BigFix

Windows ESU Add-On - User's Guide

Special notice

Before using this information and the product it supports, read the information in Notices *(on page xxiii)*.

Edition notice

This edition applies to BigFix version 11 and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Special notice ii

Edition notice iii

Chapter 1. Enabling Windows ESU Patch functionality 5

Chapter 2. Preparing endpoints to accept Windows ESU patches 9

Chapter 3. Testing Windows ESU Patch Delivery 14

Chapter 4. Using Minimize WMI usage feature 16

Appendix A. Frequently Asked Questions 18

Appendix B. Support 22

Notices xxiii

Chapter 1. Enabling Windows ESU Patch functionality

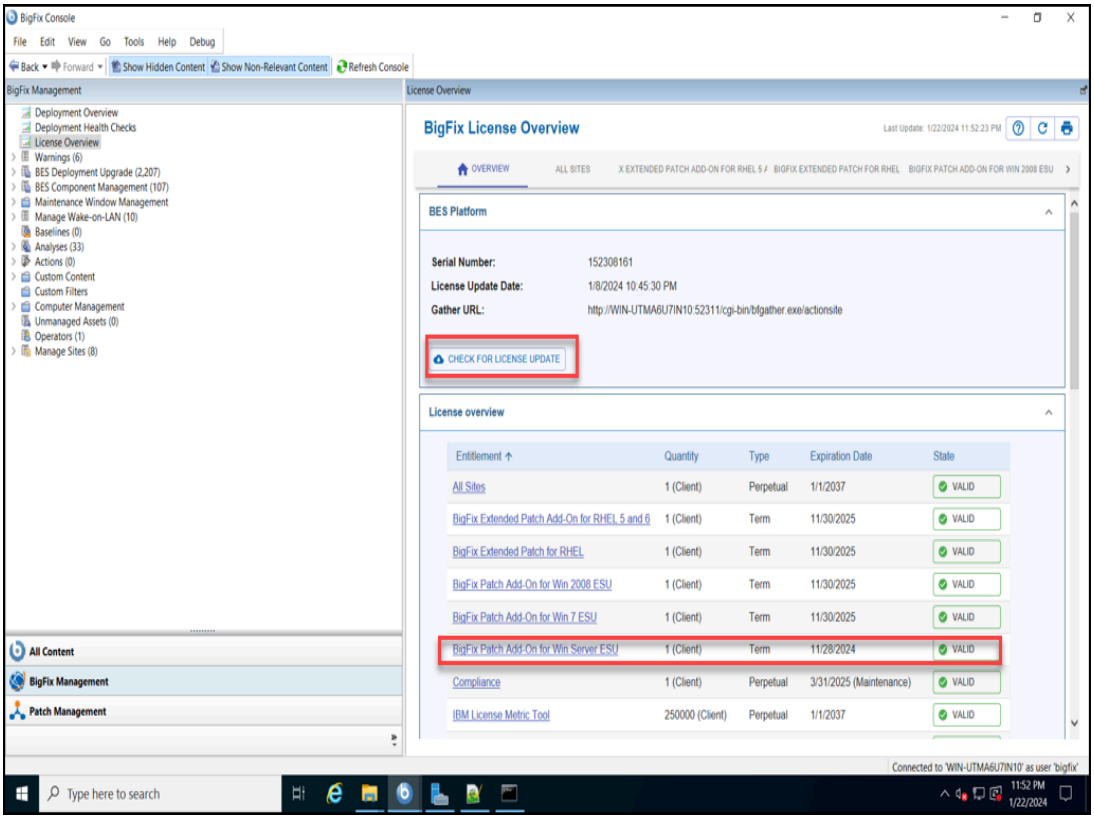
Before you can start using the Windows ESU add-on, you should first enable it.

1. Navigate to the BigFix License Key Center and add the Windows ESU add-on license to a server.
    a. Login to License and Download Portal using your BigFix credentials.
    b. Click the serial number of your server.

    On the **Manage Serial Number** page, the BigFix ESU Patch add-on products become available for allocation. Refer to the instructional video.

    https://www.youtube.com/embed/gsbouKRnI_8?si=m-Lavd5ePDi7j1St

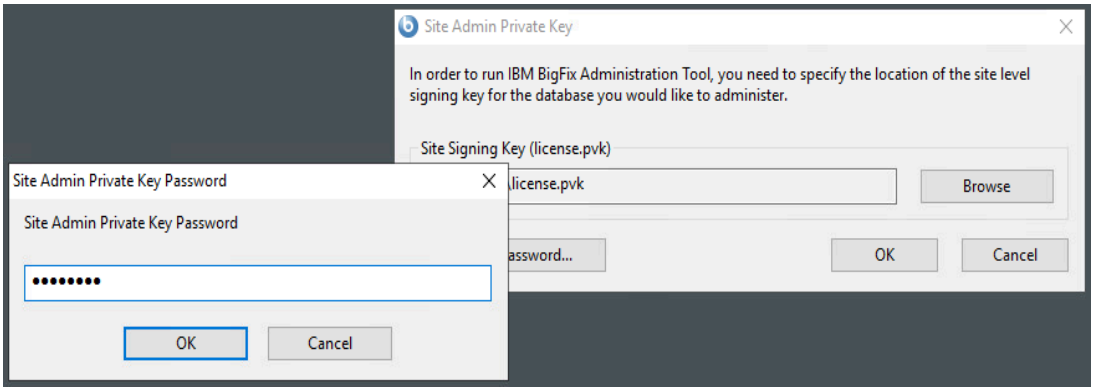
    c. Allocate one unit of the ESU patch product(s) to the server and click **Submit**.
2. Check for license updates.
    a. Log in to the BigFix Console.
    b. Go to **Dashboards > BES Support > License Overview**.
    c. Check if the **BES Platform** section notifies of any site certificate updates. If it does not, click **Check for license update**.



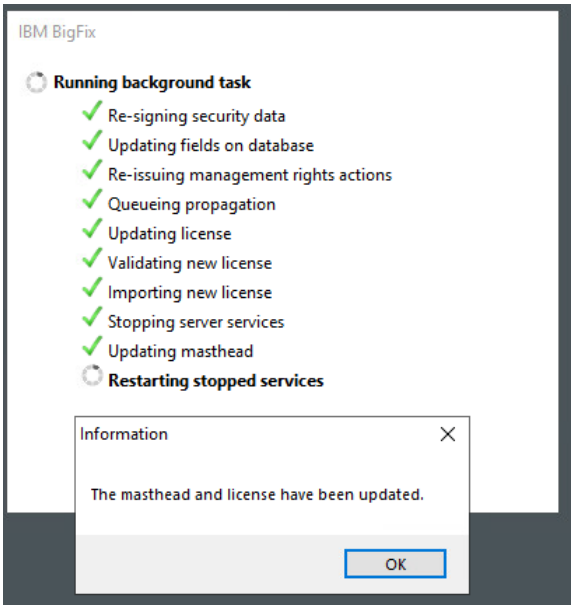
3. Update the masthead by using the BES Administration Tool.

    a. On the root server, go to **Start > Programs > HCL BigFix > HCL BigFix Administration Tool**.

    b. Enter the private key password for your deployment and click **OK**.



    The BESAdmin updates the masthead of your deployment.

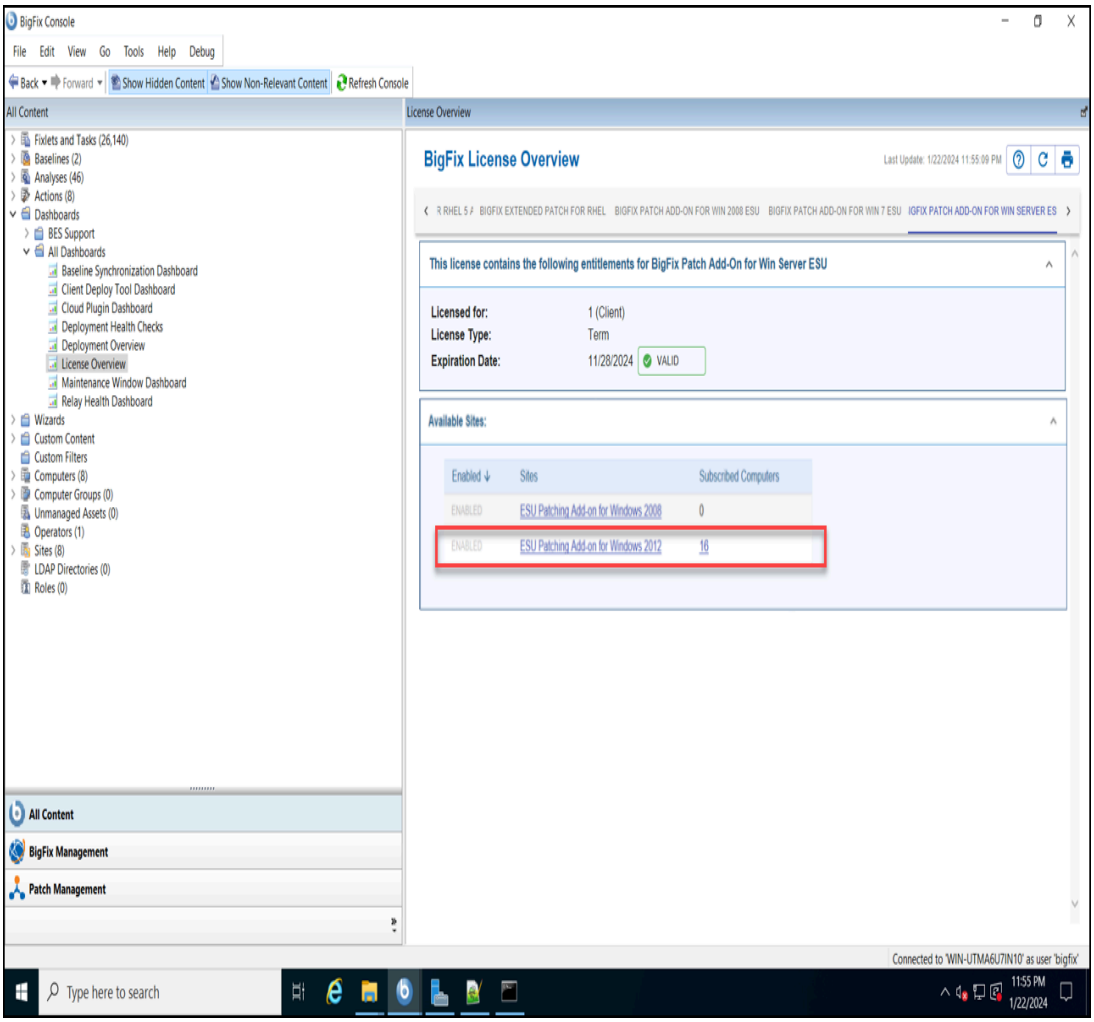


    c. Click **OK**.

4. Enable the ESU patch sites.

    a. Go back to the **License Overview** dashboard.

    b. Click **Refresh**.

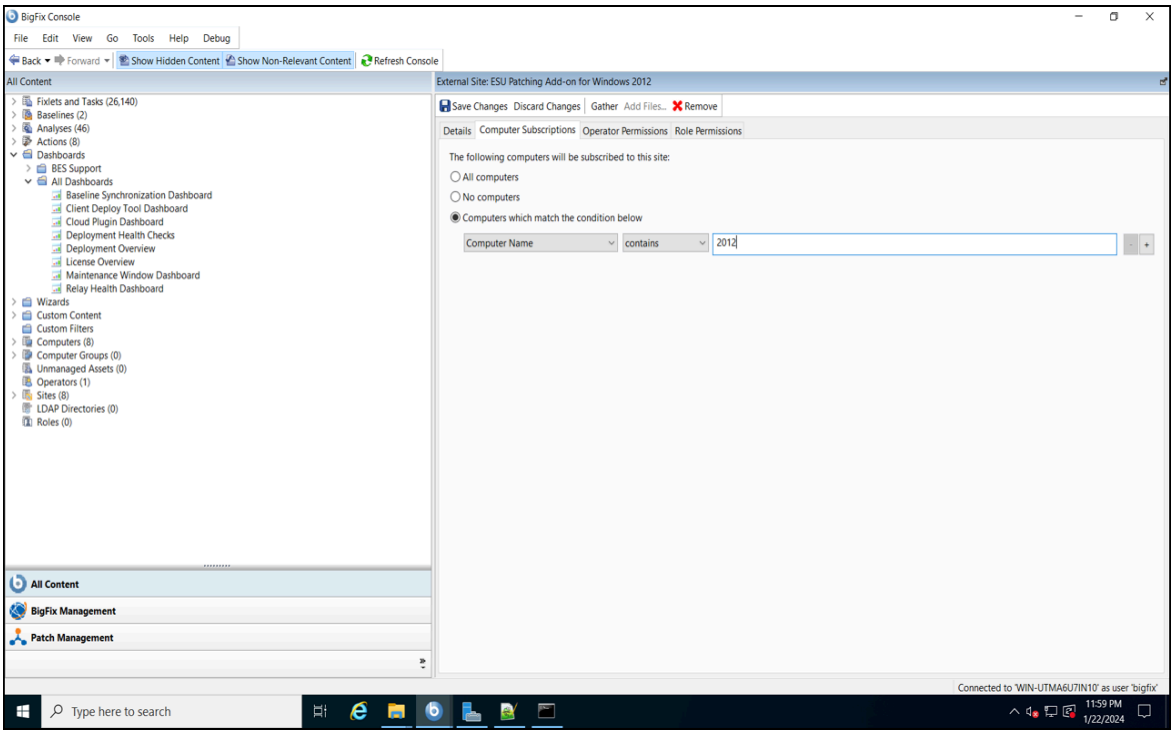


The ESU site(s) that you purchased are listed.

c. Click **Enable** to enable the any ESU patch site.

5. Subscribe your endpoints to the ESU sites.

   Set each ESU site's subscription Relevance to the correct OS and then save changes.



a. Set the subscription relevance for each ESU site against an operating system as appropriate.

b. Click **Save Changes**.

Chapter 2. Preparing endpoints to accept Windows ESU patches

After subscribing the endpoints in your deployment to a BigFix Extended Security Updates (ESU) patch site, you can use the content in the site to prepare the endpoints to accept the ESU patches.

Before you start applying ESU patches through BigFix, it is important to first ensure that your endpoints are properly configured to accept and deploy these updates. This includes verifying that your endpoints are enrolled in the BigFix ESU patch site.

Options for Accessing Extended Security Updates (ESUs)

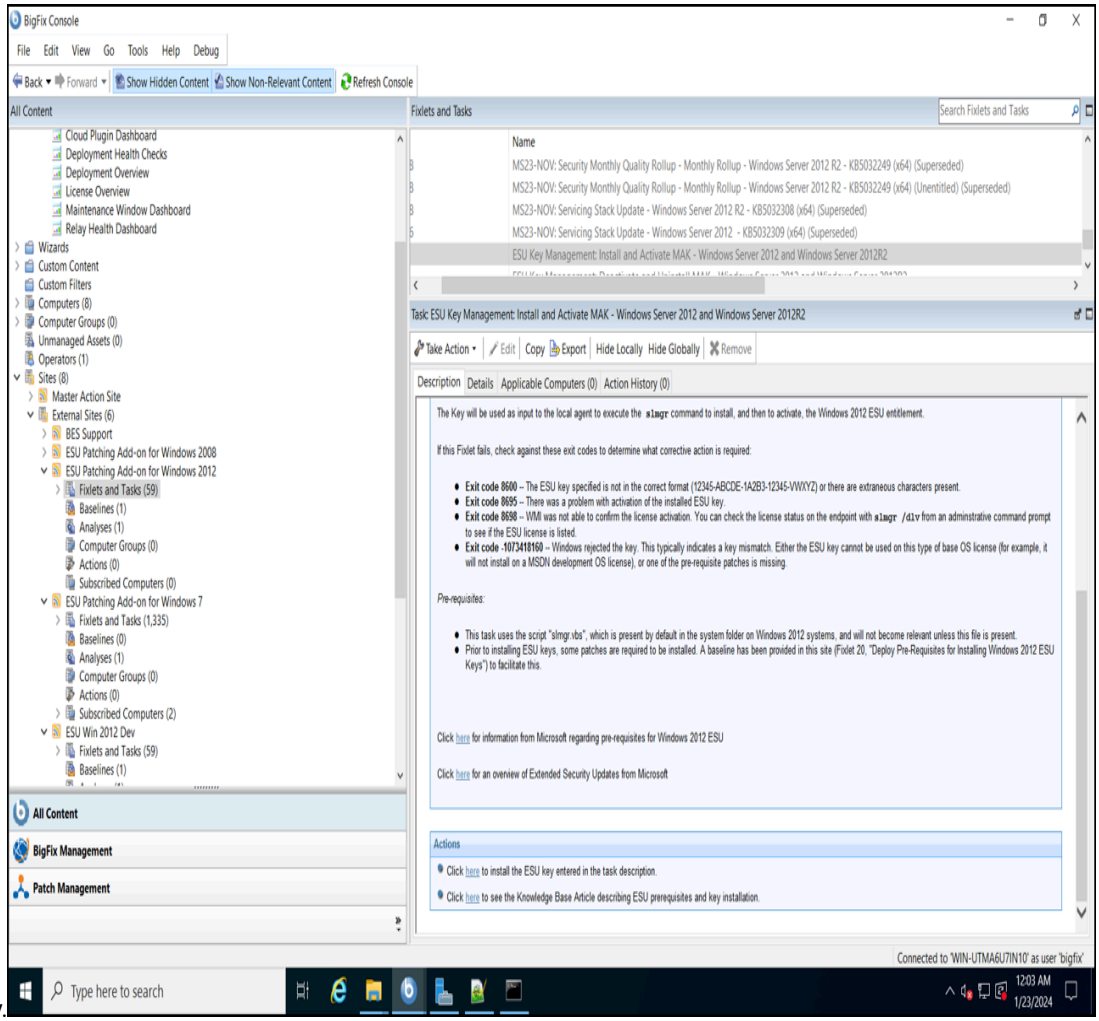
You can access Extended Security Updates (ESUs) through the following options depending on your environment.

1. **Non-Azure Physical and Virtual Machines**

   The ESUs on non-Azure virtual machines are obtained by applying a MAK to the relevant servers. This MAK key enables Windows Update servers to continue providing critical security updates beyond the standard support period.

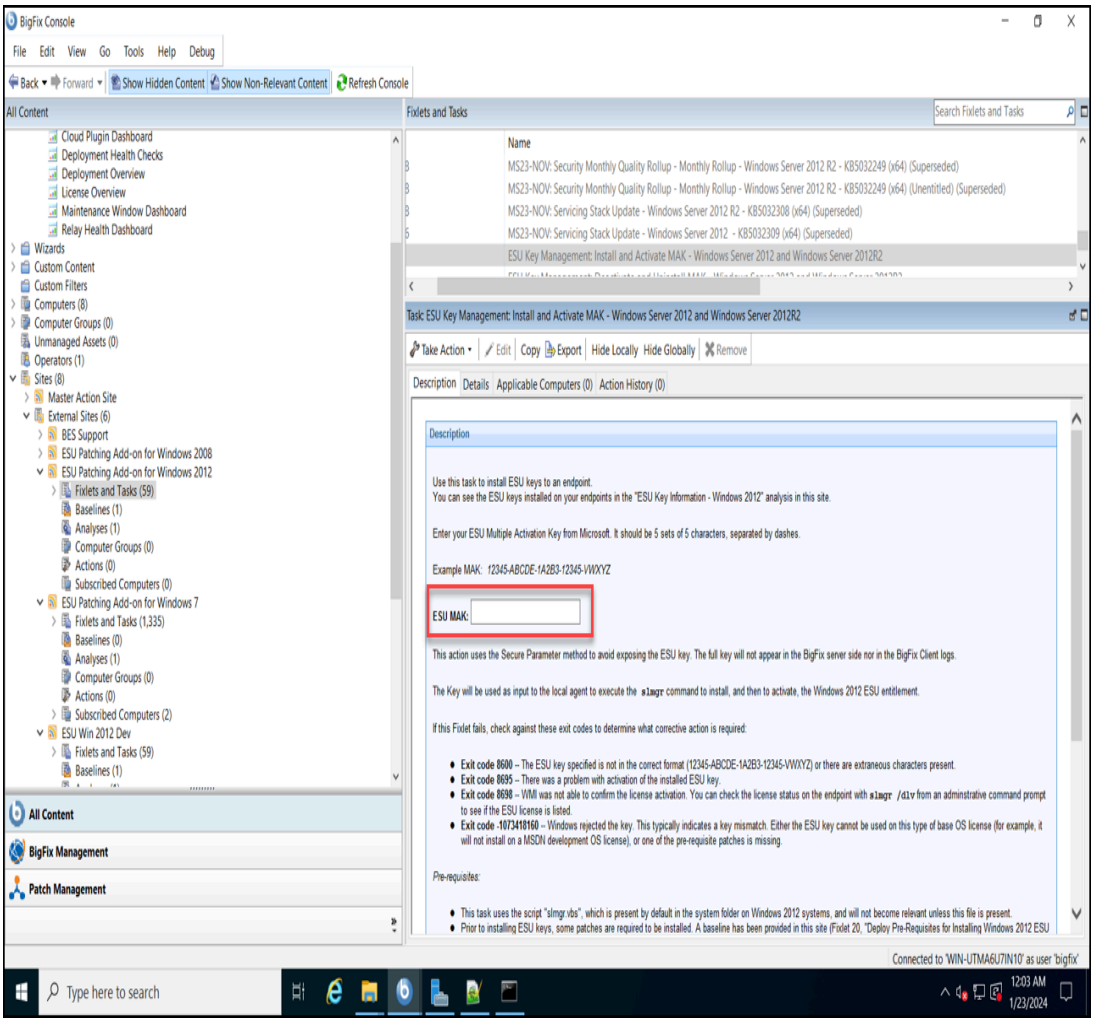
   a. Verify or apply the prerequisite Windows™ patches for ESU.
   There are multiple Windows patch Fixlets that are pre-requisites for installing the ESU MAK. The MAK installation fails if the patches are not installed. The **ESU Key Management: Install and Activate MAK** Fixlet description contains links to the pre-requisite patch Fixlets for each supported operating system, some of which are available in the **Patches for Windows** site and some of which are available in the ESU patch site. Follow the links to each Fixlet and verify which is not relevant; if any Fixlet patch is

relevant to the endpoints intended for ESU, you should apply it before installing and activating the ESU key.



b. Distribute MAK to enable ESU patching.

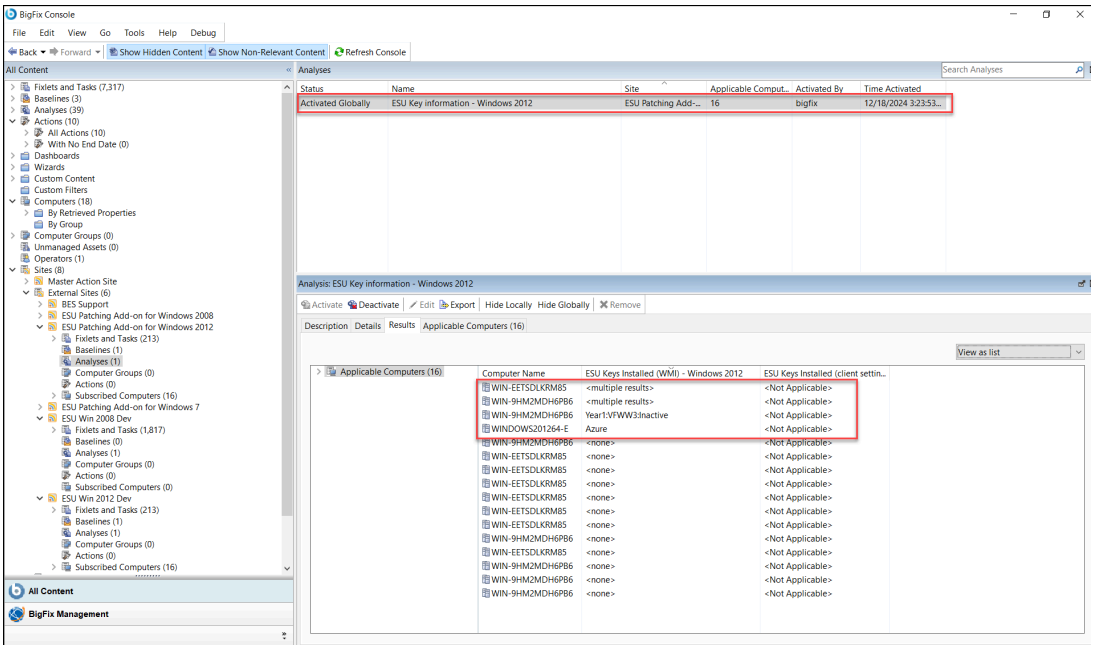
   Fixlets are provided in each ESU Patching site to automate the activation and deactivation of the ESU MAK you received from Microsoft® on many endpoints at a time. The **ESU Key Management: Install and Activate MAK** task allows you to input your ESU key securely in the Fixlet description and take action to install and activate the key on the targeted endpoints. Similarly, with the **ESU Key Management: Deactivate and Uninstall MAK** task, you can remove any ESU key that is already installed on endpoints.



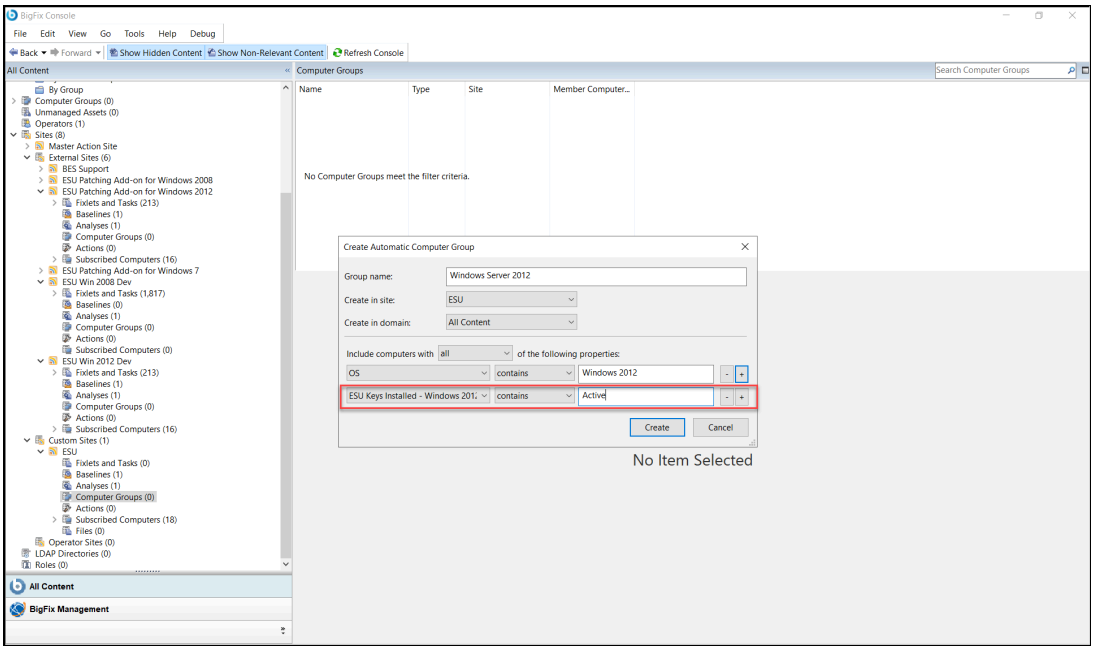
Important: The activation of ESU keys requires each endpoint to be connected to the internet and be able to communicate with Microsoft®. For more options, see Frequenty Asked Questions *(on page 18)*.

c. Create ESU patching groups in BigFix.

Each BigFix ESU Patching Add-on site contains an analysis with a **ESU Keys Installed** property that identifies subscribed endpoints that have a ESU key installed and activated, and also includes the ESU key's year and the last five characters of the installed MAK. If you have more than one MAK to manage, this will help you keep track of which key was used on which endpoints.



By copying the analysis property Relevance into a retrieved property, you can use it to create ESU patching groups in your own deployment.



Note: The ESU Installed Keys (WMI) property uses WMI queries, which can be expensive on some Windows configurations. Test before implementing as a retrieved property in your environment.

2. **Azure Virtual Machines**

Applicable Virtual Machines (VMs) hosted in Azure are automatically enabled for ESUs, and these updates are provided free of charge. There is no need to deploy a Multiple Activation Key (MAK) key or take any additional action. Learn more about this option by visiting the Extended Security Updates on Azure.

3. **Azure Arc-Enabled Servers**

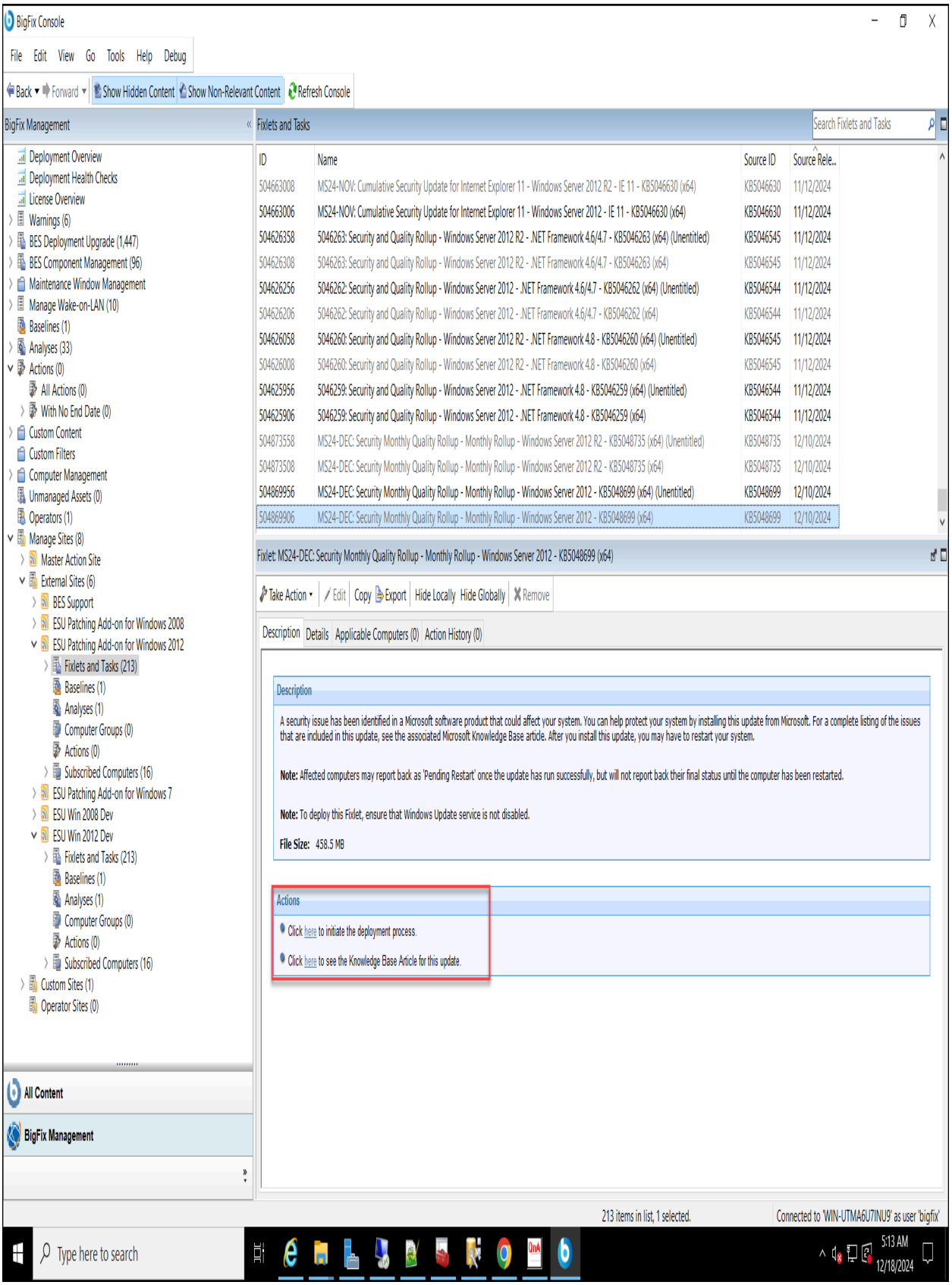
   For servers located on-premises or in a hosted environment, you can enroll your Windows Server 2012 and Windows Server 2012 R2 machines for ESUs through the Azure portal. By connecting through **Azure Arc**, you will be billed monthly via your Azure subscription, and ESUs will be delivered automatically without the need for a MAK key.

   Note: Windows 10, version 22H2 does not support and is not entitled to the ESU program for Azure Arc-enabled systems.

   Learn more about enrolling your servers through **Azure Arc** by visiting Extended Security Updates enabled by Azure Arc.

Chapter 3. Testing Windows ESU Patch Delivery

Each BigFix ESU patch add-on site contains Fixlets to test the ESU patching functionality on your endpoints. Take action on one and verify that the result is “Fixed”. If your endpoints can accept the ESU test patch successfully, it means that they are ready for ESU patching.


BigFix Console
File Edit View Go Tools Help Debug
Back Forward Show Hidden Content Show Non-Relevant Content Refresh Console
BigFix Management
Fixlets and Tasks
Search Fixlets and Tasks
Deployment Overview
Deployment Health Checks
License Overview
Warnings (6)
BES Deployment Upgrade (1,447)
BES Component Management (96)
Maintenance Window Management
Manage Wake-on-LAN (10)
Baselines (1)
Analyses (33)
Actions (0)
All Actions (0)
With No End Date (0)
Custom Content
Custom Filters
Computer Management
Unmanaged Assets (0)
Operators (1)
Manage Sites (8)
Master Action Site
External Sites (6)
BES Support
ESU Patching Add-on for Windows 2008
ESU Patching Add-on for Windows 2012
Fixlets and Tasks (213)
Baselines (1)
Analyses (1)
Computer Groups (0)
Actions (0)
Subscribed Computers (16)
ESU Patching Add-on for Windows 7
ESU Win 2008 Dev
ESU Win 2012 Dev
Fixlets and Tasks (213)
Baselines (1)
Analyses (1)
Computer Groups (0)
Actions (0)
Subscribed Computers (16)
Custom Sites (1)
Operator Sites (0)
All Content
BigFix Management
ID Name Source ID Source Rele...
504663008 MS24-NOV: Cumulative Security Update for Internet Explorer 11 - Windows Server 2012 R2 - IE 11 - KB5046630 (x64) KB5046630 11/12/2024
504663006 MS24-NOV: Cumulative Security Update for Internet Explorer 11 - Windows Server 2012 - IE 11 - KB5046630 (x64) KB5046630 11/12/2024
504626358 5046263: Security and Quality Rollup - Windows Server 2012 R2 - .NET Framework 4.6/4.7 - KB5046263 (x64) (Unentitled) KB5046545 11/12/2024
504626308 5046263: Security and Quality Rollup - Windows Server 2012 R2 - .NET Framework 4.6/4.7 - KB5046263 (x64) KB5046545 11/12/2024
504626256 5046262: Security and Quality Rollup - Windows Server 2012 - .NET Framework 4.6/4.7 - KB5046262 (x64) (Unentitled) KB5046544 11/12/2024
504626206 5046262: Security and Quality Rollup - Windows Server 2012 - .NET Framework 4.6/4.7 - KB5046262 (x64) KB5046544 11/12/2024
504626058 5046260: Security and Quality Rollup - Windows Server 2012 R2 - .NET Framework 4.8 - KB5046260 (x64) (Unentitled) KB5046545 11/12/2024
504626008 5046260: Security and Quality Rollup - Windows Server 2012 R2 - .NET Framework 4.8 - KB5046260 (x64) KB5046545 11/12/2024
504625956 5046259: Security and Quality Rollup - Windows Server 2012 - .NET Framework 4.8 - KB5046259 (x64) (Unentitled) KB5046544 11/12/2024
504625906 5046259: Security and Quality Rollup - Windows Server 2012 - .NET Framework 4.8 - KB5046259 (x64) KB5046544 11/12/2024
504873558 MS24-DEC: Security Monthly Quality Rollup - Monthly Rollup - Windows Server 2012 R2 - KB5048735 (x64) (Unentitled) KB5048735 12/10/2024
504873508 MS24-DEC: Security Monthly Quality Rollup - Monthly Rollup - Windows Server 2012 R2 - KB5048735 (x64) KB5048735 12/10/2024
504869956 MS24-DEC: Security Monthly Quality Rollup - Monthly Rollup - Windows Server 2012 - KB5048699 (x64) (Unentitled) KB5048699 12/10/2024
504869906 MS24-DEC: Security Monthly Quality Rollup - Monthly Rollup - Windows Server 2012 - KB5048699 (x64) KB5048699 12/10/2024
Fixlet: MS24-DEC: Security Monthly Quality Rollup - Monthly Rollup - Windows Server 2012 - KB5048699 (x64)
Take Action Edit Copy Export Hide Locally Hide Globally Remove
Description Details Applicable Computers (0) Action History (0)
Description
A security issue has been identified in a Microsoft software product that could affect your system. You can help protect your system by installing this update from Microsoft. For a complete listing of the issues that are included in this update, see the associated Microsoft Knowledge Base article. After you install this update, you may have to restart your system.
Note: Affected computers may report back as 'Pending Restart' once the update has run successfully, but will not report back their final status until the computer has been restarted.
Note: To deploy this Fixlet, ensure that Windows Update service is not disabled.
File Size: 458.5 MB
Actions
Click here to initiate the deployment process.
Click here to see the Knowledge Base Article for this update.
213 items in list, 1 selected.
Connected to 'WIN-UTMA6U7INU9' as user 'bigfix'
Type here to search
5:13 AM
12/18/2024

Chapter 4. Using Minimize WMI usage feature

Know more about the optional feature, Minimize WMI usage feature.

The BigFix content uses Windows Management Interface (WMI) query to detect if an ESU key is installed on a Windows 7, Windows 2012, or 2008 endpoint. WMI queries are relatively expensive, lasting approximately a second, and utilization of the first CPU core can be higher than the BigFix cap of 2% during query time (because WMI is a Windows subsystem that does not obey BigFix's CPU throttling). In most cases this effect is negligible; however, during endpoint configurations WMI queries can take much longer than usual, making WMI's CPU usage more noticeable on machines with few CPU cores. Please use the "Minimize WMI" feature to reduce the number and frequency of WMI queries used for ESU patching.

Understanding Minimize WMI feature

The Minimize WMI feature creates a client setting, _BESClient_WinESU_Keys, which is used to hold a list of ESU keys currently installed on an endpoint. When the Minimize WMI feature is enabled on an endpoint, this client setting is used (instead of WMI queries) to determine the endpoint's applicability to ESU patches.

Note: The Minimize WMI feature is "opt-in" -- ESU site operation is unchanged unless you enable the feature.

Pros:

- Fewer WMI queries resulting in less CPU overhead when evaluating ESU patch Fixlet applicability.
- Easy access to ESU key info via client setting in addition to the analysis properties.
- More up-to-date key information in the ESU Key Information analysis: the ESU Keys Installed (WMI) property is updated every 6 hours to minimize WMI overhead, but the ESU Keys Installed (client setting) property is updated every report.

Cons:

- The ESU key client setting can get out of sync with the actual keys installed on the endpoint if keys are manually added, activated, or removed. The "ESU Key Management: Synchronize Client Setting to WMI" Fixlet (Fixlet ID 10) is provided to help you prevent drift.

How to enable the Minimize WMI feature

Deploying the "ESU Key Management: Add Client Setting to Minimize WMI Usage" Fixlet (Fixlet ID 11) will add the **_BESClient_WinESU_MinimizeWMI** setting and set it to 1, enabling the feature.

Note: Enabling the feature does not populate the ESU key list into the **_BESClient_WinESU_Keys** setting. Deploy the "ESU Key Management: Synchronize Client Setting to WMI" Fixlet (Fixlet ID 10) to populate the **_BESClient_WinESU_Keys** setting. These two actions are decoupled to allow you to enable the feature without causing any immediate WMI usage.

How to disable the Minimize WMI feature

Deploying the “ESU Key Management: Remove Client Setting to Minimize WMI Usage” Fixlet (Fixlet ID 12) will remove the **_BESClient_WinESU_MinimizeWMI** setting, disabling the feature.

It also removes the **_BESClient_WinESU_Keys** setting from the endpoint so that the list of ESU keys in it does not become stale.

Technical Details

Client **setting _BESClient_WinESU_MinimizeWMI** must exist and be set to a value other than 0 to enable the feature.

Client setting **_BESClient_WinESU_Keys** hold a list of ESU keys on the endpoint. The format of each key is the same as the values reported in the “ESU Keys Installed (WMI)” property in the ESU Key Information analysis, and the values are pipe-separated. Example: “Year1:ABCDE:Active|Year2:FGHIJ:Inactive”.

If **_BESClient_WinESU_MinimizeWMI** is set, both the Install and Activate MAK task (Fixlet ID 1) and the Uninstall MAK task (Fixlet ID 2) will update **_BESClient_WinESU_Keys** to the current value(s) in WMI upon successful completion. If WMI shows no ESU keys, the **_BESClient_WinESU_Keys** client setting is deleted.

The “ESU Key Management: Synchronize Client Setting to WMI” Fixlet (Fixlet ID 10) becomes relevant on endpoints whose **_BESClient_WinESU_Keys** setting is out of sync with WMI.

If **_BESClient_WinESU_MinimizeWMI** is set, ESU related WMI queries and their frequencies are as follows:

- “ESU Keys Installed (WMI)” property (evaluation): every 6 hours
- “ESU Key Management: Synchronize Client Setting to WMI” Fixlet (applicability): once per client evaluation loop
- “ESU Key Management: Synchronize Client Setting to WMI” policy action (action reapply if relevant): configurable, 1-4 hours recommended

The following ESU Key Management Fixlets and tasks use WMI queries in their action script:

- Install and Activate MAK
- Uninstall MAK
- Synchronize Client Setting to WMI

Recommendations

Customers who enable the Minimize WMI feature should run the “ESU Key Management: Synchronize Client Setting to WMI” Fixlet as a policy action in order to periodically populate the client setting with the actual ESU key list as reported by WMI. We recommend a “reapply when relevant” interval between 1 and 4 hours as a starting point, but you can customize the interval to your environment (for example, 1 day may be sufficient if you’re confident no manual ESU key manipulation will occur in your environment).

Appendix A. Frequently Asked Questions

Learn the answers to frequently asked questions about ESU patching with BigFix.

I already have a BigFix ESU Patching add-on. Do I still need to subscribe to Microsoft's ESU program?

The BigFix ESU Patch Add-ons provide the same automation and visibility for ESU patches that BigFix provides for the standard Windows™ patches, in addition to providing a mechanism to automate ESU key management. However, unlike standard Windows patches, a special license key is required to install the ESU patches. You can obtain the ESU license key only through a subscription to Microsoft's ESU program.

Should I pre-cache the ESU patches manually?

Microsoft anticipates providing ESU patches by using publicly accessible URLs at this time, which your BigFix server can download without any manual caching effort.

How do I check which endpoints are entitled to ESU patches?

An analysis is provided in each BigFix ESU Patch Add-on site with a property that reports a list of endpoints that have ESU keys installed.

On how many BigFix servers can I enable the ESU content sites?

The BigFix ESU Patch Add-on product is licensed to your organization's HCL subscribenet account - you can use it on any of your BigFix root servers covered in that account. We provide enough license units at purchase to cover most use cases. If you need more license units than are provided in your account, or if you are a managed service provider, contact HCL BigFix Support.

Can I use ESU Fixlets in other baselines?

You can use ESU patch Fixlets in any baseline, provided the target endpoints are subscribed to the ESU patch site.

My BigFix deployment is airgapped. How do I activate my ESU keys?

If your endpoints do not have access to the Internet, you cannot activate ESU MAK directly; hence, the ESU Key Management tasks do not work for them. For such cases, Microsoft provides the Volume Activation Management Tool (VAMT). For details, see VAMT

Can I activate the Multiple Activation Key (MAK) more than once?

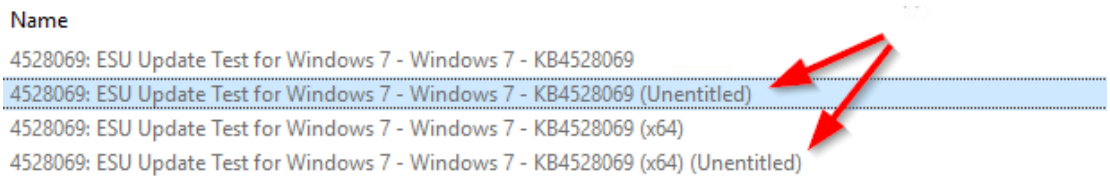
On an endpoint in which the ESU MAK is already installed, the MAK activation fixlet becomes relevant and the deactivation fixlet becomes irrelevant. While testing the activation and deactivation of MAK, no specific issues with applying the MAK to the same endpoint more than once were found.

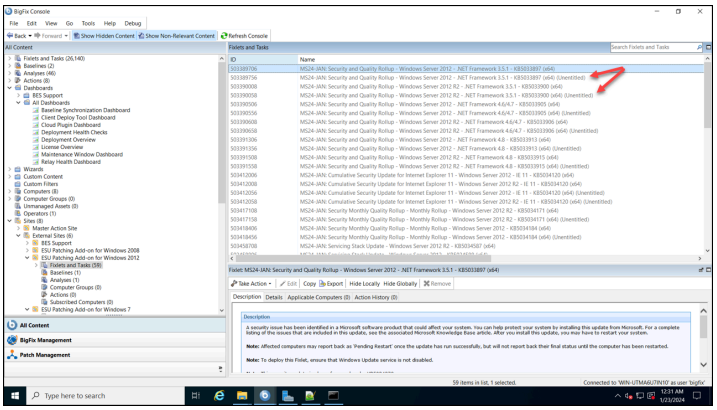
Should I activate MAK for all my endpoints at the same time?

Not necessarily. You can activate your endpoints MAK by using the BigFix Fixlet, or by using the other methods. The Fixlet content for applying the patches only checks whether the MAK is applied and activated, and not the method of activation. This check is a WMI call which you can see in the Fixlet relevance.

I do not have an ESU entitlement for a few endpoints. How do I handle patching in this case?

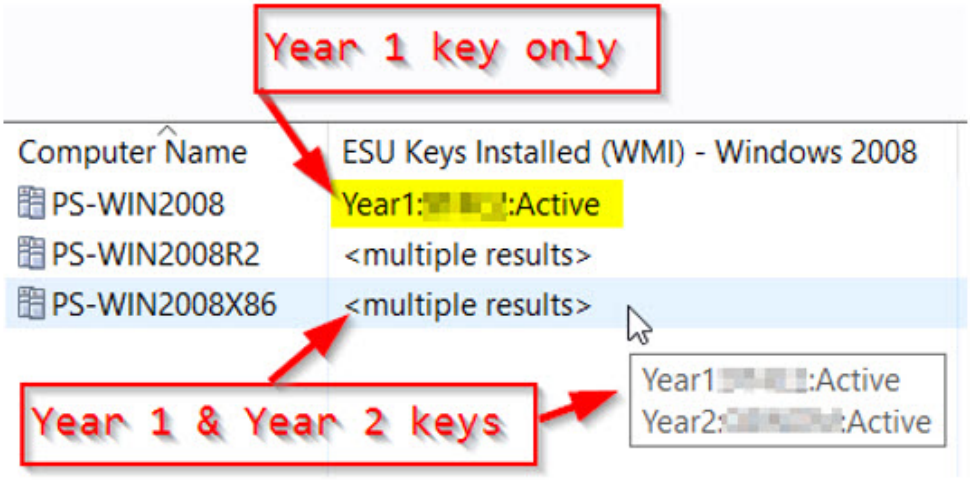
For each patch Fixlet in a BigFix ESU Patch Add-on site, a corresponding “unentitled” Fixlet is provided. Unlike the actual ESU patch Fixlets, the “unentitled” Fixlets become relevant only to endpoints that do NOT have an activated ESU key installed (and they do not have a patch action because the installation of ESU patches on an unentitled endpoint fails). These Fixlets let you track which patches vulnerable endpoints need even if those endpoints are not in the scope of the ESU program.

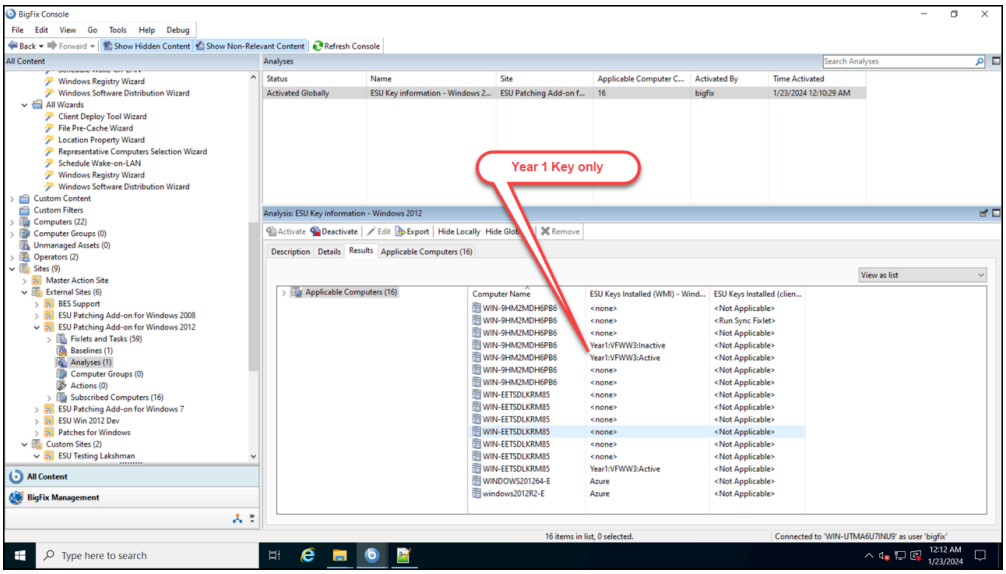




How can I check the ESU keys on my endpoints?

The ESU Patching add-on sites contains “ESU Keys Information” analysis which includes “ESU Keys Installed (WMI)” property. This property shows all the ESU keys that are installed on each endpoint.



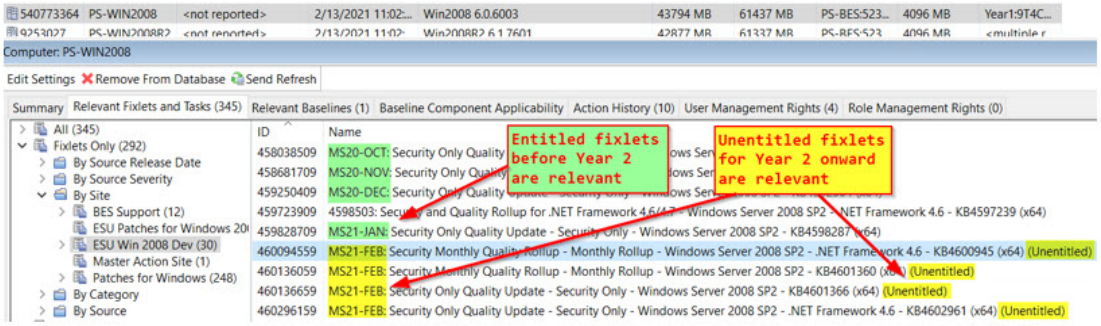


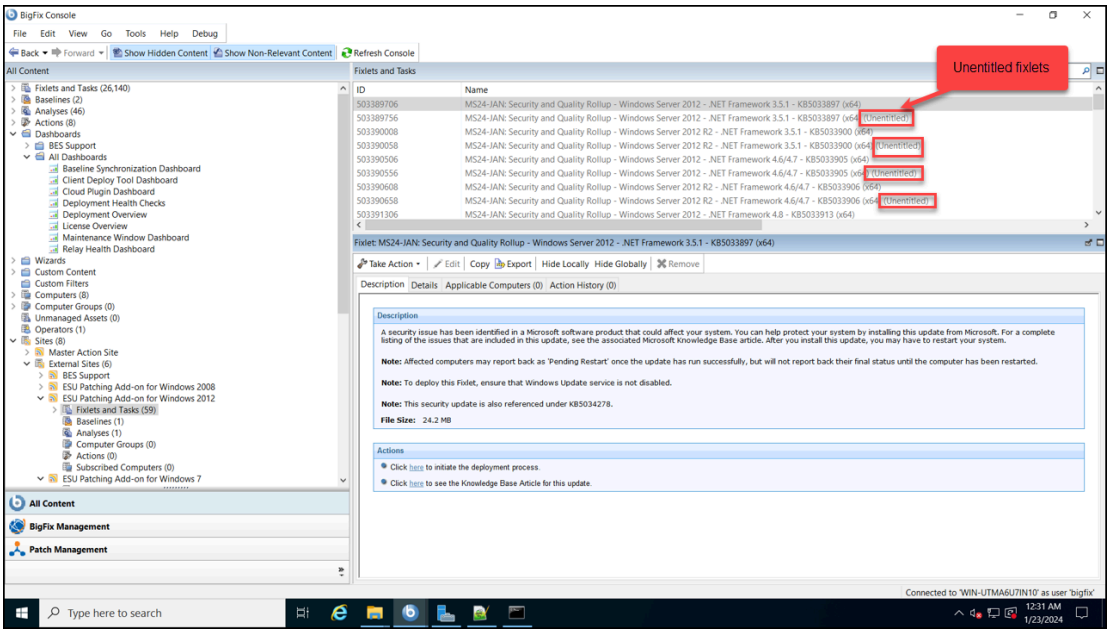
Note: The property has a 6-hour update interval, so you will need to send a refresh to endpoints that had keys recently added or removed to see the changes.

I have an ESU key installed. Why are some fixlets showing “Unentitled”?

Each ESU patch from Microsoft requires a particular ESU key installed, depending on when the patch was released. For example, a patch from January 2021 requires a Year 1 ESU key while a patch from February 2021 requires a Year 2 ESU key. If the required key is not present on the endpoint, the “Unentitled” version of the patch Fixlet is relevant instead of the entitled (actionable) version.

The following example shows relevant ESU fixlets for an endpoint with a Year 1 key but no Year 2 key:





Check the “ESU Keys Installed (WMI)” property to view the ESU keys that are installed on an endpoint.

Appendix B. Support

For more information about this product, see the following resources:

- BigFix Support Portal
- BigFix Developer
- BigFix Playlist on YouTube
- BigFix Tech Advisors channel on YouTube
- BigFix Forum

Notices

This information was developed for products and services offered in the US.

HCL may not offer the products, services, or features discussed in this document in other countries. Consult your local HCL representative for information on the products and services currently available in your area. Any reference to an HCL product, program, or service is not intended to state or imply that only that HCL product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any HCL intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-HCL product, program, or service.

HCL may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

HCL
330 Potrero Ave.
Sunnyvale, CA 94085
USA
Attention: Office of the General Counsel

For license inquiries regarding double-byte character set (DBCS) information, contact the HCL Intellectual Property Department in your country or send inquiries, in writing, to:

HCL
330 Potrero Ave.
Sunnyvale, CA 94085
USA
Attention: Office of the General Counsel

HCL TECHNOLOGIES LTD. PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. HCL may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-HCL websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this HCL product and use of those websites is at your own risk.

HCL may use or distribute any of the information you provide in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

HCL
330 Potrero Ave.
Sunnyvale, CA 94085
USA
Attention: Office of the General Counsel

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by HCL under terms of the HCL Customer Agreement, HCL International Program License Agreement or any equivalent agreement between us.

The performance data discussed herein is presented as derived under specific operating conditions. Actual results may vary.

Information concerning non-HCL products was obtained from the suppliers of those products, their published announcements or other publicly available sources. HCL has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-HCL products. Questions on the capabilities of non-HCL products should be addressed to the suppliers of those products.

Statements regarding HCL's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to actual people or business enterprises is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to HCL, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. HCL, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS," without warranty of any kind. HCL shall not be liable for any damages arising out of your use of the sample programs.

Each copy or any portion of these sample programs or any derivative work must include a copyright notice as follows:
© (your company name) (year).
Portions of this code are derived from HCL Ltd. Sample Programs.

Trademarks

HCL Technologies Ltd. and HCL Technologies Ltd. logo, and hcl.com are trademarks or registered trademarks of HCL Technologies Ltd., registered in many jurisdictions worldwide.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other product and service names might be trademarks of HCL or other companies.

Terms and conditions for product documentation

Permissions for the use of these publications are granted subject to the following terms and conditions.

Applicability

These terms and conditions are in addition to any terms of use for the HCL website.

Personal use

You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative work of these publications, or any portion thereof, without the express consent of HCL.

Commercial use

You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of HCL.

Rights

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any information, data, software or other intellectual property contained therein.

HCL reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by HCL, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

HCL MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.