



Implementing Out-Of-Band PC Management with DASH on HP Business Systems with AMD Chipset

Commercial Managed IT

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Introduction

This white paper provides instructions for enabling the DMTF DASH on supported HP Business Systems with AMD Chipset and Realtek NIC. This paper also talks about different plugins and tools available to take advantage of DASH.

Target audience: This white paper is intended for IT staff.

DMTF standard - Desktop and mobile Architecture for System Hardware (DASH) defines a set of interoperability standards for managing, monitoring and controlling PCs regardless of system power state (on, off, stand-by) or operating system capability. DASH uses standards-based management technologies for remote management and monitoring of Desktop and Notebook class systems that were previously unattainable. This paper describes the DASH capabilities available on the HP Notebook systems with AMD Chipset and Realtek Ethernet.

HP's Vision of Remote Management & DASH

DASH is an industry standard that allows system and network administrators to perform essential management tasks on HP's business class Desktop, Notebook and Workstations, regardless of their power state or operating system state. DASH enabled systems achieves smarter, efficient control of your business. HP has shipped millions of DASH enabled business class desktops and workstations to our customers. HP Notebooks today are certified for DASH 1.0 specification but have implemented most of DASH 1.1 profiles too.

Note

For more information go to the DMTF Learning Center at: <http://www.dmtf.org/education/>

The DASH standards are designed to assist in the remote management of common desktop infrastructure tasks, such as deploying new operating systems, monitoring of computer system health, power control and power state monitoring, and asset inventory collection. As new hardware technologies are introduced, or additional requirements are placed on the IT infrastructure, DASH will continue to evolve to include new functionality.

DASH has been designed to solve many of the pitfalls and constraints of previous management standards by leveraging well-proven technologies from the Service Oriented Architecture domain, advancements in security standards, and extensive modeling of management components, configuration data and relationships first introduced in the server management domain.

DASH is a web services-based management protocol and relies on security and network routing concepts familiar to web site and web services administrators.

Key Features of DASH

- Service availability without the requirement of an installed operating system and/or system power states
- Interoperability between various DASH-capable device implementations and management consoles
- Descriptive data model allowing for the discovery of iterative specification
- Updates (new profiles) or vendor-specific extensions (custom profiles)
- Well understood transport level security (HTTPS basic and digest authentication models with optional TLS client/server certificate support)
- Secured setup with support for multiple DASH users and multiple access roles (administrator, operator, auditor)
- DASH ecosystem can coexist with legacy Alert Standard Format (ASF) infrastructure
- Monitor and inventory the HW of the managed clients.

Management Profiles

A management profile is a specification that defines a normative set of behaviors and characteristics for addressing a specific management domain.

A profile consists of the following information:

- A data model representing the problem domain that consists of objects, properties and methods exposed by the profile
- Use cases to be addressed by the profile
- Steps required to traverse the data model and derive results

When a substantive block of new profiles become available, or fundamental changes are introduced to the DASH ecosystem, the DASH Implementation Requirements document is updated to reflect a new version of the standard. Profiles are continually being developed by the DMTF and DASH is designed to support them as they become available.

Note

DASH profile specification source material can be found at: <http://www.dmtf.org/standards/profiles/>

System requirements and prerequisites

For HP DASH supported platforms, you must have latest System BIOS, Realtek LAN network firmware and associated Realtek network driver and agent on your platforms.

Minimum versions of driver and firmware required

Realtek NIC:

Table 1. Minimum versions of driver and firmware of Realtek NIC required

NIC DASH FW	System BIOS	NIC Driver Win 10
1.3.171371432	Shipping	10.23.1003.2017

Broadcom NIC:

Table 2. Minimum versions of driver and firmware of Broadcom NIC required

NIC DASH FW	System BIOS	NIC Driver Win 10
3.03.0.2	Shipping	16.6.4.1

Supported platforms

Notebooks:

Table 3. Supported notebook models

Broadcom NIC Systems	Realtek NIC systems
HP EliteBook 755 G4 Notebook PC	HP EliteBook 745 G6 Notebook PC
HP EliteBook 745 G4 Notebook PC	HP EliteBook 735 G6 Notebook PC
HP EliteBook 725 G4 Notebook PC	HP EliteBook 755 G5 Notebook PC
HP EliteBook 755 G3 Notebook PC	HP EliteBook 745 G5 Notebook PC
HP EliteBook 745 G3 Notebook PC	HP EliteBook 735 G5 Notebook PC
HP EliteBook 725 G3 Notebook PC	HP ProBook 645 G4 Notebook PC

Desktops:

Table 4. Supported desktop models

Broadcom NIC Systems	Realtek NIC systems
HP EliteDesk 705 G2 Desktop Mini	HP EliteDesk 705 G5 Desktop Mini
HP EliteOne 705 G2 All in One	HP EliteDesk 705 G5 Small Form Factor
HP EliteDesk 705 G2 Microtower	HP EliteDesk 705 G4 Desktop Mini
HP EliteDesk 705 G2 Small Form Factor	HP EliteDesk 705 G4 Microtower
HP EliteDesk 705 G1 Desktop Mini	HP EliteDesk 705 G4 Small Form Factor
HP EliteOne 705 G1 All in One	
HP EliteDesk 705 G1 Microtower	
HP EliteDesk 705 G1 Small Form Factor	

Supported profiles on HP Desktop and Notebook

Table 5. The following table outlines DASH profile level support that is available with the Realtek Ethernet Family controller on supported HP platforms.

Feature	DASH 1.2 Cert Req	2013- 14 DT	2013- 14 NB	2015- 17 DT & NB	2018 DT & NB	2019/2020

Base Desktop and Mobile Profile	✓	✓	✓	✓	✓	✓
Profile Registration Profile	✓	✓	✓	✓	✓	✓
Role Based Authorization Profile	✓	✓	✓	✓	✓	✓
Simple Identity Management Profile	✓	✓	✓	✓	✓	✓
WS-Management Specification	✓	✓	✓	✓	✓	✓
WS-Management CIM Binding Spec	✓	✓	✓	✓		
WS-CIM Mapping Specification	✓	✓	✓	✓	✓	✓
Battery Profile				Not supported		
BIOS Management Profile		✓				
Boot control Profile		✓			✓	✓
CPU Profile		✓	✓	✓	✓	✓
DHCP Client Profile					✓	✓
DNS Client Profile						
Ethernet Port Profile		✓				
Host Lan Network Port Profile						
IP Interface Profile						
Fan Profile		✓			✓	✓
Indications Profile		✓			✓	✓
KVM Redirection Profile						✓
Media Redirection Profile						
Opaque Management Profile		✓				
OS Status Profile		✓			✓	✓
Physical Asset Profile		✓		AMD ASK	✓	✓
Power State Management Profile		✓	✓	✓	✓	✓
Power Supply Profile		✓			✓	✓
Sensors Profile		✓			✓	✓
Software Inventory Profile		✓			✓	✓
Software Update Profile		✓			✓	✓
System Memory Profile		✓	✓	✓	✓	✓
Text Console Redirection Profile		✓		AMD ASK	✓	✓
USB Redirection Profile		✓		AMD ASK	✓	✓
Record Log Profile				AMD ASK	✓	✓
Active Directory w/Kerberos					✓	✓
Web GUI/Embedded Web Server					✓	✓
PLDM/MCTP Interfaces for Health monitoring					✓	✓
“Graceful”/“Soft” Shutdown					✓	✓

Using DASH functions on HP Desktop and Notebook

HP notebooks that support DASH are shipped in a predefined management mode. There is no need for the end user to enable the DASH functionality. The expectation to this is products that are ordered through a custom configuration service where the customer can specify various parameters supporting their infrastructure and deployment model.

Dash Support

Ensure that you have the latest system BIOS, Realtek Ethernet network firmware and associated Realtek network driver and agent for your platforms. HP highly recommends you set the BIOS administrator password to prevent unauthorized access to system BIOS configuration options.

Unit provisioning using Realtek ROM options settings from BIOS:

- 1) Press “F10” during post to boot into BIOS setup menu, select UEFI Drivers page, there is an option to launch 3rd party option ROM on next boot.
- 2) Press “F3” during post to launch 3rd party (Realtek) option ROM directly.

On January 1st, 2020, California Senate Bill 327 will become effective. In compliance with this law, the default account/password from the DASH enablement process has been removed in 2020 or later HP platforms. The change will now require the end user to create an account/password prior to enabling DASH. In order to provide better security, a credential check will be required for each account/password change.

Please be noted there will be two scenarios for DASH login as following:

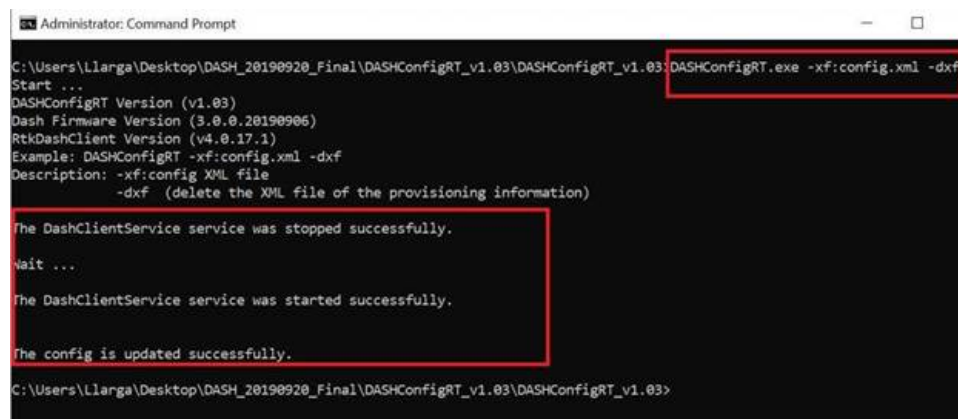
- Default account and password are set as “Administrator” and “RealTek”.
- Default account and password has been removed and user need to set private account and password on the client units before login by using DASH.

Follow the steps below to set private account and password:

- 1) Boot to the SUT (DASH enabled target) into Windows and make that sure you have installed DASH Client utility and put DASHConfigRT tool (available from Realtek website) onto a folder within the C: drive. A crab icon is shown in the notification area of the task bar informing you that the DASH Client utility is installed.
- 2) Find config.xml from DASHConfigRT tool folder and use “Notepad” to modify it – change “Administrator” to your desired account and “password” to your desired password then save.
- 3) Run a Command Prompt window as Administrator and input the commands “DASHConfigRT.exe -xf:config.xml -dx”

Press the Enter key.

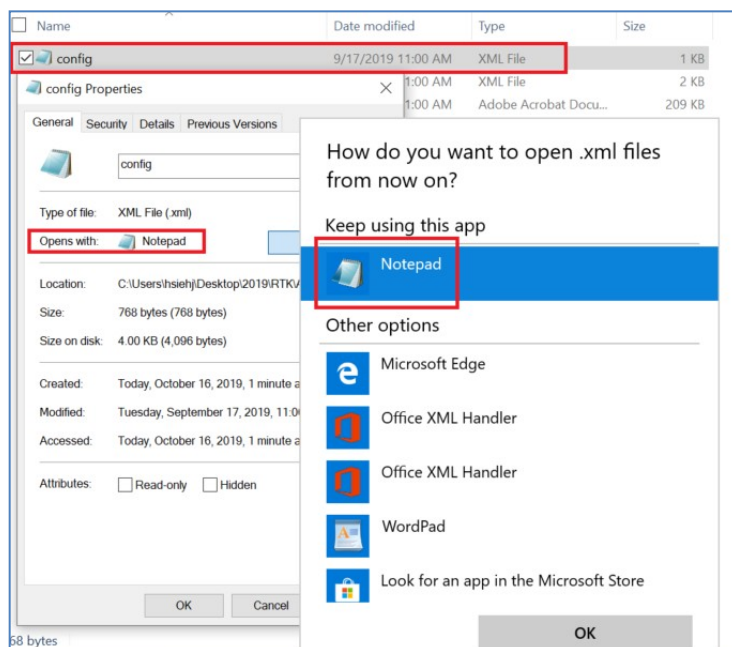
- 4) The new account and password are set successfully.



```
Administrator: Command Prompt
C:\Users\Llarga\Desktop\DASH_20190920_Final\DASHConfigRT_v1.03>DASHConfigRT.exe -xf:config.xml -dx
Start ...
DASHConfigRT Version (v1.03)
Dash Firmware Version (3.0.0.20190906)
RtkDashClient Version (v4.0.17.1)
Example: DASHConfigRT -xf:config.xml -dx
Description: -xf:config XML file
            -dx (delete the XML file of the provisioning information)

The DashClientService service was stopped successfully.
Wait ...
The DashClientService service was started successfully.
The config is updated successfully.
C:\Users\Llarga\Desktop\DASH_20190920_Final\DASHConfigRT_v1.03>
```

Also, please always make sure you use “Notepad” to open and save config.xml while setting private account and password.



HP works closely with management console vendors and partners to ensure that an ecosystem of supporting products is available to help you realize the full potential of DASH in your environment.

Some of the different consoles and software available today are list below. For more details, please visit the vendor website.

- **AMD DASH Plug-in for Microsoft Systems Center 2007**
- **Realtek Management Console**
- **AMD Management**

For systems with Broadcom Ethernet network please refer to the support link at the end of this document.

HP Client Management Web View

In addition to managing the DASH-enabled PC through a management console, HP provides a convenient method to access out-of-band management functions through a web browser.

The HP Client management Web View is a web browser-based interface for limited remote system management. The web view is only functional once the management controller has been provisioned for DASH management and an Administrator account has been enabled. The HP Client management Web View is accessible using any modern browser.

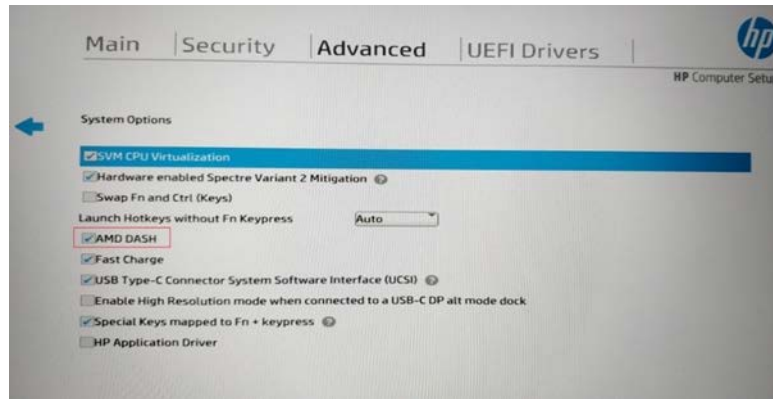
Management functions accessible from the web-based user interface include:

- Access to hardware inventory information for system, processors, and memory
- Visibility to system power state and remote power control operations
- Network configuration settings

The following steps outline connecting to the out-of-band management service from the embedded web server included on the Realtek Ethernet controller. This interface provides an alternative control mechanism for utilizing the DASH functionality without requiring a DASH enabled management console.

1. Make sure your system has minimum supported BIOS/FW/Driver from Table 1 and Table 2 above

- Power up the system and press F10 to enter the BIOS setup menu and enable AMD Dash feature from Advanced>System Options



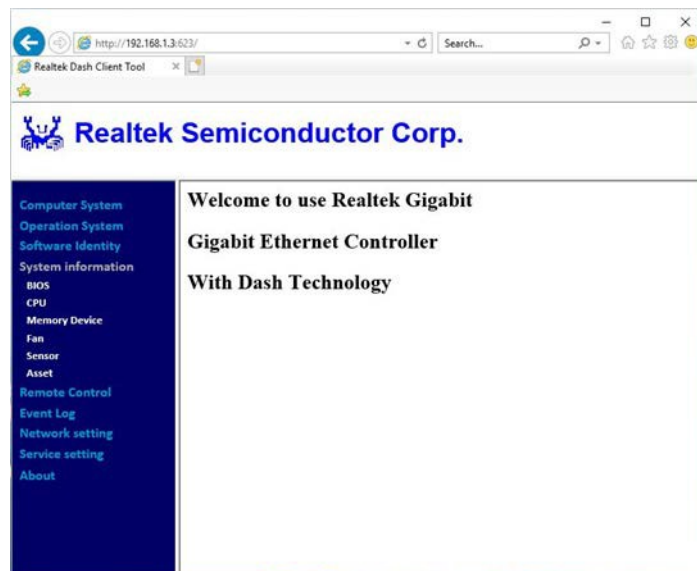
- Boot to desktop and connect a LAN network cable to the test system.
- Using your web browser of choice from a separate computer system on the same network, connect to the IP address and DASH management port of the remote system that you wish to manage.

Table 6. DASH Management Ports

TCP Port	Purpose	Example
623	WS-Man over HTTP	http://172.16.2.17:623
664	WS-Man over HTTPS	http://172.16.2.17:664

These are the well-known IANA ports reserved for DASH management traffic. By default, the Realtek Ethernet controller will use these ports for DASH traffic.

- The web browser makes a connection to the HP Client management Web View but will require authentication to grant access to the web page.
- Enter the username and password to use for authentication. If you have not created any additional accounts, you can connect with predefined “Administrator” account. The default password for “Administrator” account is “Realtek”
- Once your access has been authenticated, you will have access to a management portal similar to the figure below to do some simple management tasks.



Note

Please make sure that you have opened ports 623 and 664 in the Windows or any third-party firewall you might have installed. If these ports are blocked, you will not be able to communicate with the DASH protocol to remotely manage the PC.

For more information

DMTF

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

AMD Tools for DMTF DASH

<https://developer.amd.com/tools-for-dmtf-dash/>

HP Client Management Solutions

<https://www8.hp.com/us/en/ads/clientmanagement/overview.html>

Dash White Paper for Broadcom systems

<ftp://ftp.hp.com/pub/caps-softpaq/cmit/whitepapers/DASH%20White%20Paper%20for%20HP%20Desktops.pdf>

Realtek RealManage User Manual and all related documents and tools (including DASH ConfigRT tool under - RTL8111DP/EP/FP DASH console tool for Windows 7/8/10)

<https://www.realtek.com/zh-tw/component/zoo/category/network-interface-controllers-10-100-1000m-gigabit-ethernet-pci-express-software>

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