



# Intel® Endpoint Management Assistant

## Release Notes

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*Rev. 1.12.2*

*January 2024*

**Intel Confidential**

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## 1.0 Introduction

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Intel® Endpoint Management Assistant (Intel® EMA) is a software application that provides an easy way to manage Intel vPro® platform-based devices in the cloud, both inside and outside the firewall. Intel EMA is designed to make Intel® AMT easy to configure and use so that IT can manage devices equipped with Intel vPro platform technology without disrupting workflow. This in turn simplifies client management and can help reduce management costs for IT organizations.

Intel EMA and its management console offer IT a sophisticated and flexible management solution by providing the ability to remotely and securely connect Intel AMT devices over the cloud. Benefits include:

- Intel EMA can configure and use Intel AMT on Intel vPro platforms for out-of-band, hardware-level management
- Intel EMA can manage systems using its software-based agent, while the OS is running, on non-Intel vPro® platforms or on Intel vPro® platforms where Intel AMT is not activated.
- Intel EMA can be installed on premises or in the cloud.
- You can use Intel EMA's built-in user interface or call Intel EMA functionality from APIs

This document provides release-specific information for the current release of Intel® EMA.

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### NOTE

For the latest version of this document, refer <https://downloadcenter.intel.com/download/28994?v=t>.

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## 1.1 Related Documentation

The following documentation is included as part of the Intel® EMA software release package:

Document (filename)	Description
Intel® EMA Quick Start Guide ( <i>Intel(R)_EMA_QuickStart_Guide.pdf</i> )	Provides a simplified procedure for installing and configuring the Intel EMA server and deploying the Intel EMA agent for tutorial or proof-of-concept purposes in a small scale (i.e., laboratory) environment.
Intel® EMA Server Installation and Maintenance Guide( <i>Intel(R)_EMA_Server_Installation_and_Maintenance_Guide.pdf</i> )	Provides complete installation, configuration, and maintenance instructions for implementing the Intel EMA server in a full scale production environment.
Intel® EMA Administration and Usage Guide ( <i>Intel(R)_EMA_Admin_and_Usage_Guide.pdf</i> )	Provides complete instructions for setting up and using Intel EMA to manage your endpoint systems.
Intel® EMA Web Deployment Guide for AWS/Azure/GCP ( <i>Intel(R)_EMA_Web_Deployment_Guide_for_AWS/Azure/GCP.pdf</i> )	Provides high-level conceptual information on how to deploy Intel EMA for a web-based services or cloud environment. A separate guide is provided for Amazon Web Services (AWS), Microsoft* Azure, and Google* Cloud Platform (GCP).
Intel® EMA API Guide ( <i>Intel(R)_EMA_API_Guide.pdf</i> )	Provides detailed usage information for the Intel EMA Application Programming Interface (API).
Intel® EMA JavaScript Libraries Guide ( <i>Intel(R)_EMA_JavaScript_Libraries.pdf</i> ) EMA.	Provides detailed usage information for the JavaScript libraries included in Intel

### 1.1.1 Localized End User Documentation

Intel EMA user documentation is available in multiple languages. Available languages are French, German, Mexican Spanish, Brazilian Portuguese, Russian, and Simplified Chinese.

#### French

<https://www.intel.com/content/www/fr/fr/support/articles/000058257/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000055619/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000055621/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000058622/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000055626/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000055627/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000055628/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000055629/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000088614/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000055630/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000058624/software/manageability-products.html>

<https://www.intel.com/content/www/fr/fr/support/articles/000058623/software/manageability-products.html>

### **German**

<https://www.intel.com/content/www/de/de/support/articles/000058257/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000055619/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000055621/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000058622/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000055626/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000055627/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000055628/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000055629/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000088614/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000055630/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000058624/software/manageability-products.html>

<https://www.intel.com/content/www/de/de/support/articles/000058623/software/manageability-products.html>

### **Mexican Spanish**

<https://www.intel.com/content/www/xl/es/support/articles/000058257/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000055619/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000055621/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000058622/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000055626/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000055627/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000055628/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000055629/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000088614/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000055630/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000058624/software/manageability-products.html>

<https://www.intel.com/content/www/xl/es/support/articles/000058623/software/manageability-products.html>

#### **Brazilian Portuguese**

<https://www.intel.com/content/www/br/pt/support/articles/000058257/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000055619/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000055621/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000058622/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000055626/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000055627/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000055628/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000055629/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000088614/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000055630/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000058624/software/manageability-products.html>

<https://www.intel.com/content/www/br/pt/support/articles/000058623/software/manageability-products.html>

### **Simplified Chinese**

<https://www.intel.com/content/www/cn/zh/support/articles/000058257/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000055619/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000055621/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000058622/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000055626/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000055627/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000055628/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000055629/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000088614/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000055630/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000058624/software/manageability-products.html>

<https://www.intel.com/content/www/cn/zh/support/articles/000058623/software/manageability-products.html>

## **1.1.2 Intel EMA Cloud Start Tool Information**

The Intel EMA Cloud Start Tool is a quick and simple way to create a cloud based, standalone Intel EMA instance for evaluation purposes.

There are two versions: a web based version, which works with Microsoft\* Azure; and a local execution version which works with Amazon\*, Google\*, and Microsoft Azure cloud services. Refer the links below for software downloads and documentation.

### **Web based version:**

<https://www.intel.com/content/www/us/en/download/19738/intel-endpoint-management-assistant-intel-ema-cloud-start-tool-for-azure.html>

**Local execution version:**

<https://www.intel.com/content/www/us/en/download/684584/684586/intel-ema-cloud-start-tool-terraform-scripts.html>

### **1.1.3 Additional Intel AMT Information**

For additional information about Intel AMT, refer the following documentation:

[https://software.intel.com/sites/manageability/AMT\\_Implementation\\_and\\_Reference\\_Guide/default.htm](https://software.intel.com/sites/manageability/AMT_Implementation_and_Reference_Guide/default.htm)

## 2.0 What's New in this Release

### NOTE

When upgrading an Intel EMA instance, the account under which the Platform Manager service runs reverts to Local System. If you are running that service under another local or domain account, it will need to be reconfigured and all Intel EMA components halted and restarted after the upgrade is complete.

- **Intel EMA 1.12.2**
  - EMA latest version now supports provisioning, adoption and management of newer platforms, AMT versions 18 and on.
- **Intel EMA 1.12.1**
  - Improved flow for setting DB connection strings to prevent failures due to database permissions issues when using Azure SQL databases.
- **Intel EMA 1.12.0**
  - The version 9 (v9) APIs have been removed from this release of Intel EMA. The version 10 (v10) APIs will be removed in the next release of the Intel EMA API. Please upgrade any custom integration code you have created to use a new API version. We recommend, you always update to the latest API version as soon as possible as older versions will be removed upon subsequent updates. If desired, you can use the "latest" API path (for example, GET /api/latest/802\_1XSetups) to ensure you are always calling the latest API version in your code.
  - New JavaScript API for out-of-band Intel AMT KVM remote control.
  - In-band remote desktop improvements
    - Display selection is maintained during UAC prompts or logging out/in.
    - Improved handling of displays with different DPI scaling to prevent parts of the screen from being cut off.
    - Improved settings handling for the multi-display view.
  - Improved error handling when the Local Manageability Service is not present or disabled.
  - Unicode characters support for endpoint computer names and files in the Files tab.
  - The ability to show endpoint fully qualified domain names (FQDNs) in the endpoint list.
  - Separate database connections strings for installation and post-install database access.
  - Improvements to the installer flow.
  - Bugfixes.

## 2.1 Upgrading from v1.3.1 to v1.3.2 or later

A fresh install is recommended when upgrading from Intel EMA 1.3.1. If upgrading from Intel EMA 1.3.1, please be aware of the following.

- Due to a known issue, the Intel EMA 1.3.1 agent will not automatically upgrade to the new version as it normally would. The Intel EMA agent must be reinstalled with the 1.3.2 or later version to restore normal operations.
- The FileActions and Installer processes included in Intel EMA 1.3.1 are no longer included as part of Intel EMA and will fail to start after upgrading to v1.3.2 or later. Use the Platform Manager to stop and remove these two items from the Runtime and Storage tabs.
- If you created user groups in Intel EMA version 1.3.1, you will notice that your existing user group names are displayed differently in the current version's user interface. Starting with version 1.3.2, user group names now include the group's rights (Execute or View) appended at the end. Refer examples below:

```
MyGroupName@@@Execute
```

```
MyOtherGroupName@@@View
```

- If you are using a custom user or system account to run Intel EMA services under, you will need to reset that account again after the upgrade and then reboot to restart the services under that account.
- As of this release, TLS 1.0 on HTTPS is disabled by default.

## 3.0 Supported Operating Systems

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As a stand-alone application, the Intel® EMA Agent can be installed on the following operating systems:

- Microsoft Windows 10
- Microsoft Windows 11

Intel EMA Server can be installed on the following operating systems:

- Microsoft Windows Server 2019

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**NOTE**

The getPFX API requires the Intel EMA server to be installed on Windows Server 2019 or later

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- Microsoft Windows Server 2022

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**NOTE**

Crypto for Intel ME 11 systems is disabled by default on Windows Server 2022

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## 4.0 Installation Prerequisites

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This is a list of the prerequisites needed to set up the Intel® EMA Server.

### 4.1 Computer

A computer or virtual machine with sufficient capability for the expected traffic. Systems not meeting these minimum specifications could experience performance issues.

2 Intel® Xeon® Processors, 16 threads, 24GB RAM, 1TB Mirrored: This configuration should be able to handle over 20k connections.

### 4.2 Operating System

Refer [Supported Operating Systems](#) on page 12

Currently, Intel EMA does not provide internationalization support. The operating system needs to have English-US Windows display language, English-US system locale, and English-US format (match Windows display language).

### 4.3 Database

Install the Microsoft SQL Server\*. The database may run on a separate server on the network or on the same system as the Intel EMA Server. For demonstration or test purposes, Microsoft SQL Server Express edition can be used if installed with Advanced Features. For production environments, we recommend using Microsoft SQL Server Enterprise. A strong working knowledge of installing, configuring, and using SQL and Active Directory is required (if using 802.1x).

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#### IMPORTANT

To achieve security in-depth, we recommend to use Microsoft SQL Server Enterprise and enable Transparent Data Encryption. Additionally Windows authentication mode is recommended as the authentication mode.

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## NOTES

- Microsoft SQL Server 2017, 2019, and 2022 (English-US version only) are supported.
- The operating system of the machine on which SQL Server is running must be a supported operating system version and needs to have English-US Windows display language, English-US system locale, and English-US format (match Windows display language). See Supported Operating Systems, Chapter 1.
- The **collation** value in SQL Server must be set to **SQL\_Latin1\_General\_CP1\_CI\_AS**.
- Be sure to allocate enough resources (CPU, memory, SSD, etc.) to SQL Server. If your SQL Server's resources are dynamically allocated, ensure enough guaranteed fixed resources are allocated. If not, you may see error messages like "Unable to get database connection, all connections are busy" in the component server log files in **Program Files (x86)\Intel\Platform Manager\EmaLogs**.
- Intel EMA uses query notification in SQL Server to reduce the number of database reads. That feature requires "Service Broker" to be enabled in SQL server. If Service Broker is disabled, you will see warnings to that effect in the component server log files in **Program Files (x86)\Intel\Platform Manager\EmaLogs**.
- If you choose SQL authentication during installation you will be required to supply two database connection strings. One string is for a more permissive account used to install the database, and the other is for less permissive account used by Intel EMA services to access the database after installation.
- Before installing Intel EMA, ensure that an account exists on the SQL server that can be used by the Intel EMA installer to connect to the SQL server and create the Intel EMA database. If you are not the SQL database administrator (SQL DBA), contact the SQL DBA to have this account set up. This account must exist before you install Intel EMA, since you will be asked to specify the SQL connection account during the installation process. This account may be a Windows account under Windows Authentication or an SQL account under SQL Authentication. In addition, the SQL account must have a default database configured. The default database can be any existing database on the SQL server. This default database is required so that the Intel EMA installer can confirm that the specified SQL account/user can contact the SQL server and its databases.
- Before installing Intel EMA, ensure that the SQL account used in the Intel EMA SQL connection string to create the database has sysadmin rights (to create new account for IIS default application pool identity) and has at least dbcreator permission, which allows it to create, modify, and delete any database. Also, this account must have the database level roles db\_owner, db\_datawriter, and db\_datareader. The "sysadmin" right is needed in order to create the new user "IIS APPPOOL\DefaultAppPool" for the SQL server (if it does not exist). If it exists already or you do not use that account for the IIS application pool of the Intel EMA website, then the role needed during installation is "dbcreator", to create the Intel EMA database. Keep in mind that the "sysadmin" or "dbcreator" rights are only needed during Intel EMA installation. Lastly you must grant permission for "SUBSCRIBE QUERY NOTIFICATIONS" to the user of Intel EMA database.

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## IMPORTANT

If you do not grant "sysadmin" rights to the SQL connection account, the installation will still complete successfully, but with errors related to not being able to create the IIS APPPOOL user mentioned above. **If you did not grant "sysadmin" rights to the SQL connection account, you MUST manually create this user on the SQL server after the installation completes in order for Intel EMA to work.**

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## 4.4 Pre-installation Instructions for Microsoft Azure AD Environments

If you plan to install Intel EMA in an existing Microsoft Azure AD environment, follow the steps below in order to enable Intel EMA to successfully connect to the Azure AD environment. We recommend that you perform these steps before installing Intel EMA, however they can be performed after installation, though you will not be able to add users and perform other Intel EMA actions until you perform these steps in Azure AD.

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### NOTE

Intel EMA instances configured to use Azure AD authentication do not support individual user authentication via the REST API from scripts or outside applications. Use of Client Credential authentication is a supported alternative on these instances. If you require the use of integrating applications or administrative scripts that call Intel EMA's APIs, verify that they will work with Azure AD authentication before proceeding with a production deployment.

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1. In your Azure AD tenant (note that this is NOT the same as an Intel EMA tenant), create a new app registration. This app will be associated with Intel EMA once Intel EMA is installed, and Intel EMA will use this app to interact with Azure AD to exchange information.
  - a. Go to **Azure Active Directory > App Registration** and create a new app registration.
  - b. **Supported account types** for the new app must be Accounts in this organizational directory only.
  - c. Configure the Redirect URI, choosing Web as the Platform.
  - d. Enter `https://<EMA FQDN or IP>/api/latest/azureLogin` as the Redirect URI value (Note: This URI is case sensitive).
2. In the **Certificates & Secrets** section for the newly registered app, add a new client secret:
  - a. At the time of client secret creation, record the client secret's value, as it is only displayed once. You will need this value later when you configure Intel EMA's Web Server settings after installation. Be sure to secure this sensitive information.
  - b. Consider the expiration date for the client secret. Note that before it expires, you will need to create a new client secret and update the Web Server settings in Intel EMA.
3. In the API permissions section for the newly registered app, add the required permissions:

- a. Ensure that a "Delegated" permission type for **Microsoft Graph** with "User.Read" permission exists.
  - b. Add a permission for **Microsoft Graph** with "Application" Type and with "User.Read.All" permission.
  - c. Click to **Grant admin consent** for these API permissions.
4. Go to the Overview section of the newly registered app and copy/record the Azure AD Directory (tenant) ID, the Azure AD Application (client) ID, to go with the Azure AD Client Secret Value you created above. Use these values to configure the Intel EMA Web Server after initial server installation, as described in [Installation Prerequisites](#) on page 13.

## 4.5 Web Server

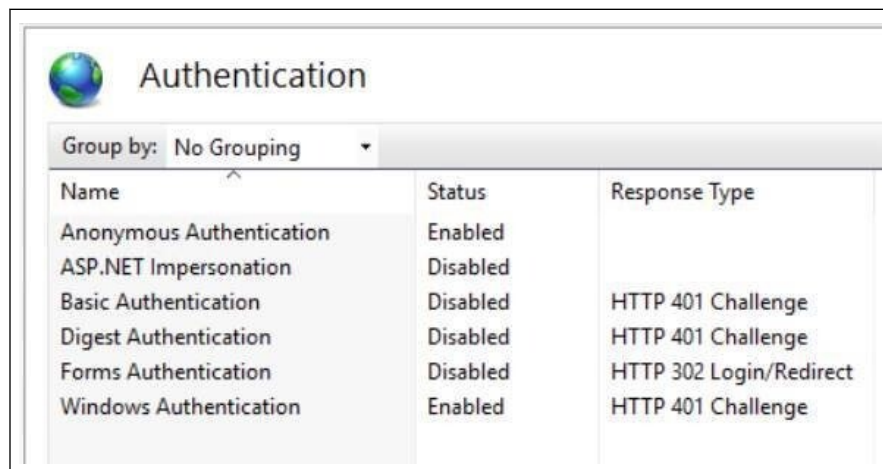
Intel EMA uses Microsoft Internet Information Server (IIS). Use the latest IIS 10 version.

Install IIS URL Rewrite Module for the target IIS. If it is installed, Intel EMA will set up the website setting to

remove the IIS server version from the response header. Further, the rewrite module will add the HSTS header, the cookie Same Site strict, and the auto redirect from HTTP to HTTPS. If it is not installed, these settings will not be applied.

### NOTE

If IIS is already installed, ensure that all authentication methods are disabled except for "Anonymous" and "Windows" (only those two should be enabled). This only applies to Windows Authentication mode.



Name	Status	Response Type
Anonymous Authentication	Enabled	
ASP.NET Impersonation	Disabled	
Basic Authentication	Disabled	HTTP 401 Challenge
Digest Authentication	Disabled	HTTP 401 Challenge
Forms Authentication	Disabled	HTTP 302 Login/Redirect
Windows Authentication	Enabled	HTTP 401 Challenge

## 4.6 Intel AMT PKI Certificate

Intel AMT Admin Control Mode (ACM) provisioning requires a certificate issued by a trusted authority that matches the domain name of the target Intel AMT endpoints. The certificate file needs to have the full certificate chain. Also, it needs to be issued with the supported OID 2.16.840.1.113741.1.2.3 (this is the unique Intel AMT OID).

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**NOTE**

Starting with Intel ME 15 systems support for SHA1 root certificates or RSA key sizes smaller than 2048 in Intel AMT PKI Certificate chain was removed.

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## 4.7 Microsoft .NET Framework Versions

Intel EMA Server software is built with Microsoft .NET Framework 4.8. The operating system must have Microsoft .NET Framework 4.8 or later. If .NET Framework 4.8 or later is not installed, the Intel EMA installer will display a dialog prompting you to download and install .NET Framework 4.8 runtime.

## 4.8 Firewall

We recommended using a firewall software to ensure that only authorized ports are available for connection. The firewall software built into Windows can perform this task.

## 4.9 Network

During the installation, you must specify the value (either hostname or IP address) to use for communication among various components. If you choose hostname or FQDN, you need to make sure the value is resolvable by a DNS server in the network. If you do not have the DNS server, a fixed IP address should be used during installation. Incorrect hostname/IP address will cause Intel EMA features to not function properly. In a distributed server architecture implementation, if using Active Directory, ensure all computers (including the computer hosting the load balancer) are listed in Active Directory.

FQDN and/or IP addresses selected are used for various purposes:

- Swarm Server Load Balancer FQDN/IP address is the location that will be provided in the agent configuration file for endpoint agents, Intel AMT, or Intel® Standard Manageability to connect to.
- Ajax & Web Server Load Balancer FQDN/IP address is used for the main Intel EMA website HTTPS URL.
- Recovery Server Load Balancer FQDN/IP address is used to support One Click Recovery.

These settings CANNOT be changed after installation. Make sure each resolves correctly in DNS, and consider choosing a FQDN that can be flexibly reconfigured to a different server when needed – for example, a dynamic DNS entry.

## 4.10 Network Ports

The below table lists the server network ports used for various communications among server components.

- For certain features/usages, the AJAX server and Manageability server will establish a TCP connection (locally or remotely) with the Swarm server.

- The endpoint and the Swarm server communicate via a secure TCP connection. Intel AMT (CIRA) and the Swarm server communicate via a secure TCP connection.
- The Platform Manager service uses a named pipe to talk to other Intel EMA component servers on the same machine. The Platform Manager client application talks to the Platform Manager service via a secure TCP connection.

Protocol	Port	Usage
TCP	443	HTTPS Web server port. This is used between the web browser and the web server.
TCP	1433	SQL server remote access. This is used between the internal Intel EMA server and the internal SQL server; only needed if Intel EMA server and the SQL server are not on the same machine. This is the default port that SQL server uses.
TCP	8000	The default TCP port for communication between Platform Manager service and Platform Manager client. You can change this port during installation.
TCP	8080	Agent, console, and Intel AMT CIRA port. This is between client endpoints and the Intel EMA Swarm server. Refer note below.
TCP	8084	Web redirection port. This is used between the web browser and the web server.
TCP	8085	Recovery port. This is used by the Recovery component server. If you change this port on the Recovery Server tab of the Server Settings page, you will be prompted to update port bindings.
TCP	8089	Communication between the various Intel EMA component servers and Intel EMA Swarm server. This port number is the default, and can be changed in the Server Settings page.
TCP	8092	Port on which Ajax component server listens for internal component-to-component communication. This port number is the default, and can be changed in the Server Settings page.
TCP P	8093	Port on which Swarm component server listens for internal component-to-component communication. This port number is the default, and can be changed in the Server Settings page.
TCP	8094	Port on which Manageability component server listens for internal component-to-component communication. This port number is the default, and can be changed in the Server Settings page.
TCP	8095	Port on which Recovery component server listens for internal component-to-component communication. This port number is the default, and can be changed in the Server Settings page.
LDAPS/LDAP	636/389	The LDAPS secure port is 636. The standard non-secure LDAP port is 389. These ports are for use with Active Directory and/or 802.1x configuration.
Global Catalog (secure/non-secure)	3269/3268	The secure (3269) and non-secure (3268) Global Catalog ports. These ports are for use with Active Directory and/or 802.1x configuration.

## 5.0 Agent Prerequisites

### NOTE

The Intel EMA Agent is not designed to run in a VM on the target endpoint, even on the Base Hypervisor. The LAN/WLAN cannot interpret multiple IP addresses correctly. No Hypervisor has been written to accommodate the address translation required to use Intel AMT. This affects the agent's ability to connect to Intel AMT and perform Out of Band (OOB) actions on the endpoint. It is possible that in-band actions may work in this scenario, but that is not certain.

This is a list of the prerequisites needed to set up the Intel EMA Agent:

- **Operating System:** Intel® EMA Agent is officially supported on Microsoft Windows 10 and Windows 11, 64bit operating systems. The 32bit agent has been deprecated and will no longer be released. Systems running the 32bit agent should be updated (a manual update procedure).
- **Firewall:** When Intel EMA Agent is installed, it will set up the following Windows Firewall in-bound rules for the installed agent binary process. If you are using a different firewall, make sure that the following in-bound rules are set for the installed agent binary process:
  - Peer-to-peer traffic: UDP with local port at 16990, any IP for local and remote addresses, and edge traversal blocked.
  - Peer-to-peer traffic: TCP with local port at 16990, any IP for local and remote addresses, and edge traversal blocked.
  - Local loopback management traffic: TCP with local port at 16991, 127.0.0.1 for local and remote addresses, and edge traversal blocked.
- **Intel® Active Management Technology (Intel® AMT):** Intel EMA only supports Intel® AMT 11.8.79 or later. Only required for Out-of-band endpoint management. The following table lists the minimum Intel AMT versions required on endpoints to use USBR over CIRA.

Intel AMT Version	Build Number
Intel AMT 11	11.8.79 or later
Intel AMT 12	12.0.70.1607 or later
Intel AMT 14 1	4.0.45.1341 or later
Intel AMT 15	all
Intel AMT 16	all

## 6.0 Known Issues and Limitations

<b>CIRA Connection Inconsistencies</b>	More recent versions of AMT 12 and AMT 14 together with Windows Server 2019 and 2022 have implemented stronger security requirements which can cause the CIRA connections to take longer and intermittently fail TLS handshakes. It is recommended to increase the "Unauthorized TCP connection timeout" value in Security Settings to 10000 milliseconds (default 5000 milliseconds).
<b>CIRA Connection Compatibility .</b>	<p>Intel vPro® systems updated with Intel® AMT 12 manageability engine firmware v12.0.45.1509 or higher require Intel® EMA 1.3.2.1 or later to ensure CIRA connection compatibility.</p> <ul style="list-style-type: none"> <li>Recommend upgrading to Intel EMA 1.3.2.1 or later as soon as possible.</li> <li>If you have existing Intel AMT 12 systems provisioned via CIRA and they have been upgraded to Intel AMT FW v12.0.47.1524 or higher, those systems will need to be unprovisioned/reprovisioned via Intel EMA after the upgrade. If Intel AMT auto setup is configured in the Intel EMA endpoint group, reprovisioning can also be triggered to happen on all endpoints in that endpoint group automatically by making any profile change (for example changing the description).</li> <li>If CIRA does not connect when the endpoint is powered down or if the OS is not running, check the Intel AMT wireless profile in Intel EMA. When the endpoint OS is down, Intel AMT's CIRA relies on the Intel AMT WiFi profile in Intel EMA for its connection settings. Out-of-band CIRA connection issues can often be corrected by selecting Counter mode CBC MAC Protocol (CCMP) for the Security Type in the Intel AMT WiFi profile. Also, check that the wireless router's or hotspot's SSID is broadcasting and not hidden. Lastly, if the endpoint is a laptop, ensure its power supply is plugged in. For more information, see "Creating a New WiFi Profile" in the Intel® EMA Administration and Usage Guide</li> </ul>
<b>Resource Conflict error when booting endpoint to image via USBR</b>	<p>If you attempt to boot an endpoint that is powered off to a mounted image via USBR (using the "Boot to this Image" link on the endpoint's details page), you will see a "Resource Conflict" error message.</p> <p><b>To fix:</b></p> <ul style="list-style-type: none"> <li>Power on the endpoint, then use the "Boot to this Image" link to boot the endpoint to the mounted image.</li> <li>-OR-</li> <li>Use the "Power up to IDE-R Image" feature under Power Actions on the Hardware Manageability tab.</li> </ul>
<b>Intel® EMA Agent</b>	To uninstall the service, or to install/update the service on top of an existing installation, you must use an Intel® EMA Agent installer with the same architecture type (32-bit service or 64-bit service) as the existing Intel EMA Agent.
<b>Data refreshing</b>	The website does not automatically update the displayed data. The data update is triggered only after you perform certain actions or when you refresh the web page.
<b>Intel® AMT Provisioning</b>	<ul style="list-style-type: none"> <li>If Intel AMT on the endpoint is setup/provisioned by some other tool (i.e., Intel EMA database does not have any record of this setup), then Intel EMA cannot manage this Intel AMT. The user needs to clear up / unprovision this endpoint first and then use Intel EMA to do the setup. Alternatively if the Intel AMT Admin password is known, you can use the POST /api/latest/amtSetups/endpoints/adopt API to adopt the endpoint. See the swagger documentation for more information.</li> </ul>

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	<ul style="list-style-type: none"> <li>Before you use Intel EMA to un-provision an endpoint, check the current provisioned control mode shown at the endpoint's detail information. It needs to be in either Client Control Mode or Admin Control Mode for un-provisioning to work. If it is in provisioned complete but not in Client Control Mode or Admin Control Mode, please restart the endpoint first for Intel EMA to get the correct status.</li> <li>Intel AMT CILA (Client Initiated Local Access) is not supported/set-up by Intel EMA.</li> <li>Newer Windows Server operating systems may not enable all necessary cipher suites required to support Intel® Active Management Technology, causing provisioning to fail. Refer section 1.4.6 of the distributed or single server installation and maintenance guides for details on which cipher suites are required.</li> <li>The Intel EMA UI states that the character limit for passwords is 32 characters, however the actual limit is 31 characters.</li> </ul>
<b>Intel® AMT Profile</b>	<ul style="list-style-type: none"> <li>A profile can only be used with Intel AMT auto-setup. It cannot be used with on-demand setup.</li> <li>A profile cannot be removed if the profile is used by an endpoint group or is used by any endpoint for provisioning.</li> <li>If an Intel AMT profile was used for auto-provisioning but auto-provisioning is now disabled, the profile cannot be deleted. In order to delete this profile, you must first re-enable auto provisioning and select a different profile. The reason is that, even though auto-provisioning was disabled for the endpoint group, the actual endpoints in this group are still using the profile. Therefore, this profile cannot be deleted until the endpoints are switched to a different profile.</li> <li>802.1X: Currently, Intel EMA supports only EAP-TLS and EAP-PEAP-MSCHAP-V2 as the authentication protocols.</li> </ul>
<b>Endpoints' batch actions</b>	<ul style="list-style-type: none"> <li>View Desktops: Currently, when the user adjusts the "screen per row" slider, the remote in-band KVM is re-established to all the target endpoints. If the endpoint group policy "User consent for in-band KVM" is enabled, the user(s) must consent again.</li> <li>On the Managed Endpoints tab, when logged in as an Endpoint Group User or Endpoint Group Creator role, if you select multiple endpoints and then click the <b>Manage this endpoint</b> drop-down menu, you may see actions that you cannot perform. The Intel EMA UI does not check user permissions for which actions to display in this menu when multiple endpoints are selected. However the underlying code will prevent unauthorized users from performing any actions for which they do not have permission.</li> </ul>
<b>Endpoint's power status</b>	The power status is not guaranteed to be correct. Correct power status is guaranteed only when the endpoint is setup/provisioned under Intel AMT CIRA.
<b>Cross-origin requests blocked for in-band KVM, terminal, files, processes, and WMI tabs</b>	The URL you used to access Intel EMA web site needs to match the URL used during Intel EMA server installation. If they do not match, you will get an alert pop-up window right after you log in to inform you about this. If you choose to continue, those features mentioned above may not work.
<b>Each endpoint's in-band KVM</b>	<ul style="list-style-type: none"> <li>When the target endpoint displays DPI value changes, the current user on the endpoint must sign out and sign in again so that Intel EMA Agent can get the current display resolution. This limitation is shared by many Windows applications.</li> <li>There is a known issue with the Intel EMA in-band, software based and remote control that may prevent Intel EMA from showing the entire contents of a screen. This issue occurs when you have two or more screens, with one of them being a 4k or higher resolution, and you have different DPI settings for each screen. This behavior can be worked around by using the same DPI setting for all screens.</li> <li>On the Chrome browser, the in-band KVM may appear black or has a block of black region. It will be updated when that black region gets the next screen fresh.</li> </ul>
<b>Each endpoint's out-of-band (Intel® AMT) KVM</b>	<ul style="list-style-type: none"> <li>Laptop device/endpoint: Be sure to open the lid of the laptop to ensure KVM functions correctly.</li> </ul>
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	<ul style="list-style-type: none"> <li>Desktop and headless devices/endpoints: Be sure to plug a monitor in to desktop or headless endpoints, to ensure KVM functions correctly.</li> <li>Device emulator: You may run a device emulator (High Definition Multimedia Interface - HDMI or other) to have the system function as if there's a monitor attached.</li> </ul>
<b>Each endpoint's file tab</b>	Currently, for the endpoint group policy, you must enable both Files and KVM policies. Otherwise, the Intel EMA Agent will reject this request.
<b>Endpoints' remote file search</b>	<ul style="list-style-type: none"> <li>Search conditions will accept only characters from a to z, A to Z, 0 to 9, *, and ?. All other characters will be filtered out.</li> <li>The maximum returned search result is about 20,000 characters. Any results after this limit will be truncated. Therefore, the user may need to use a more-detailed search condition to avoid a long search result.</li> <li>This depends on Windows indexing. Windows finds only those files in "indexed" locations.</li> <li>On the Managed Endpoints page, under <b>Action &gt; Remote File Search</b>, entering a file extension (i.e., <i>filename.ext</i>) is not supported. To search for a remote file, enter the filename without any extension (do not include a ".*" either), and the search will return all files matching that filename. The issue is that the "." character is not currently supported, so any filename that includes the "." will fail.</li> </ul>
<b>Ctrl-C in terminal window causes agent to stop working</b>	<p>In a terminal window session with an endpoint, if you send a command to show one screen at a time (for example, <code>ipconfig /all   more</code>) and then press <b>Ctrl-C</b>, the agent will stop working.</p> <p>To fix this, you must reboot the managed endpoint. Simply stopping and restarting the agent service will not work.</p>
<b>Terminal tab</b>	<ul style="list-style-type: none"> <li>Only ASCII text-based commands are supported. Some BIOS's that use UTF8 will be displayed incorrectly.</li> <li>The terminal tab displays only the last 80 by 25 characters. Windows command console also has a display limit; however, Windows command console's limit is much longer than the current limit here.</li> <li>For in-band terminal connections, if the endpoint is running the latest Windows 10 or Windows 11, the terminal window may not display correctly.</li> </ul>
<b>Port Not Available Error When Using endpointOOBOperations/Single APIs</b>	For endpoint OOB operations (for example, Intel AMT power operations), two versions of each API are provided: one for single endpoint operations, and one for multiple endpoint operations. If you use the single APIs concurrently on a large number of endpoints (greater than 100K, depending on other processes that may be using ports on the Intel EMA server), you may get a "Port Not Available" error. We recommend using the endpointOOBOperations/Multiple APIs for concurrent operations on large numbers of endpoints.
<b>Failover for machine hosting Web server and Ajax server components in a distributed server architecture</b>	In a distributed server architecture environment, the Intel EMA Web server and Ajax server components work together to handle traffic on port 443. Therefore, the load balancer health monitoring rule (which is based on port only) will not detect when only one of these components is down. However, it will detect when the server machine as a whole is down (i.e., both Web and Ajax components are down) and failover to another healthy machine.
<b>Intel EMA API token expiration while using Intel EMA website UI</b>	Once you login to the Intel EMA website UI, Intel EMA uses that API token for subsequent API requests. The token's default expiration time is 60 minutes. Intel EMA does not automatically refresh the token, even if you are continually using the Intel EMA website UI.
<b>Visual and performance issues when using Hardware Manageability tab</b>	The Hardware Manageability tab in Intel EMA makes use of Intel Manageability Command (Intel MC) to provide the functionality available on this tab. Due to known issues with Intel MC, depending on the browser you use to open Intel EMA, you may notice some cosmetic issues with the visual display and UI functionality when using the features of the Intel Hardware Manageability tab. Refreshing the page often fixes some of the display issues.
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<b>After upgrade, the Intel Hardware Manageability tab may still call previous Intel MC version</b>	After upgrading Intel EMA to the latest version, you may notice that the version of Intel Manageability Commander (Intel MC) that is called when using the Intel Hardware Manageability tab of Intel EMA is not the latest Intel MC version (2.1). To correct this, clear your browser's cache, then refresh the Intel Hardware Manageability tab page in the browser. The correct version of Intel MC (v2.1) should now be called from the Intel Hardware Manageability tab.
<b>Remote connection to endpoint dropped when restarting the endpoint</b>	<p>When restarting a managed endpoint over a remote connection to the endpoint's Intel AMT, you may see Intel EMA's TCP connection to the endpoint drop as the endpoint restarts. This is due to temporary link loss as the endpoint transitions from the Intel Management Engine (Intel ME) to the OS network stack, during which Intel EMA retries to send TCP packets to the transitioning endpoint. A Microsoft network stack configuration TcpMaxRetransmissions allows only 5 TCP retransmission attempts (approximately 3 seconds) by default. Newer OS's (19H1 and above) have a slower transition from the Intel ME to the OS network stack, and as a result Intel EMA exceeds the maximum number of TCP retransmission attempts and the remote connection is dropped.</p> <p><b>To fix:</b></p> <p>You can avoid this issue by modifying the Microsoft registry key in the Windows OS on your Intel EMA server(s) to set the TcpMaxRetransmissions value to 7 or higher. This will allow Intel EMA enough retries to keep the remote connection established as the endpoint transitions to the OS network stack. Follow the steps below.</p> <ol style="list-style-type: none"> <li>1. Open the Registry Editor (regedit.exe)</li> <li>2. Browse to "HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Tcpip\Parameters"</li> <li>3. Find or create the following:             <ol style="list-style-type: none"> <li>a. Value Name: TcpMaxDataRetransmissions</li> <li>b. Value Type: REG_DWORD</li> <li>c. Value Data: 7</li> </ol> </li> </ol> <p>For additional information, see the following Microsoft article: <a href="https://support.microsoft.com/en-us/help/170359/how-to-modify-the-tcp-ip-maximum-retransmission-time-out">https://support.microsoft.com/en-us/help/170359/how-to-modify-the-tcp-ip-maximum-retransmission-time-out</a></p>
<b>KVM disconnects during endpoint power state change</b>	If you experience a disconnect during a power state change when using out of band KVM, wait a few seconds and attempt to reconnect.
<b>Image mount via USBR fails</b>	If an attempt to mount an image to a managed endpoint via USBR fails, the cause may be that the Intel AMT redirection port was not enabled during provisioning. Use the Hardware Manageability tab, available by selecting <b>Endpoints</b> on the navigation bar, to enable the redirection port on that endpoint.
<b>Booting an endpoint to a mounted image via USBR fails</b>	Check the format of your image file. Ensure the format is CDFS, not UDF.
<b>In-band KVM paste from clipboard results in unexpected characters or case</b>	<p>When attempting to paste plain text from the clipboard of the Intel EMA console system (i.e., the clipboard of the computer running the Intel EMA web-based UI) to an endpoint via KVM, you may notice unexpected case or capitalization in the pasted output on the target endpoint. This is consistent with other remote desktop applications' behavior. For more information, see the following link from Microsoft: <a href="https://docs.microsoft.com/en-us/troubleshoot/windows-server/remote/caps-lock-key-status-not-synced-to-client">https://docs.microsoft.com/en-us/troubleshoot/windows-server/remote/caps-lock-key-status-not-synced-to-client</a></p> <p>Further, depending on the OS language/locale of the target endpoint, unexpected characters may be pasted. Only US English keyboard character codes are supported. If the endpoint's language/locale is not US English, unpredictable characters may be pasted on the endpoint.</p> <p><b>To fix (capitalization issue only):</b></p> <p>Ensure that the Caps Lock is OFF on the target endpoint before pasting. If you pressed Caps Locks during a KVM session to that endpoint, be sure to press Caps Lock again before exiting the KVM session to clear (turn off)</p>

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	the Caps Lock on the target. Otherwise Caps Lock will remain ON on the endpoint, and when you paste to that endpoint, the pasted text will behave accordingly (lower case as all caps, and vice versa).
<b>CloudWatch issue with AWS</b>	<p>If used or enabled on AWS instances of Intel EMA, CloudWatch can prevent the Swarm server process from restarting due to files being kept open or in use.</p> <p><b>To fix:</b> Disable CloudWatch or configure it to ignore Intel EMA processes and associated files.</p>
<b>Port conflict issues between Intel EMA component servers and Splunk application</b>	Be aware that in a distributed server installation, the application Splunk can cause conflict issues with the component server communication over the default management port TCP 8089.
<b>Do not use browser's Back button when running Intel EMA web based UI</b>	Using the browser's Back button when running the Intel EMA web based UI can put the UI in an unpredictable state. Use the UI's navigation elements to move within the UI.
<b>Mouse scroll wheel can unexpectedly modify number values in a numeric UI field.</b>	<p>On the Server Settings page of the Intel EMA user interface (UI), if you update a numeric field and then use the mouse scroll wheel to scroll the UI page (say, to return to the top to click <b>Save</b>) while the cursor focus is still in the numeric field, the numeric value you entered will also be changed (up or down, depending on which direction you scroll with the mouse wheel).</p> <p><b>To fix:</b> When updating numeric fields on the Server Settings page, be sure to click on the page outside of the numeric field entry box, to ensure the cursor focus is no longer in the field. You can then use the mouse wheel to scroll the page without affecting the numeric value in the field.</p>
<b>Using SQL Server Authentication and SQL Account password includes '&amp;' (ampersand) character</b>	<p><b>Update Database feature hangs indefinitely (EMAServerInstaller -&gt; Database -&gt; Update Database)</b></p> <ul style="list-style-type: none"> <li>Connections.config file is backed up but no new Connections.config file is created</li> <li>After reboot, Intel EMA Web UI does not load and all Intel EMA Server components unable to access database</li> </ul> <p><b>Workaround:</b> rename backup copy of Connections.config.org. Copy to Connections.config in "C:\Program Files (x86)\Intel\Platform Manager\Runtime\MeshSettings" folder</p> <p><b>EMA Server Installer Exits with Exception Error</b></p> <ol style="list-style-type: none"> <li>Intel EMA Server Installation is incomplete and not functional</li> <li>Connections.config file is not created <ul style="list-style-type: none"> <li>[INFO] EVENT: Information, Created C:\Program Files (x86)\Intel\Platform Manager\Runtime\MeshSettings\connections.config</li> <li>[ERROR] EVENT: Exception, Action: PlatformManagerInstalling, FileName: MainForm.cs, FunctionName: InstallPlatformManager, ExceptionMsg: System.Configuration.ConfigurationErrorsException: An error occurred while parsing EntityName. Line 3, position 110. (C:\Program Files (x86)\Intel\Platform Manager\Runtime\MeshSettings\connections.config line 3) ---&gt; System.Xml.XmlException: An error occurred while parsing EntityName. Line 3, position 110.</li> <li>[ERROR] EVENT: Exception, There are errors in the process. Please see the detailed event log to find details.</li> </ul> </li> <li>Unable to run Uninstaller, throws exception error and stops</li> </ol> <p><b>Workaround:</b> Change SQL account password, remove or change '&amp;' char. Re-run installer and install over previous incomplete install.</p>
<b>Intel EMA Server upgrade throws warning</b>	Documentation instructs to stop all Intel EMA processes before performing upgrade. Customers will stop all Intel EMA Server components (either Halt in Platform Manager or End Tasks in Task Manager) and Platform Manager service.
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	<p>The following warning is logged when performing upgrade with Platform Manager service stopped:</p> <pre>Stopping server processes failed: System.InvalidOperationException: Cannot stop PlatformManager service on computer '.'. ---&gt; System.ComponentModel.Win32Exception: The service has not been started</pre> <p><b>This warning can be safely ignored .</b></p>
<b>Disabling remote management (WMI) endpoint group policy fills Intel EMA Swarm Server logs with errors</b>	<p>The following errors are repeatedly filling the Swarm Server logs:</p> <pre> ERROR EVENT: Exception, Exception on MeshSwarmServer.CentralServer.DeserializeWmiResponse() - WMI Query returned error: -2147024891</pre> <p><b>Errors can be safely ignored. You may need to monitor disk space usage and delete logs as needed .</b></p>
<b>Intel EMA Server components log errors in Windows application event</b>	<p>The following errors can be seen the Windows Application Events logs after the Intel EMA server is rebooted or when the Intel EMA Server components are restarted:</p> <pre>Level: Error Source: EMA AJAX Server Message: Service cannot be started. The service process could not connect to the service controller Level: Error Source: EMA Swarm Server Message: Service cannot be started. The service process could not connect to the service controller Level: Error Source: EMA Manageability Server Message: Service cannot be started. The service process could not connect to the service controller</pre> <p><b>Errors can be safely ignored .</b></p>
<b>Endpoint group setup UI inconsistency</b>	<p>There is an inconsistency in the Endpoint Group Setup UI. While the "Generate Agent Installation Files" option appears as a button, the "Save &amp; Intel AMT Autoseup" option is displayed as a link, which can be difficult to see and find on the UI page.</p>
<b>KVM sessions may fail to connect</b>	<p>Intel AMT KVM sessions may fail to connect to endpoints that have a very high-resolution display when the KVM session is requested with options that exceed Intel AMT's 8-megabyte display buffer. If this happens, the KVM session will connect, then disconnect. Try changing the settings/ options to use 1 byte-per-pixel, grayscale or decimation.</p>
<b>Remote Platform Erase with CSME unconfigure does not complete before user consent times out</b>	<p>If you execute Remote Platform Erase and include CSME unconfigure, on an endpoint where user consent is required, it's possible CSME unconfigure will not execute before user consent expires, resulting in an error. If this happens, simply use Remote Platform Erase again, and only select the CSME unconfigure option, to complete the process.</p>
<b>Potentially invalid passwords displayed</b>	<p>When selecting Stop Managing Endpoint, a new feature allows you to see the Intel MEBx and or Intel AMT Admin passwords before removing the endpoint from Intel EMA. The passwords shown could be invalid if the system hasn't fully completed its initial provisioning.</p>
<b>AMT Terminal connections may display the wrong characters</b>	<p>When you use the Terminal tab to open a Serial-over-LAN (SOL) session for remote bios access, some characters meant to draw lines or boxes on the screen may be replaced with other characters. Normal text on the screen will remain readable.</p>
<b>Errors when invoking AMT Terminal (Serial-over-LAN) "Power Cycle to BIOS" command</b>	<p>Some of the following failure messages may be encountered repeatedly when invoking the "Power Cycle to BIOS" command on an endpoint's Terminal tab, especially when user consent is required.</p> <ul style="list-style-type: none"> <li>"Endpoint is not ready to execute this operation yet, please wait and retry"</li> <li>"Internal Server Error. Please contact the administrator"</li> </ul>

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	Where available, consider using out-of-band Hardware Manageability Remote Desktop to boot to graphical BIOS instead.
<b>The Event Log in the Hardware Manageability tab displays event ID 26 incorrectly</b>	The description for event ID 26 is incorrectly displayed as "Unrecoverable PS/2 or USB keyboard failure." when it should be "Removable boot media not found."