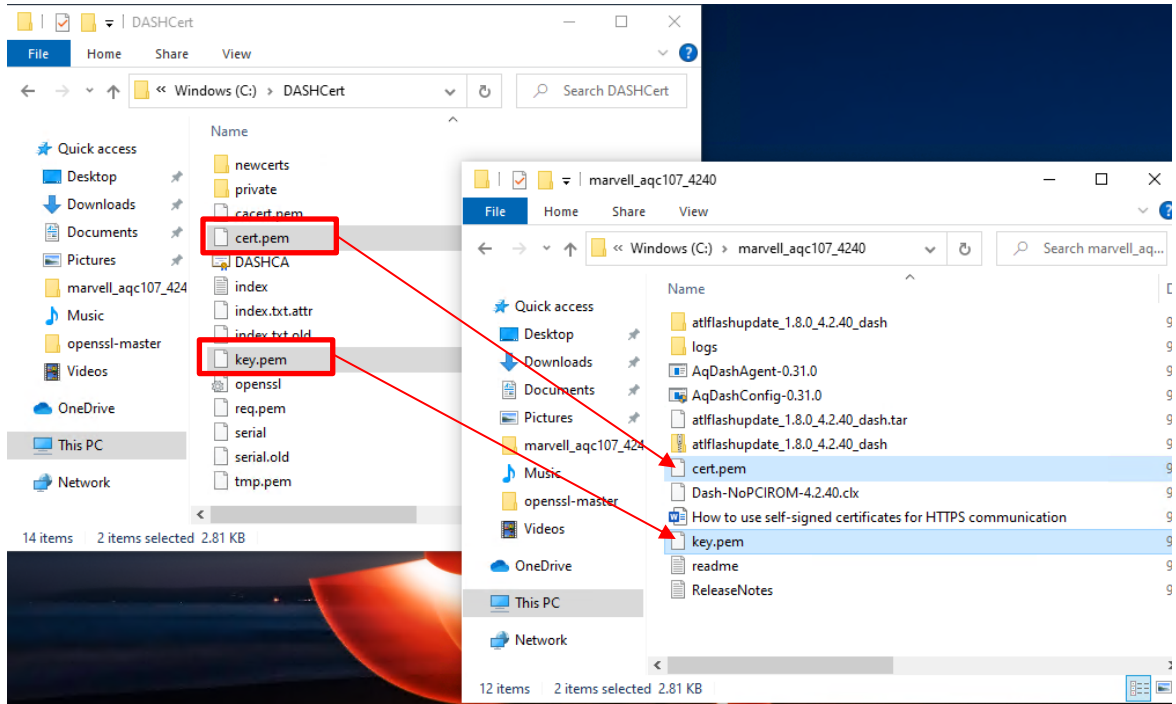
Here are some quick step-by-step instructions on how to install and configure DASH in exclusive mode on the system:

- From an Administrative Command Prompt Window, browse to the Marvell Firmware directory from the previous step.
 - `cd C:\marvell_aqc107_4240\`

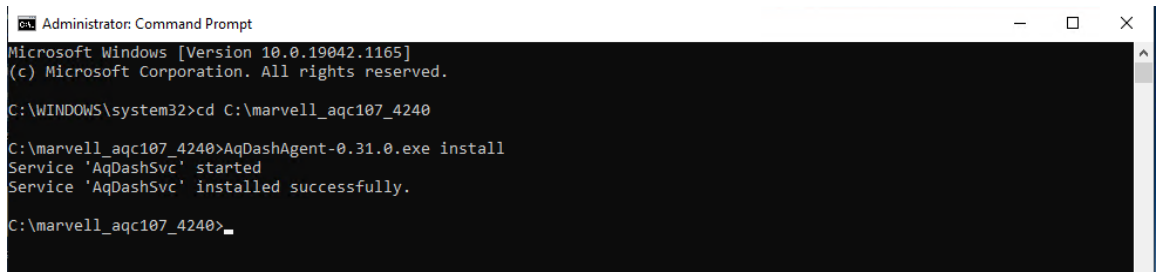


```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.
C:\WINDOWS\system32>cd C:\marvell_aqc107_4240
C:\marvell_aqc107_4240>
```

- Copy over the certificate and key files created above to this directory



- Install the Marvell DASH Agent using the command:
 - AqDashAgent-0.31.0.exe install



- Determine the MAC and IP address of the onboard Marvell NIC port to configure DASH using the command:
 - ipconfig /all

```
Administrator: Command Prompt
C:\>ipconfig /all

Windows IP Configuration

Host Name . . . . . : DESKTOP-T80NH4M
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : attlocal.net

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . : attlocal.net
Description . . . . . : Marvell FastLinQ Edge 10Gbit Network Adapter
Physical Address. . . . . : 00-17-B6-01-02-03
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
IPv6 Address. . . . . : 2600:1700:720:e490::b(Preferred)
Lease Obtained. . . . . : Friday, April 1, 2022 11:07:07 AM
Lease Expires . . . . . : Friday, April 1, 2022 12:07:07 PM
IPv6 Address. . . . . : 2600:1700:720:e490:4568:5e63:35a2:754a(Preferred)
Temporary IPv6 Address. . . . . : 2600:1700:720:e490:68a0:8b36:9b30:20a7(Preferred)
Link-local IPv6 Address . . . . . : fe80::4508:5e63:35a2:754a%8(Preferred)
IPv4 Address. . . . . : 192.168.1.121(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : fe80::8a96:4eff:feb2:28a0%8
                               192.168.1.254
DHCPv6 IAID . . . . . : 100669366
DHCPv6 Client DUID. . . . . : 00-01-00-01-29-CC-19-CB-00-17-B6-01-02-03
DNS Servers . . . . . : 2600:1700:720:e490::1
                               2600:1700:720:e490::1

NetBIOS over Tcpi. . . . . : Enabled
Connection-specific DNS Suffix Search List :
    attlocal.net
    attlocal.net

Ethernet adapter Ethernet 2:

Connection-specific DNS Suffix . . : attlocal.net
Description . . . . . : Marvell FastLinQ Edge 10Gbit Network Adapter #2
Physical Address. . . . . : 00-17-B6-00-A7-5F
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
IPv6 Address. . . . . : 2600:1700:720:e490::13(Preferred)
Lease Obtained. . . . . : Friday, April 1, 2022 11:30:58 AM
Lease Expires . . . . . : Friday, April 1, 2022 12:30:58 PM
IPv6 Address. . . . . : 2600:1700:720:e490:f59a:d74a:11ff:e11d(Preferred)
Temporary IPv6 Address. . . . . : 2600:1700:720:e490:ed1c:13bc:c59a:c28e(Preferred)
Link-local IPv6 Address . . . . . : fe80::f59a:d74a:11ff:e11d%37(Preferred)
IPv4 Address. . . . . : 192.168.1.89(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Friday, April 1, 2022 11:30:58 AM
Lease Expires . . . . . : Saturday, April 2, 2022 11:30:58 AM
Default Gateway . . . . . : fe80::8a96:4eff:feb2:28a0%37
                               192.168.1.254
DHCP Server . . . . . : 192.168.1.254
DHCPv6 IAID . . . . . : 620763062
DHCPv6 Client DUID. . . . . : 00-01-00-01-29-CC-19-CB-00-17-B6-01-02-03
DNS Servers . . . . . : 2600:1700:720:e490::1
                               192.168.1.254
                               2600:1700:720:e490::1

NetBIOS over Tcpi. . . . . : Enabled
Connection-specific DNS Suffix Search List :
    attlocal.net
    attlocal.net
```

Device

IP Address

MAC Address

- Configure the Marvell DASH Agent using the command:

Note: The MAC address for Exclusive mode must specify a different NIC adapter other than the onboard Marvell AQC107 NIC MAC and IP address. This is necessary when multiple network interfaces are installed and exclusively configures the P620 onboard NIC to be used for DASH communications. At the time of this writing, DASH configured in Exclusive mode is only supported when static or manually assigned IP addresses are in use. DASH in Exclusive mode with DHCP will be supported in a future release of marvell AQC107 firmware.

- AqDashConfig0.26.exe exclusive <user> <password> cert.pem key.pem --mac xx:xx:xx:xx:xx:xx --ip xxx.xxx.xxx.xxx --device "xxx"

***In this example, the MAC and IP address are as follows:

--mac = 00:17:B6:00:A7:5F

--ip = 192.168.1.121

--device = "Marvell FastLinQ Edge 10Gbit Network Adapter"

```
C:\>AqDashConfig-0.31.0.exe exclusive Lenovo lenovo cert.pem key.pem --mac 00:17:B6:00:A7:5F --ip 192.168.1.121 --device "Marvell FastLinQ Edge 10Gbit Network Adapter"
Aquantia DASH Configuration Tool v0.15.0 (bundle v0.31.0)
Found 4 ASF power control operations
Found 2 adapter(s):
1. Marvell FastLinQ Edge 10Gbit Network Adapter
2. Marvell FastLinQ Edge 10Gbit Network Adapter #2

Selected 'Marvell FastLinQ Edge 10Gbit Network Adapter' adapter.
[*] DASH successfully configured!
```

- Confirm the Marvell DASH configuration using the command:
 - AqDashConfig0.26.exe show

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>cd C:\marvell_aqc107_4240

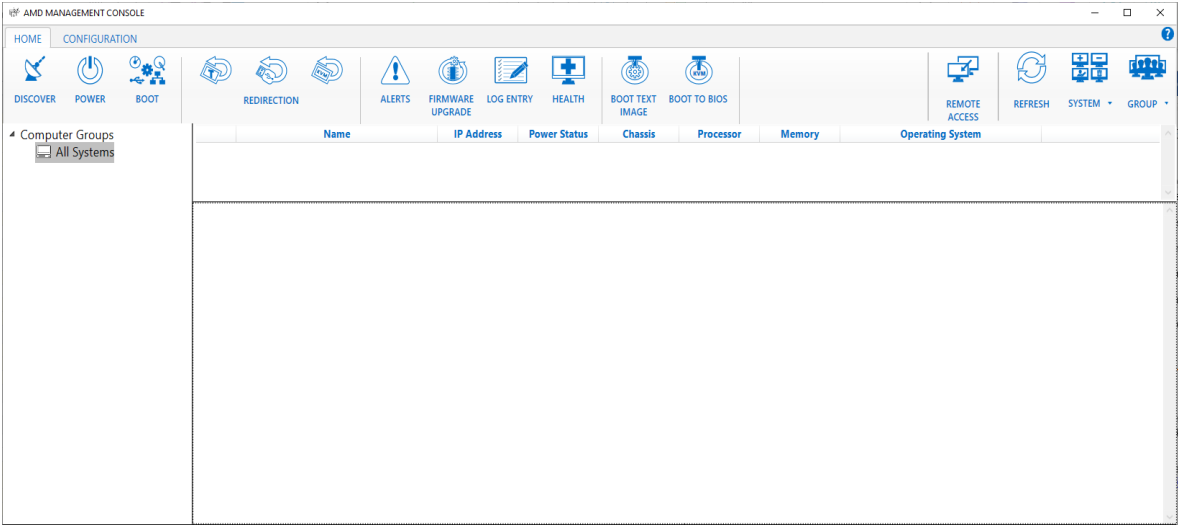
C:\marvell_aqc107_4240>AqDashConfig-0.31.0.exe show
Aquantia DASH Configuration Tool v0.15.0 (bundle v0.31.0)
Found 1 adapter(s):
1. Marvell AQtion 10Gbit Network Adapter
- Mode: Exclusive
- MAC: 00:e0:4c:98:8c:4e
- IP: 192.168.1.72
- Organization:

C:\marvell_aqc107_4240>_
```

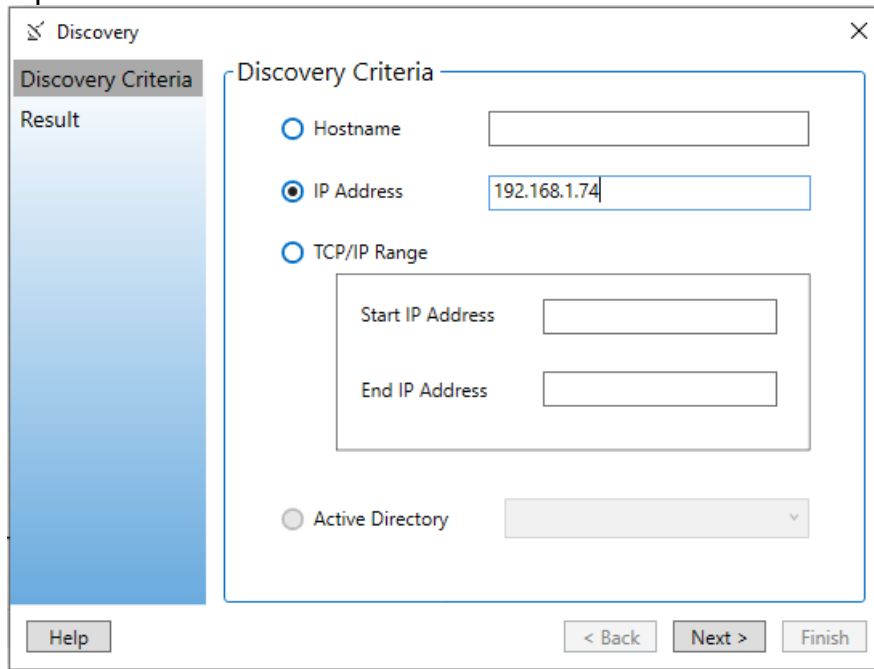
AMD Management Console

Once DASH has been properly configured, it is now time to add the system from within the AMD Management Console. Here are some quick step-by-step instructions on how to add the P620 to the AMD Management Console.

- Download and install the AMD Management Console from AMD’s website:
<https://developer.amd.com/tools-for-dmtf-dash/>
- Launch the AMD Management Console and select “DISCOVER”.



- Input either the P620 hostname or IP Address into the text field.

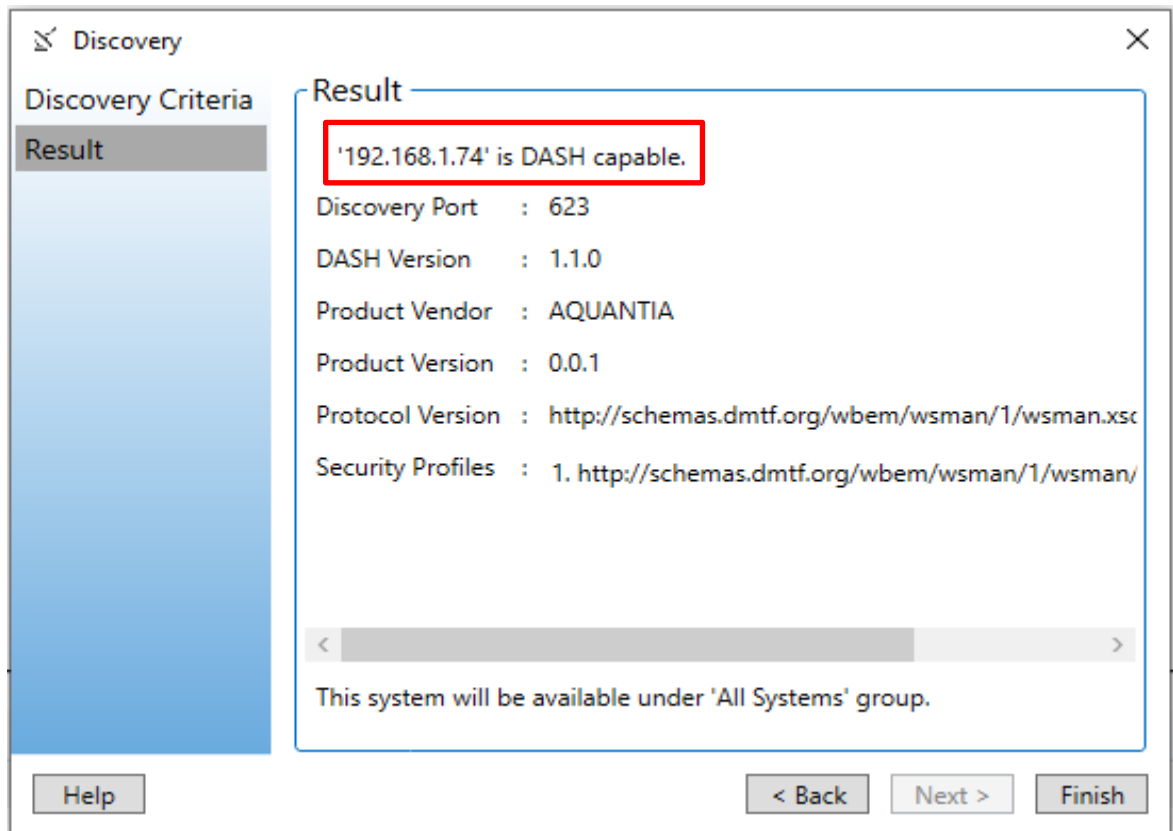


The screenshot shows a 'Discovery' dialog box with a sidebar on the left containing 'Discovery Criteria' and 'Result'. The 'Discovery Criteria' section is active and contains the following options:

- Hostname
- IP Address (with the text '192.168.1.74' entered in the adjacent text field)
- TCP/IP Range (with sub-fields for 'Start IP Address' and 'End IP Address')
- Active Directory (with a dropdown menu)

At the bottom of the dialog are buttons for 'Help', '< Back', 'Next >', and 'Finish'.

- Verify if the system is DASH capable and select 'Finish'.



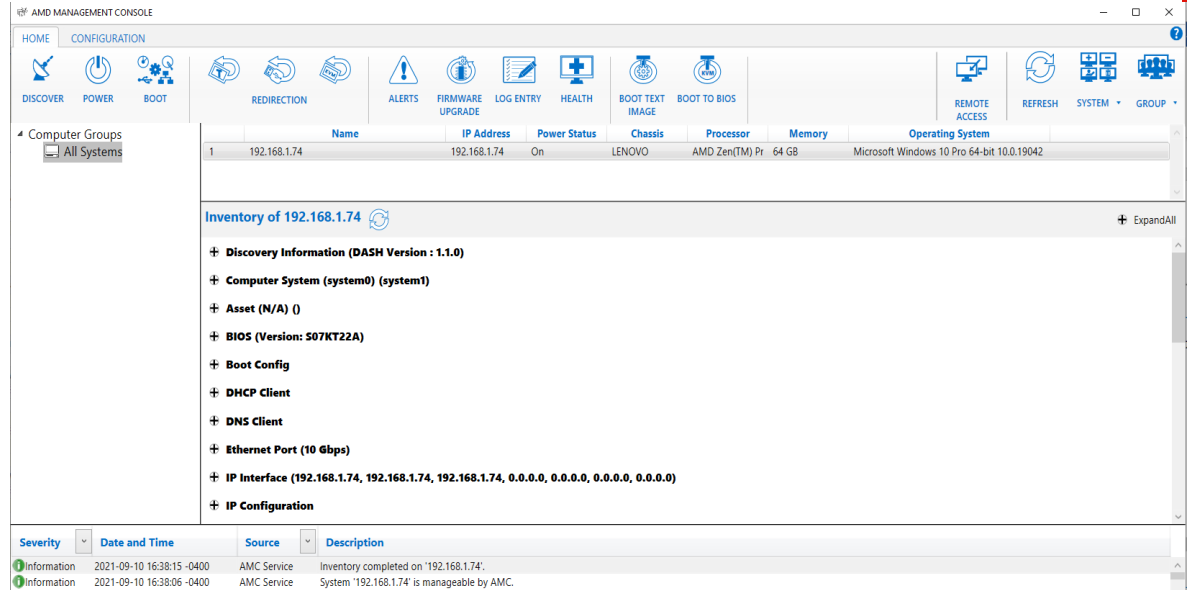
The screenshot shows the 'Discovery' dialog box with the 'Result' section selected in the sidebar. The main area displays the following information:

- '192.168.1.74' is DASH capable. (This line is highlighted with a red box)
- Discovery Port : 623
- DASH Version : 1.1.0
- Product Vendor : AQUANTIA
- Product Version : 0.0.1
- Protocol Version : http://schemas.dmtf.org/wbem/wsman/1/wsman.xsc
- Security Profiles : 1. http://schemas.dmtf.org/wbem/wsman/1/wsman/

Below the information is a horizontal scrollbar and a message: 'This system will be available under 'All Systems' group.' At the bottom are buttons for 'Help', '< Back', 'Next >', and 'Finish'.

- The P620 system should eventually appear at the top with inventory status near the bottom. DASH should now be setup and ready to manage the P620 system!

Note: This may take several minutes for the system to show up in the AMC Management Console.



The screenshot shows the AMD Management Console (AMC) interface. The top navigation bar includes options like DISCOVER, POWER, BOOT, REDIRECTION, ALERTS, FIRMWARE UPGRADE, LOG ENTRY, HEALTH, BOOT TEXT IMAGE, BOOT TO BIOS, REMOTE ACCESS, REFRESH, SYSTEM, and GROUP. The main content area displays a table of discovered systems:

Name	IP Address	Power Status	Chassis	Processor	Memory	Operating System
1	192.168.1.74	On	LENOVO	AMD Zen(TM) Pr	64 GB	Microsoft Windows 10 Pro 64-bit 10.0.19042

Below the table, the 'Inventory of 192.168.1.74' is expanded, showing the following details:

- Discovery Information (DASH Version : 1.1.0)
- Computer System (system0) (system1)
- Asset (N/A) ()
- BIOS (Version: 507KT22A)
- Boot Config
- DHCP Client
- DNS Client
- Ethernet Port (10 Gbps)
- IP Interface (192.168.1.74, 192.168.1.74, 192.168.1.74, 0.0.0.0, 0.0.0.0, 0.0.0.0, 0.0.0.0)
- IP Configuration

At the bottom, a log table shows the following entries:

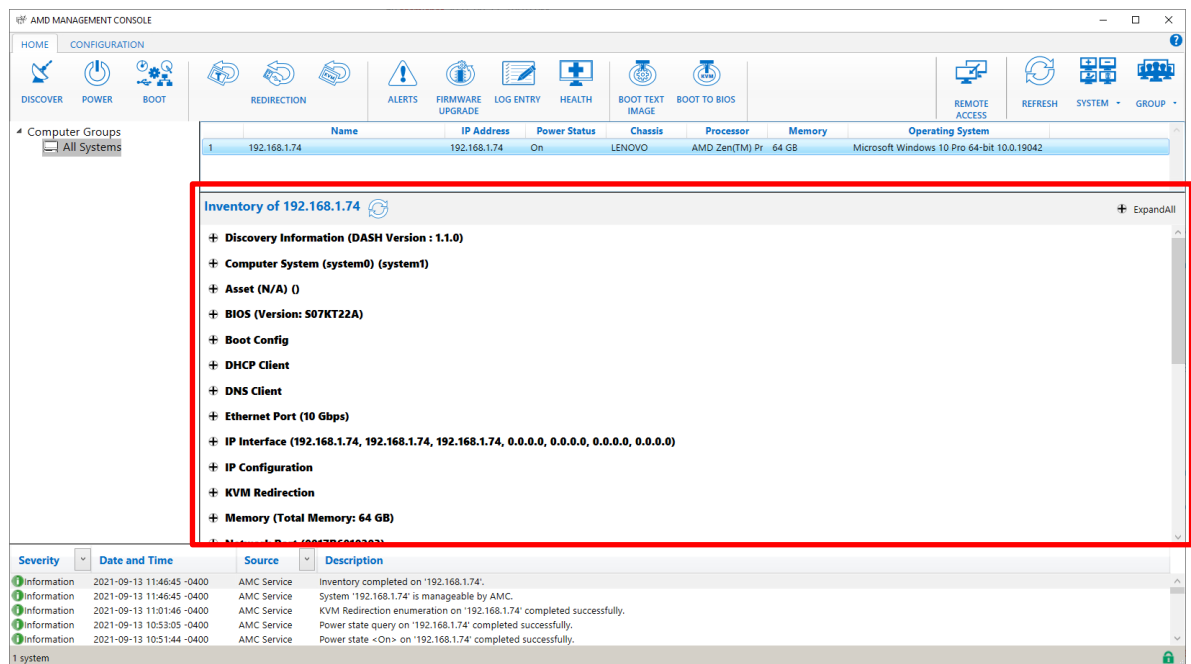
Severity	Date and Time	Source	Description
Information	2021-09-10 16:38:15 -0400	AMC Service	Inventory completed on '192.168.1.74'.
Information	2021-09-10 16:38:06 -0400	AMC Service	System '192.168.1.74' is manageable by AMC.

AMD DASH Supported Features

Once DASH has been properly configured and setup, here are a few supported features within the AMD Management Console. Feel free to reach out on options not covered here.

- Inventory Status

This is the middle section of the AMD Management Console. It can show the user different settings of the P620 system such as BIOS version, IP address, CPU and memory information, etc.



- Informational Log

This is the bottom section of the AMD Management Console. It basically is a running log of everything the user does within the AMD Management Console.

The screenshot displays the AMD Management Console interface. The top navigation bar includes options like DISCOVER, POWER, BOOT, REDIRECTION, ALERTS, FIRMWARE UPGRADE, LOG ENTRY, HEALTH, BOOT TEXT IMAGE, BOOT TO BIOS, REMOTE ACCESS, REFRESH, SYSTEM, and GROUP. The main content area shows a table of systems with columns for Name, IP Address, Power Status, Chassis, Processor, Memory, and Operating System. Below this, there is an 'Inventory of 192.168.1.74' section with expandable categories such as Discovery Information, Computer System, Asset, BIOS, Boot Config, DHCP Client, DNS Client, Ethernet Port, IP Interface, IP Configuration, and KVM Redirection.

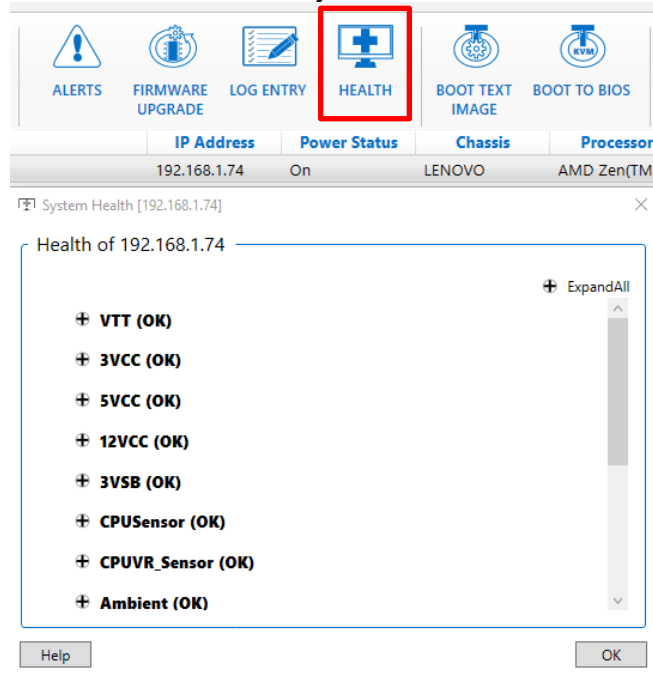
The bottom section, highlighted with a red border, is an informational log table:

Severity	Date and Time	Source	Description
Information	2021-09-13 11:46:45 -0400	AMC Service	Inventory completed on '192.168.1.74'.
Information	2021-09-13 11:46:45 -0400	AMC Service	System '192.168.1.74' is manageable by AMC.
Information	2021-09-13 11:01:46 -0400	AMC Service	KVM Redirection enumeration on '192.168.1.74' completed successfully.
Information	2021-09-13 10:53:05 -0400	AMC Service	Power state query on '192.168.1.74' completed successfully.
Information	2021-09-13 10:51:44 -0400	AMC Service	Power state <On> on '192.168.1.74' completed successfully.
Information	2021-09-10 16:43:50 -0400	AMC Service	Power state query on '192.168.1.74' completed successfully.
Information	2021-09-10 16:42:50 -0400	AMC Service	Power state <Off - Soft Graceful> on '192.168.1.74' completed successfully.

At the bottom left of the log, it indicates '1 system'.

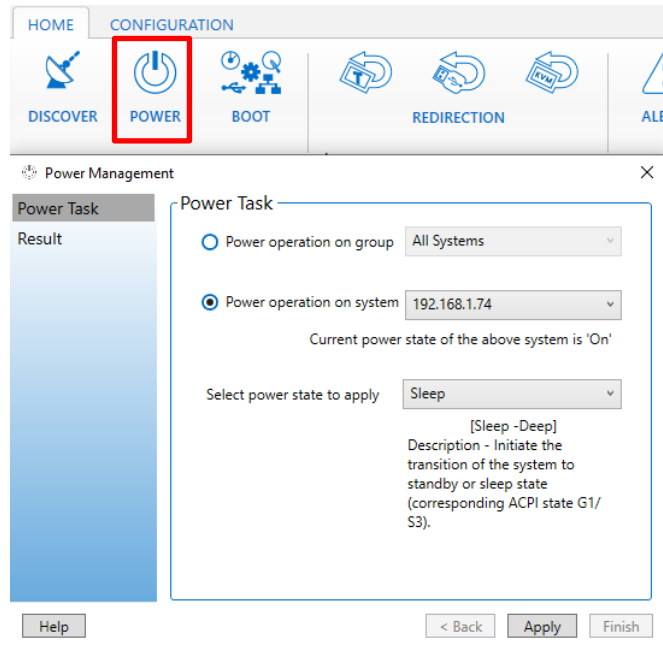
- Health

This option is located within the top ribbon menu that views different sensor states of the system.



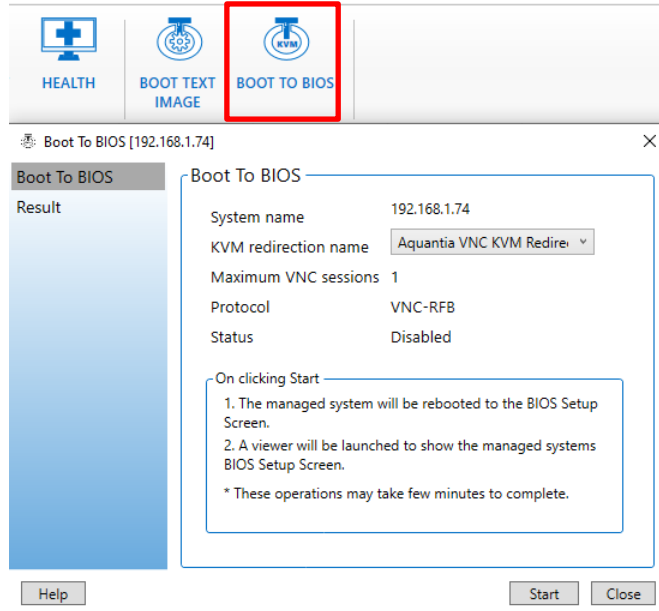
- Power

This option is located within the top ribbon menu that allows the user to shut down, reboot, wake the system, etc.



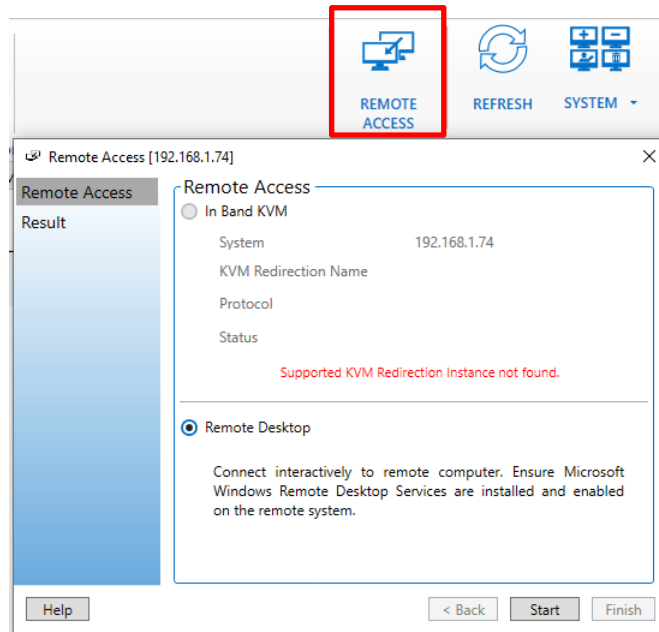
- **Boot to BIOS**

This option is located within the top ribbon menu that allows the user to boot the system into BIOS setup.



- **Remote Access**

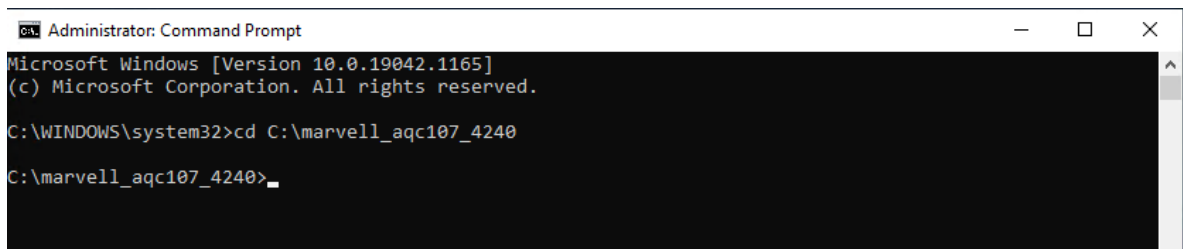
This option is located within the top ribbon menu that allows the user to remote access into the system desktop.



Unconfiguring & Disabling DASH

It is always a good idea to properly unconfigure DASH before disabling DASH in BIOS. Here are some quick step-by-step instructions on how to unconfigure and disable DASH from the system.

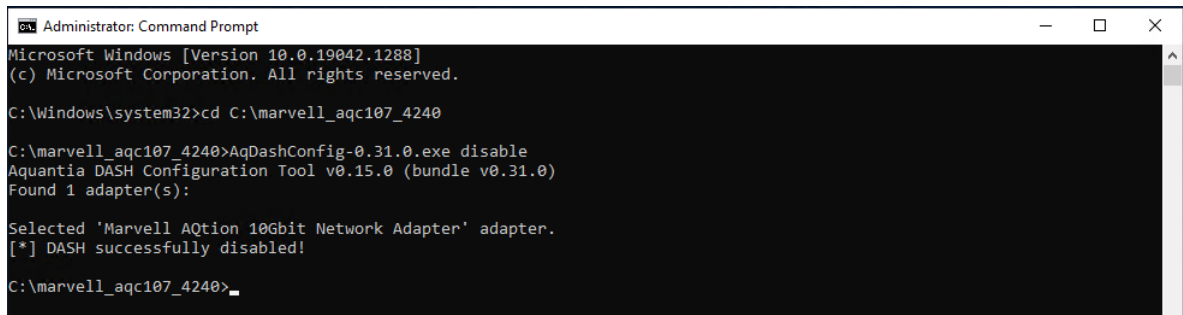
- From an Administrative Command Prompt Window, browse to the Marvell Firmware directory from the previous steps.
 - `cd C:\marvell_aqc107_4240\`



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\marvell_aqc107_4240
C:\marvell_aqc107_4240>
```

- Disable the Marvell DASH Agent using the command:
 - `AqDashConfig-0.31.0.exe disable`



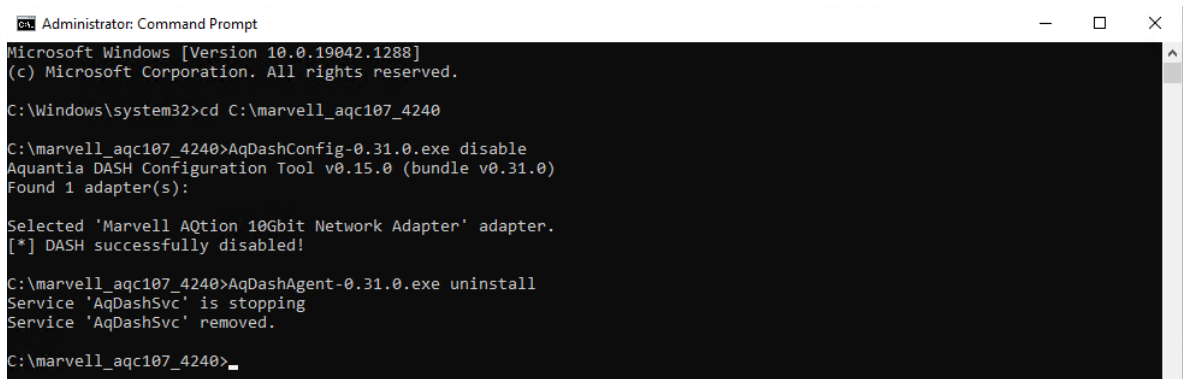
```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>cd C:\marvell_aqc107_4240
C:\marvell_aqc107_4240>AqDashConfig-0.31.0.exe disable
Aquantia DASH Configuration Tool v0.15.0 (bundle v0.31.0)
Found 1 adapter(s):

Selected 'Marvell AQtion 10Gbit Network Adapter' adapter.
[*] DASH successfully disabled!

C:\marvell_aqc107_4240>
```

- Uninstall the Marvell DASH Agent using the command:
 - `AqDashAgent-0.31.0.exe uninstall`



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1288]
(c) Microsoft Corporation. All rights reserved.

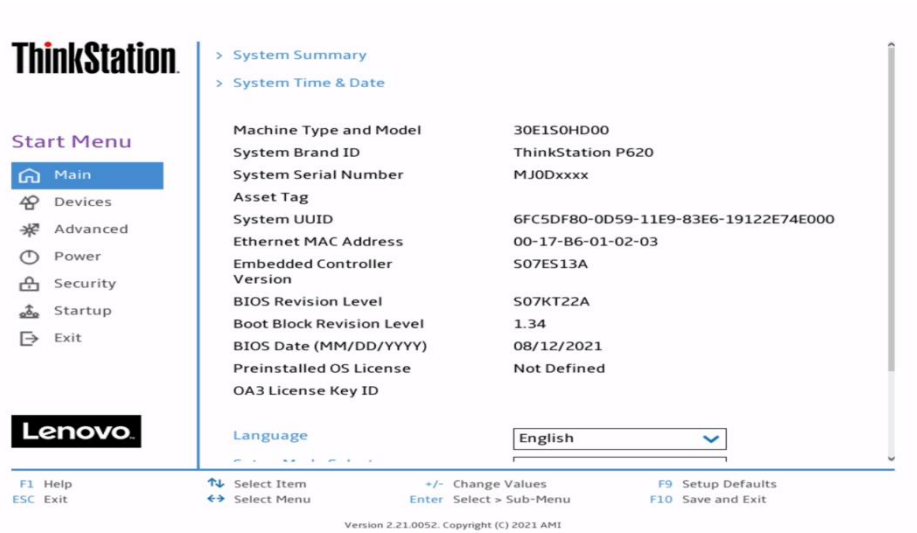
C:\Windows\system32>cd C:\marvell_aqc107_4240
C:\marvell_aqc107_4240>AqDashConfig-0.31.0.exe disable
Aquantia DASH Configuration Tool v0.15.0 (bundle v0.31.0)
Found 1 adapter(s):

Selected 'Marvell AQtion 10Gbit Network Adapter' adapter.
[*] DASH successfully disabled!

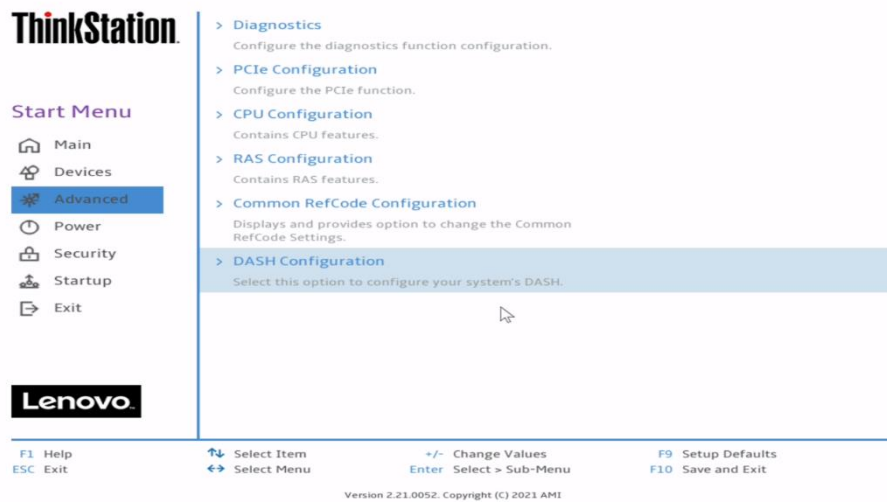
C:\marvell_aqc107_4240>AqDashAgent-0.31.0.exe uninstall
Service 'AqDashSvc' is stopping
Service 'AqDashSvc' removed.

C:\marvell_aqc107_4240>
```

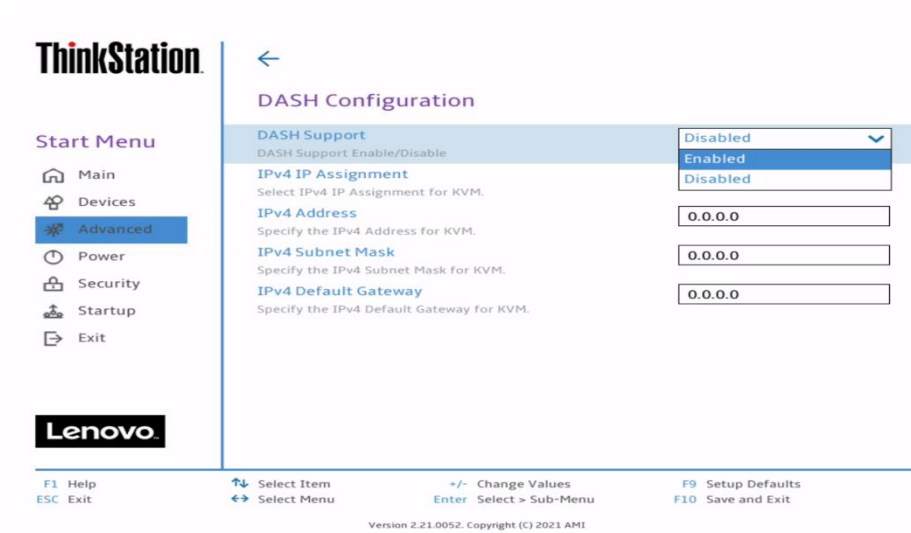
- Reboot the system and boot into BIOS F1 setup.



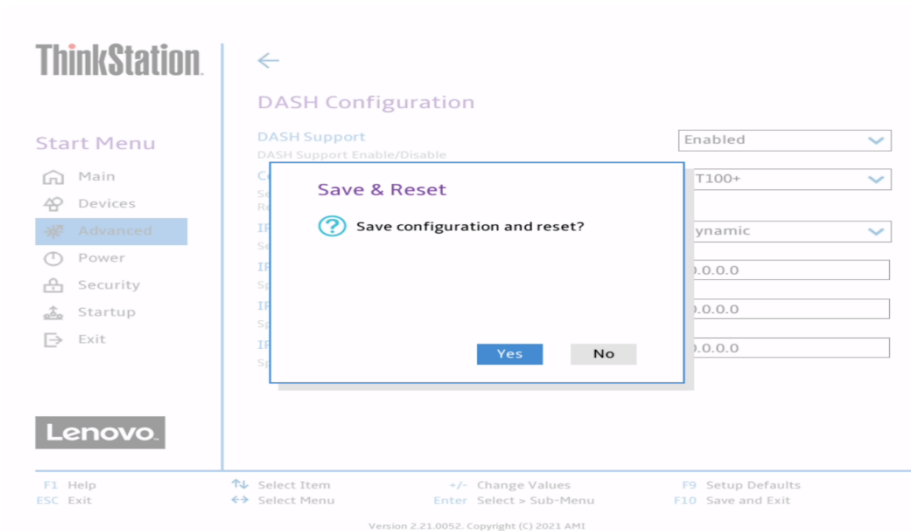
- Select the 'Advanced' menu option, followed by the "DASH Configuration" option.



- Select the drop-down menu for 'DASH Support' and set this to 'Disabled'.



- Press F10 to Save and Exit the BIOS setup menu.



- DASH is now completely unconfigured and disabled!

Revision History

Version	Date	Author	Changes/Updates
1.3	4/1/2022	Jason Moebs	Updated DASH Exclusive Mode Configuration.
1.2	10/26/2021	Jason Moebs	Added a note about “Exclusive Mode” will not work with DHCP with the current FW 4.2.40.
1.1	10/22/2021	Jason Moebs	Added Table of Contents. Added to the Introduction section. Added a “Installing & Configuring DASH in Exclusive Mode” section. Added a “Unconfiguring & Disabling DASH” section
1.0	9/15/2021	Jason Moebs	Initial release