IBM Features on Demand

IBM

User's Guide

IBM Features on Demand

User's Guide

Note: Before using this information and the product it supports, read the general information in Appendix B, "Notices," on page 39.

Contents

Chapter 1. Introduction

This document provides an overview of the IBM® Features on Demand program and the feature activation process. Features on Demand is the capability to activate or "unlock" features that are integrated in System x products. The feature is in the firmware or software but is "locked" until the activation key is installed.

Features on Demand provides the capability to activate a feature on a server or option with a software key that is referred to as the Features on Demand activation key. Features on Demand features are usually integrated in firmware or software on a server or option, but the feature is "locked" until the Features on Demand activation key is installed. If you purchase a server and a Features on Demand option, manufacturing can install the Features on Demand activation key on the server so that the Features on Demand function is ready for you to use when you receive the server. A Features on Demand option can also be ordered anytime after your initial server purchase just like other IBM options. Features on Demand enables you to buy the features that you need now with the ability to enhance your system later without costly hardware upgrades.

The Features on Demand feature is activated in one of the following ways:

- If you purchase a feature as part of a server or chassis order, the IBM factory or business partner enables the feature as part of the configuration and testing of the server or chassis. You can begin using the feature when you receive the server or chassis.
- If you purchase a Features on Demand option or upgrade that is separate from the server or chassis order, you must complete the feature activation when you install the option. In this case, an authorization code with instructions for activating the feature is mailed to you.

An authorization code is a 22-character alphanumeric string that is the proof of purchase and entitlement to upgrade one or more units with a particular feature. The authorization code and instructions for requesting an activation key are on a printed document that is mailed to you. If you order directly from IBM, the authorization code and instructions can also be sent to the email address that you provide when you register on the Features on Demand website. For more information, see "Registering with IBM" on page 5.

Features on Demand is also supported on certain hardware and software options offered by IBM. To check whether a Features on Demand option is available for your hardware or software option, see the documentation that comes with the option.

Overview

There are four types of Features on Demand features:

- Server-based features
- Chassis-based features
- I/O Modules or switch features
- Software features

The Features on Demand website is the primary interface that is used to register with IBM for Features on Demand, activate keys, retrieve key history, generate a report, and much more. IBM ToolsCenter has two utilities, the IBM Advanced Settings Utility (ASU) and IBM Dynamic System Analysis (DSA), that you can use to manage the Features on Demand keys. There are manual methods that you can also use to install or remove an activation key. More information about using these tools is provided in Chapter 2, "Using the IBM Features on Demand website," on page 5 and Chapter 3, "System feature activation," on page 19.

The following table provides guidance for determining which tools to use for the different types of Features on Demand features.

Table 1. Tools to use for each Features on Demand feature type

Features on Demand type	Administration point	Tools	Protocols	Examples
Server-based	Integrated Management Module II (IMM2)	• Key Management System (KMS) website • ASU and DSA • IMM2 web interface	• Intelligent Platform Management Interface (IPMI) • Keyboard Controller Style (KCS) • Common Information Model (CIM)	Server functions, for example: • IMM2 Advanced • RAID features • Network features
Chassis-based	Management module of the chassis	• KMS website • ASU and DSA	CIM	Chassis features like BladeCenter Open Fabric Manager (BOFM)
I/O module	Management Information Base (MIB)	ASU	Simple Network Management Protocol (SNMP)	Switch features
Software-based		See the software documentation.		IBM System Networking Distributed Switch 5000V

Managing the Features on Demand features

There are several tools available for you to manage the Features on Demand features. The Features on Demand website (http://www.ibm.com/systems/x/fod/), also referred to as Key Management System (KMS), provides a user interface for creating and retrieving keys and is the repository of Features on Demand key information and history. Use the Features on Demand website to register users, activate keys, retrieve keys or authorization codes, and generate reports. The Features on Demand website is used with all Features on Demand feature types. Chapter 2, "Using the IBM Features on Demand website," on page 5 provides detailed information about the Features on Demand website.

IBM ToolsCenter has two utilities, Advanced Settings Utility (ASU) and Dynamic System Analysis (DSA), to help you manage your Features on Demand activation keys for server-based, chassis-based, and I/O module-based features. These utilities are used to acquire and download keys from the Features on Demand website, install and remove Features on Demand activation keys, export keys for backup, and report on available keys. For an overview of the ToolsCenter utilities, see "Using IBM ToolsCenter utilities to manage Features on Demand activation keys" on page 25.

In addition to the Features on Demand website, tools, and applications, you can also manually manage the Features on Demand keys. For more information about using the IMM2 web interface to manage server-based Features on Demand keys, see "Manually installing a Features on Demand activation key on the IMM2" on page 20 and "Manually removing a Features on Demand activation key on the IMM2" on page 23.

For software-based features, use the method that is specified in the software documentation.

System requirements

To activate a Features on Demand feature, you must have a hardware or software offering from IBM that supports Features on Demand. Servers must have the Integrated Management Module II (IMM2) to support Features on Demand.

To manage hardware-based Features on Demand features, you can interact directly with the hardware (for example, a server, chassis, or I/O module) through its supported user interfaces, or you can use IBM Systems Director or the IBM ToolsCenter utilities. For more information about IBM Systems Director, see the information center at http://publib.boulder.ibm.com/infocenter/director/v6r1x/index.jsp?topic=/director_6.1/fqm0_main.html. For more information about the IBM ToolsCenter, see the information center at http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp.

To manage software Features on Demand that are independent of the hardware, you can interact with the software-provided interface for managing product activation. For specific details about how to access product activation information, see the software product documentation.

Notices and statements in this document

The following notices and statements are used in this document:

- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage might occur.

Chapter 2. Using the IBM Features on Demand website

The IBM Features on Demand website is at http://www.ibm.com/systems/x/fod/. You can use the website to perform the following tasks:

- Register with IBM
- Activate a feature
- Retrieve history and reactivate a Features on Demand feature
- Manage an IBM customer number
- Retrieve an authorization code
- Generate a report

Note: Your IBM ID and password are required to log in to the Features on Demand website. If you are not registered with IBM, go to http://www.ibm.com/systems/x/fod/ and click **register** on the bottom of the page.

Registering with IBM

If you are not registered with IBM, complete the following steps:

1. Go to http://www.ibm.com/systems/x/fod/ and click **register** on the bottom of the page. The My IBM Registration page opens.

2. On the "My IBM Registration" page, enter the following information:
    - IBM ID, which is an email address
    - Password
    - Verification of the password
    - Security question
    - Answer to the security question
    - Email address
    - Country or region of residence

If you have problems registering on the IBM website, click **Help and FAQ** on the left navigation pane, or go to https://www.ibm.com/account/profile/dk?page=helpdesk.

3. Click **Continue**. The following page opens, thanking you for registering with ibm.com.
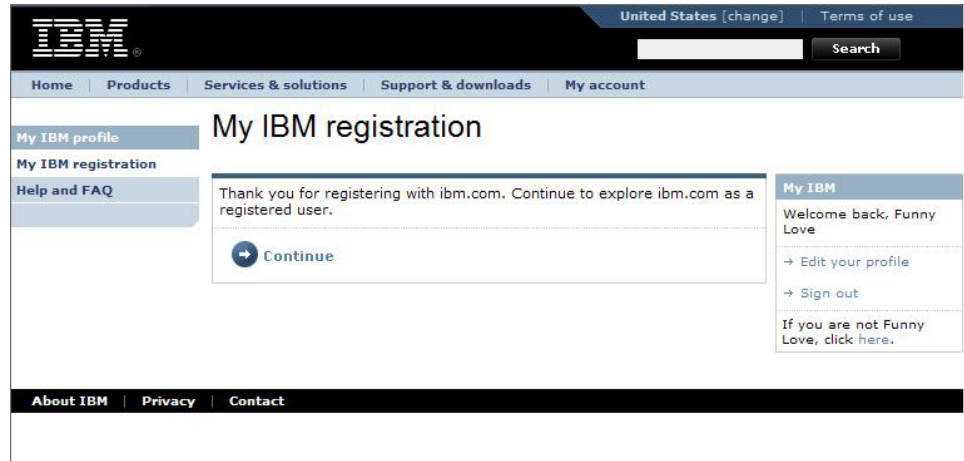
4. Click **Continue** and the Features on Demand page opens. Go to "Activating the Features on Demand feature" on page 8.

Activating the Features on Demand feature

Before you begin, make sure that the following items are available:

- Authorization code that is at the top of the *IBM Feature Activation Instructions* document that was sent to you in the mail
- Access to the hardware or software that you want to activate

To activate the Features on Demand feature, complete the following steps:

1. Go to http://www.ibm.com/systems/x/fod/. The Features on Demand page opens.
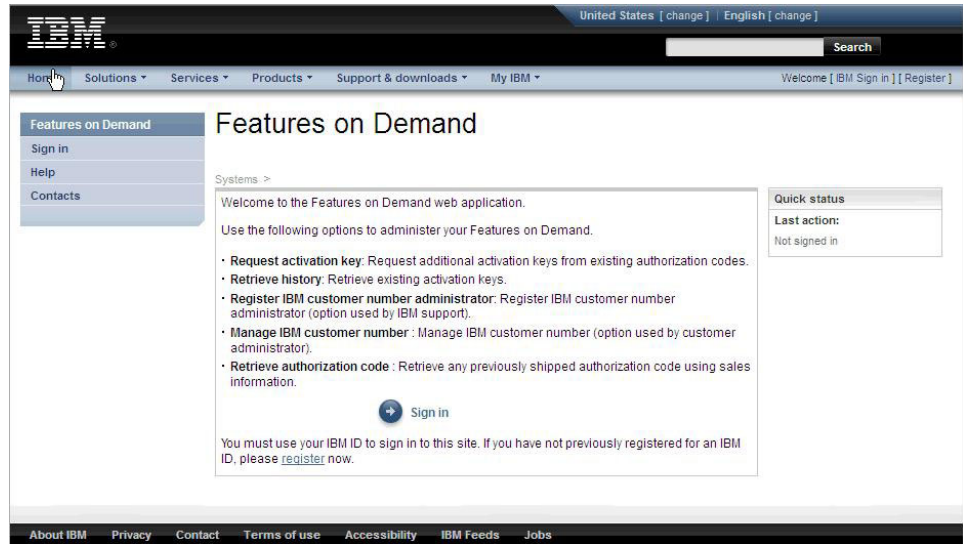
2. Click **Sign in**. The Sign in page opens.
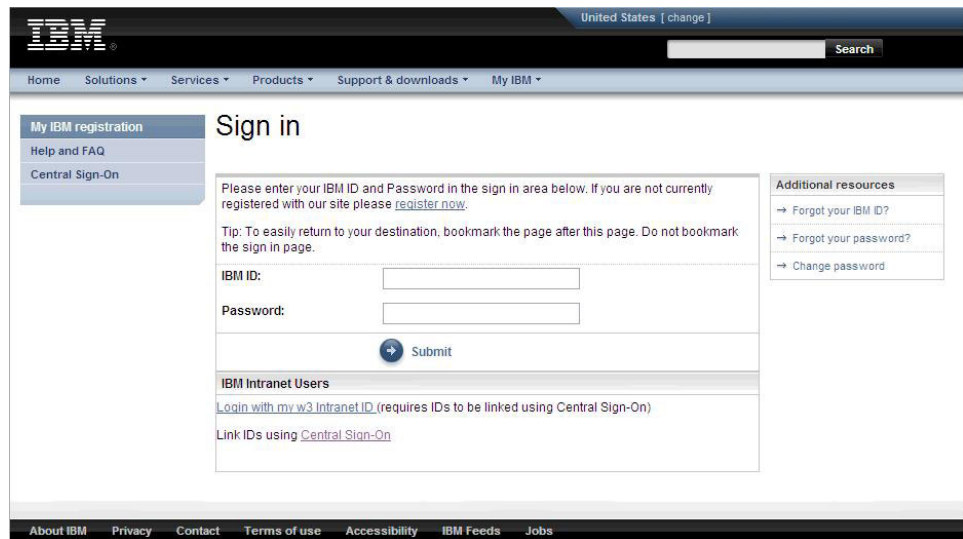
3. On the Sign in page, enter your IBM ID and password and click **Submit**. The Welcome page opens.
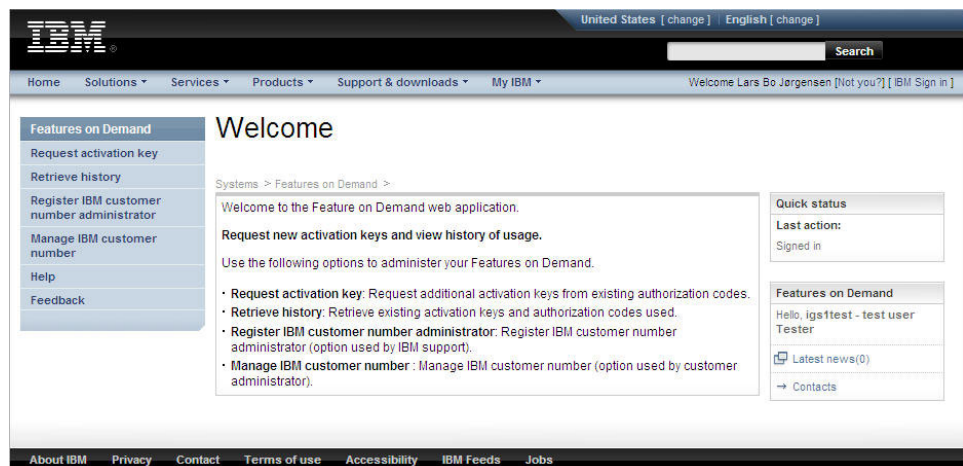
4. On the Welcome page, select **Request activation key** from the left navigation pane.
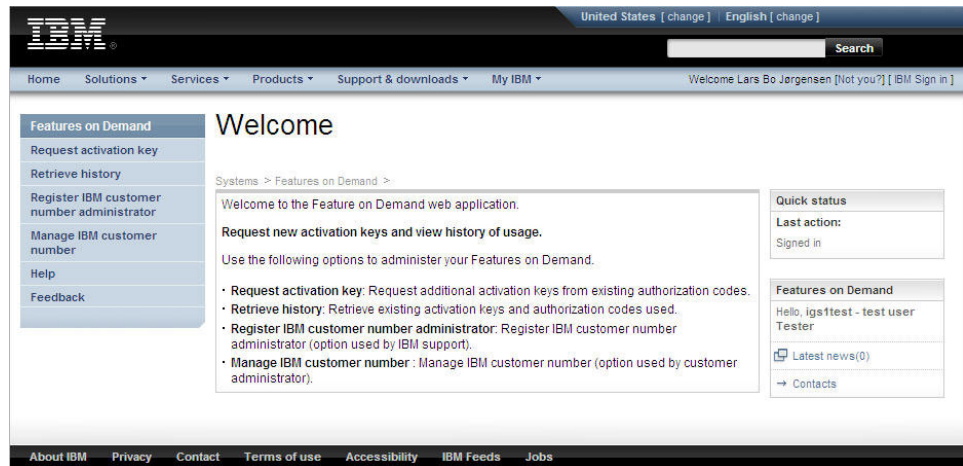
5. On the "Request activation key" page, enter the authorization code and click **Continue**.
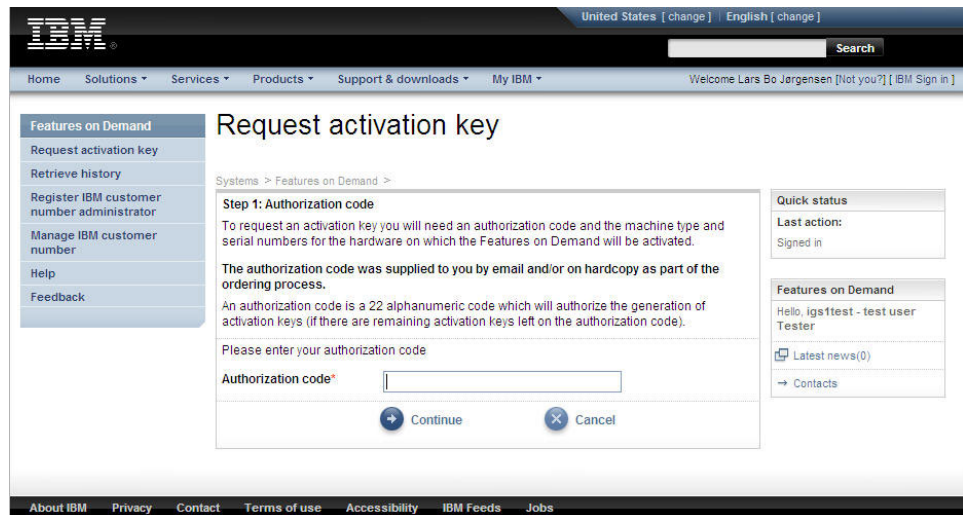
6. Enter the unique identifier (UID) specified for feature activation. If you do not know the UID that is requested, see the product documentation for further information about how to retrieve and enter the identifier in the key redemption process.

Note: For server options, the UID is usually the machine type and serial number (entered together with no spaces) of the target server. For I/O modules, the UID is usually the serial number of the I/O module.

For features that include additional constraints, such as the entitlement number of chassis, an additional prompt is displayed during the authorization code redemption process. The current entitlement is displayed and you are asked for the new entitlement number. Enter the value when you are prompted. For more information about constraints, see your feature documentation.

7. Select **Generate key**. A summary of what will be created is displayed. Make sure that the information is correct before you select **Confirm**.

8. Install the activation key file:
   - For a hardware target, use the IBM ToolsCenter utilities. For more information, see Chapter 3, "System feature activation," on page 19 and the product-specific documentation for the feature that you are activating.

     Keys can also be installed directly through the local product interfaces on the IMM2 and supported non-server hardware devices, such as I/O modules. For more information about supported direct-installation interfaces, see the hardware product documentation.
   - For a software target, use the method that is specified in the software target documentation. For more information, see the product-specific documentation for the feature that you are activating.

   Notes:
   a. A restart of the hardware or software system might be required to complete the activation process. For more information about the activation process requirements after the key is installed, see the product documentation for the feature that you are activating.
   b. You can also use the IBM ToolsCenter utilities to activate a Features on Demand feature. For more information, see "Using IBM ToolsCenter utilities to manage Features on Demand activation keys" on page 25.

Retrieving history

On the "Retrieve history" page, you can use the authorization code or the unique identifier (UID) to search for activation key history. The results from a search using the authorization code lists all activation keys that are generated for the authorization code. The results from a search using the UID lists all activation keys that are generated for the UID.

To retrieve the history, complete the following steps:

1. Select **Retrieve history** from the left navigation pane.

2. Enter either the authorization code or the UID. Click **Continue**.

3. Select the device for which you want to retrieve the key (as shown in the previous illustration). To send the key information to the email address of the user who is logged in, click **Email**. To download the activation key directly to your computer, click **Download**.

Managing the IBM customer number

On the "Manage IBM customer number" page, you can see a list of the customer numbers for which you have administrative authority and any users who are registered for the customer number. You can add or remove users as administrators for a customer number.

Note: If you cannot select a customer number in the **Customer number** field, click **Contacts** in the right navigation pane to contact customer support for your region.

To manage the IBM customer number, complete the following steps:

1. Select **Manage IBM customer number** from the left navigation pane.
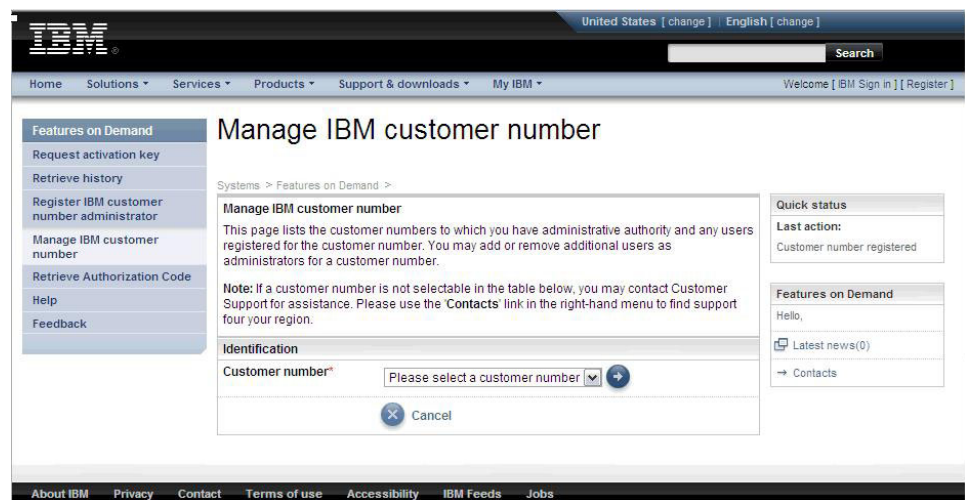
2. Select a customer number to which your IBM user ID is linked and click the arrow.
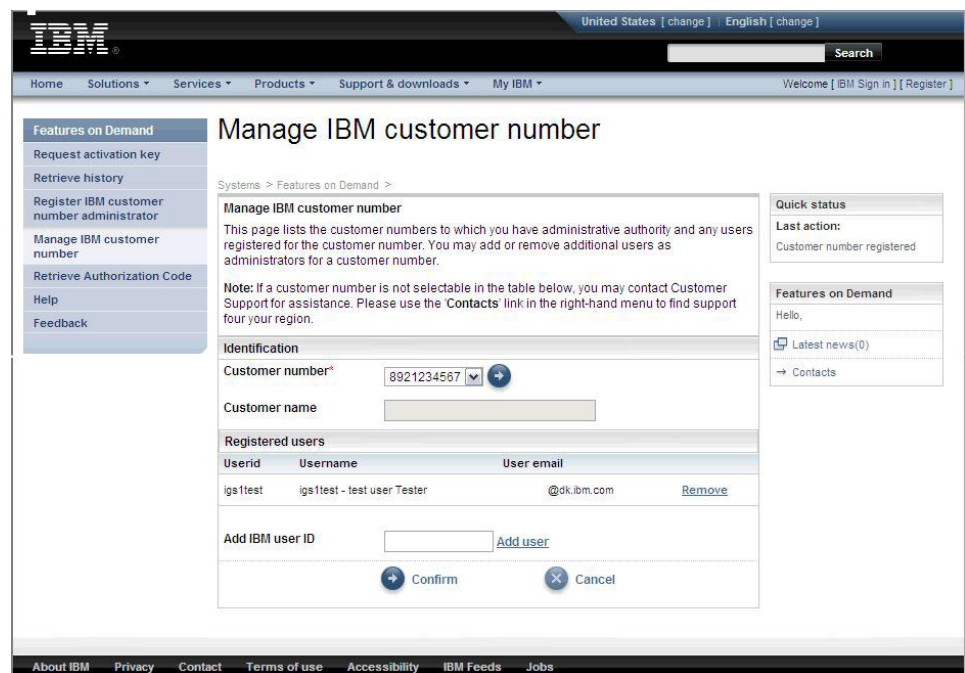
3. To link additional users to your customer number, complete the following steps.

    Note: Each user must have an IBM user ID and must have signed on at least once on the IBM Features on Demand website.

    a. In the **Add IBM user ID** field, enter the IBM user ID.

    b. Click **Add user**. The user ID, user name, and user email address are displayed.

    c. Click **Confirm**.

All users who are linked to a customer number will receive authorization codes through email for future orders that are placed. However, authorization codes for some software-based Features on Demand features are only delivered by mail.

Retrieving an authorization code

On the "Retrieve Authorization Code" page, you can request to have a PDF file with an authorization code emailed to you.

To retrieve an authorization code, complete the following steps:

1. Select **Retrieve Authorization Code** from the left navigation pane.

2. Enter the customer number with country code, plant order number, and order part number or product ID. These numbers are on the packing list that comes with your order. The **Your Email address** field is automatically populated with the user email address. In the **Other recipients** field, separate email addresses with commas.

3. Click **Submit**. A confirmation window is displayed.

Generating a report

On the "Generate report" page, you can create several report types based on specified criteria and entered information. A comma separated value (.csv) document with the results is emailed to you.

To generate a report, complete the following steps:

1. Select **Generate report** from the left navigation pane.

2. Select a report type in the **Report type** field. You can generate reports based on searches of the following information:
   - Machine type and serial number
   - Other UID
   - Authorization code
   - Order number

3. Based on the selected report type, enter an applicable value in the **Report input** field. An example is shown in the following window.

4. You can refine the result by selecting a customer number for which you are an administrator. Select the customer number in the **Customer number filter** field.

5. Click **Submit**. A confirmation window is displayed. You will receive an email with the report attached. There is no attachment if the result is empty.

Chapter 3. System feature activation

The administration of a Features on Demand activation key is different depending on the type of feature that you install:

- Server-based Features on Demand

  The server Integrated Management Module II (IMM2) is the point of administration for Features on Demand activation keys. If the server supports a web interface into the IMM2, you can administer activation keys with a web browser connection. For more information about the IMM2 web interface, see the IMM2 *User's Guide.*

- Software-based Features on Demand

  The software package configuration interface is the point of administration for Features on Demand activation keys.

- Switches and I/O module Features on Demand

  The management interface of the device is the point of administration for Features on Demand activation keys.

- Chassis-based Features on Demand

  The management module of the chassis is the point of administration for Features on Demand activation keys.

For each device type, device-applicable standard protocols are supported, according to the following information:

- Simple Network Management Protocol (SNMP) is supported through a Features on Demand management information base (MIB) on I/O modules, network switches, and the IMM2 devices that support the Features on Demand feature. For details about the Features on Demand MIB, see Appendix A, "Features on Demand MIB," on page 33.

- A web interface or command line interface (CLI) is supported on a device-by-device basis. Where applicable and aligned with the device operational semantics, support for administering Features on Demand activation keys is available through the native command line or web interface of the Features on Demand-compliant device.

Note: These interfaces are not standard and are not universally available across all Features on Demand-compliant implementations. For more information about how web and CLI interfaces operate and whether they support feature key administration, see the device-specific documentation.

Manually installing a Features on Demand activation key on the IMM2

For an Features on Demand activation key that is stored in the IMM2, you can use the IMM2 web interface to manually install the Features on Demand activation key to activate the feature that you purchased. You can also use the IMM2 CLI `keycfg` command to display, add, or delete Features on Demand activation keys. For details and syntax of the `keycfg` command, see the IMM2 *User's Guide* at http://www-947.ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5089484.

Before you install an activation key, you must have the Features on Demand activation key on your system or removable media. That is, you must have ordered a Features on Demand option and received the authorization code through the mail or email and per the instructions in Chapter 2, "Using the IBM Features on Demand website," on page 5, you must have received the key from KMS. The IMM2 web interface on the target server is accessed by using a remote interface from a workstation over the network. If you need more information about the remote access, see the IMM2 *User's Guide*.

To manually install a Features on Demand by using the IMM2 web interface, complete the following steps:

1. Open a web browser. In the address or URL field, type the IP address or host name of the IMM2 server to which you want to connect.
2. Type your user name and password in the IMM2 Login window.
3. Click **Log In** to start the session.

4. From the IMM2 web interface, click on the **IMM Management** tab; then click on **Activation Key Management**.
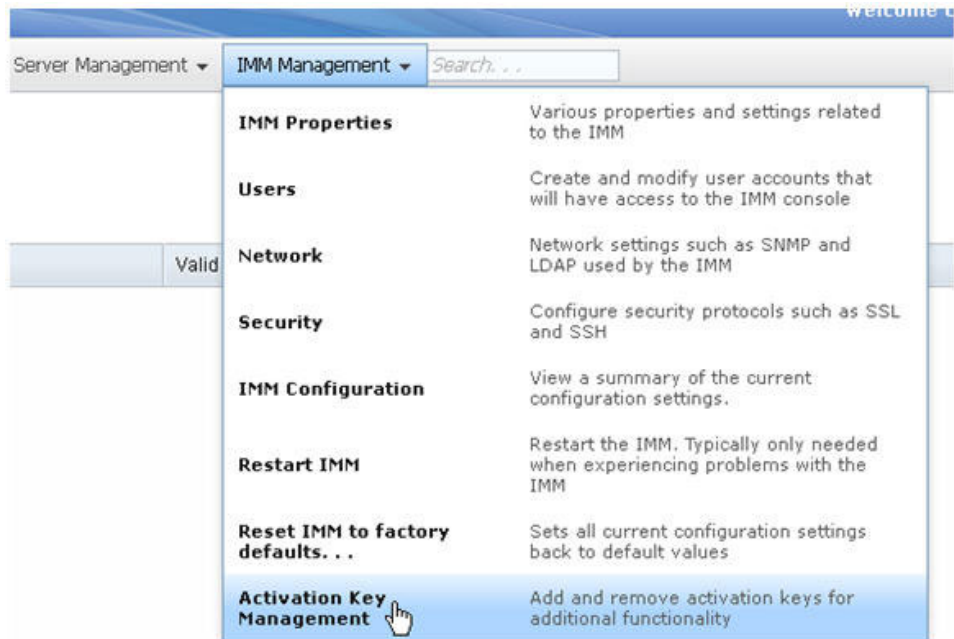
5. From the Activation Key Management page, click **Add**.
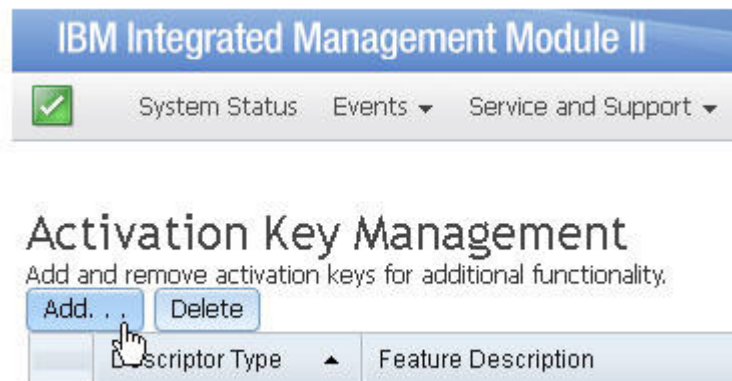
6. In the Add Activation Key window, click **Select File**; then, select the activation key file to add in the File Upload window and click **Open** to add the file or click **Cancel** to stop the installation. To finish adding the key, click **OK**, in the Add Activation Key window, or click **Cancel** to stop the installation.
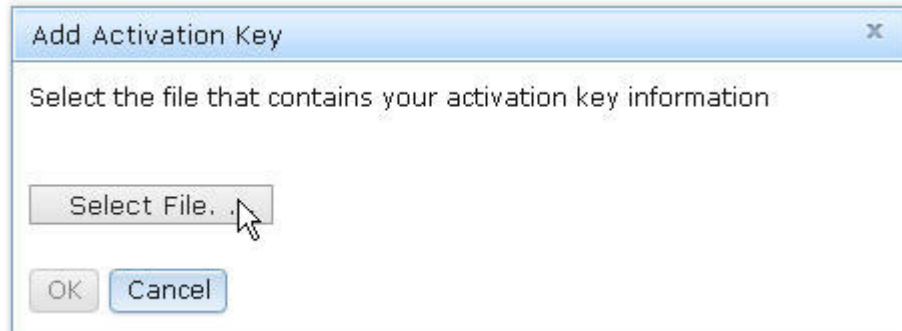
The Success window indicates that the activation key is installed correctly.
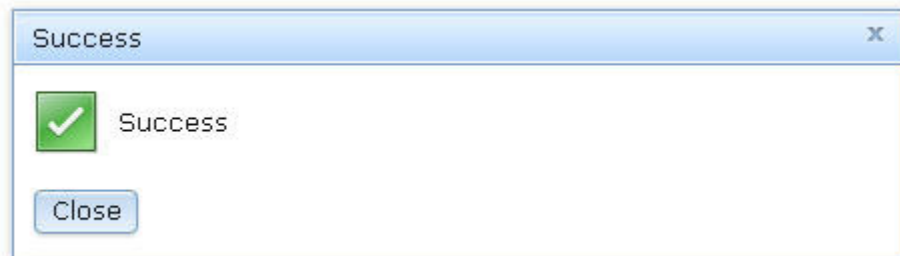
Notes:

- If the activation key is not valid, the following error window is displayed.
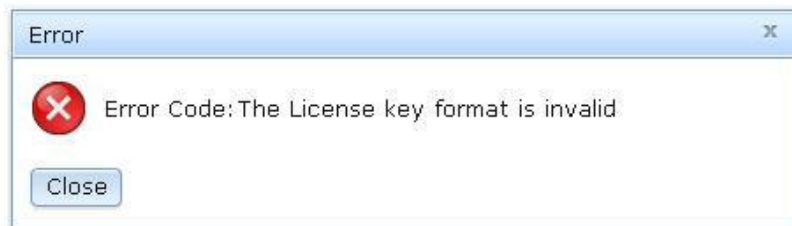
- If you are attempting to install the activation key on a machine type that does not support the Features on Demand feature, the following error window is displayed.
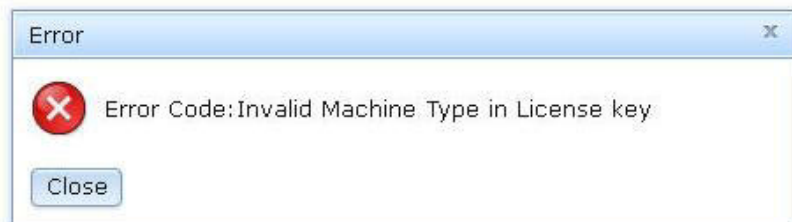
7. Click **OK** to close the Success window.

The selected activation key is added to the server and is displayed on the Activation Key Management page.

Note: You might have to restart your system to complete the installation of the activation key.

Manually removing a Features on Demand activation key on the IMM2

To remove a Features on Demand activation key, complete the following steps:

1. Open a web browser. In the address or URL field, type the IP address or host name of the IMM2 server to which you want to connect.
2. Type your user name and password in the IMM2 Login window.
3. Click **Log In** to start the session.
4. From the IMM2 web interface, click on the **IMM Management** tab; then click on **Activation Key Management**.
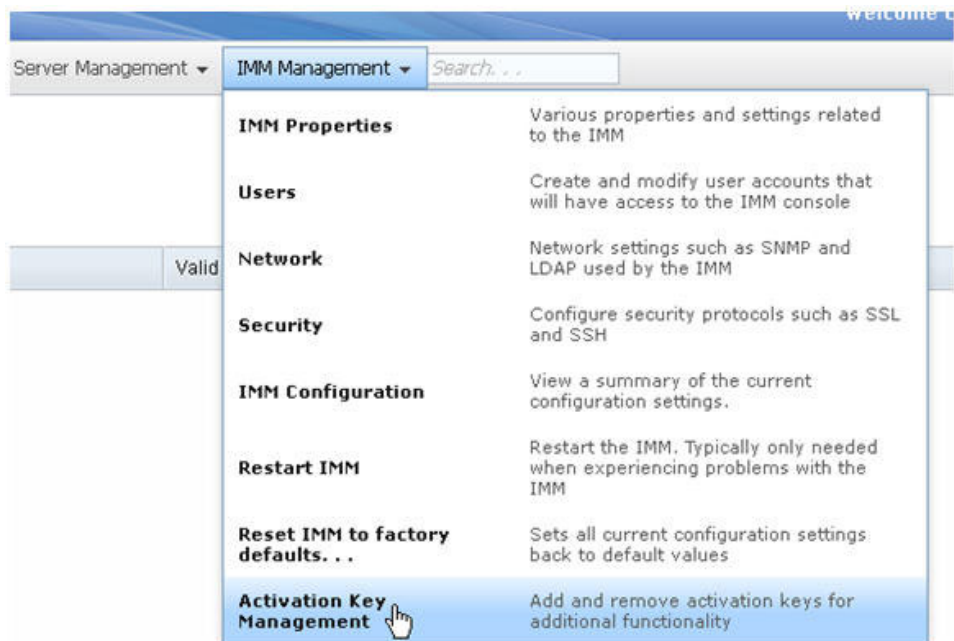
5. From the Activation Key Management page, select the activation key to remove; then, click **Delete**.

6. In the Confirm Activation Key Deletion window, click **OK** to confirm activation key deletion or click **Cancel** to keep the key file.
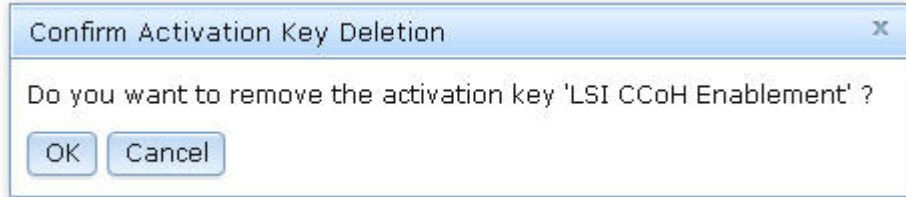
The selected activation key is removed from the server and is no longer displayed on the Activation Key Management page.

Note: You might have to restart your system to complete the removal of the activation key.

Using IBM ToolsCenter utilities to manage Features on Demand activation keys

IBM ToolsCenter V9.00 provides the following two utilities to help you manage Features on Demand activation keys:

- Advanced Settings Utility (ASU)
- Dynamic System Analysis (DSA)

Using the IBM Advanced Settings Utility

The IBM Advanced Settings Utility (ASU) is a command line utility that enables you to manage keys. The ASU is supported on Windows and Linux operating system clients and is designed to automate the process of managing Features on Demand keys. The ASU commands enable you to manage activation keys for all Features on Demand features: server-based, software-based, switches, I/O modules, and chassis-based features.

The ASU commands support the following functions:

- Install a key. Use the ASU **installkey** command to install an activation key. You can also use the ASU to acquire the activation from the Features on Demand website (KMS) and install the key to activate your Features on Demand feature. To utilize this function, you must have the feature authorization code and have network connectivity to http://www.ibm.com/.
- Remove (or uninstall) a key. Use the ASU **uninstallkey** command to uninstall or deactivate a feature key.
- Export a key. Use the ASU **exportkey** command to export an activation key from the IMM2 on which it is installed if you must back up the server, or if you are instructed to export the key before you replace the server system board.
- Inventory keys. Use the ASU **reportkey** command to retrieve inventory information and activation status for the Features on Demand features. The **reportkey** command generates a list of all keys that are installed on the system and gives their descriptions.

For more information about using the ASU to manage Features on Demand activation keys, including complete syntax instructions, see http://www-947.ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5085890 and the ToolsCenter for System x and BladeCenter information center documentation at http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/topic/toolsctr/asu_main.html.

Using IBM Dynamic System Analysis

IBM Dynamic System Analysis (DSA) collects and analyzes system information to aid in diagnosing problems. DSA has two utilities, Preboot DSA and Portable DSA, that you can use for Features on Demand key management functions, including online and offline key installation, key removal, Features on Demand key inventory reporting, and exporting Features on Demand information.

For more information and instructions for using DSA to manage Features on Demand activation keys, see http://www-947.ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5084901, http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/topic/dsa/dsa_main.html, and the ToolsCenter for System x and BladeCenter information center documentation at http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/topic/toolsctr/asu_main.html.

Portable DSA

Portable DSA is a command line utility that requires that the operating system is running. The following Features on Demand key management functions are provided by the Portable DSA utility:

- Reporting the available Features on Demand keys for a target device. (IMM, management module of the chassis, or switch)
- Acquiring and downloading activation keys from an IBM website (KMS). This task requires a network connection to http://www.ibm.com/ (IMM, management module of the chassis, or switch)
- Installing activation keys from key files on a user-specified location to a target device. (IMM, management module of the chassis, or switch)
- Exporting the local Features on Demand unique IDs to a file saved in the DSA output path. (IMM only)
- Uninstalling activation keys from a target device or switch (IMM or management module of the chassis)

  Note: For Features on Demand activation key install or uninstall on the management module of the chassis, switch, or remote IMM2, make sure that there is a LAN connection available.

Preboot DSA

Preboot DSA is used on a basic system without the operating system enabled and consists of a GUI interface and command-line interface (CLI). Through the Preboot DSA GUIs or CLI, you can manage features for server-based, chassis-based, and switch Features on Demand features.

If an Internet connection is not available, the Preboot DSA GUIs or CLI enable you to perform the following functions:

- Display the Features on Demand features installed on your device and also display the other available Features on Demand features for purchase.
- Install activation keys from removable media.
- Uninstall activation keys
- Export activation keys or removable media for backup or before a repair is performed, for example, a planar replacement.

If an Internet connection is available, the Preboot DSA GUIs or CLI enable you to perform the following functions:

- Display the Features on Demand features that are installed on your device and also display the other available Features on Demand features for purchase.
- Install activation keys directly on the KMS website.

  Note: If a key is available for the Features on Demand feature that has been generated previously, no authorization code is needed for the installation. If a key is not available for the Features on Demand feature, an authorization code is needed for key generation.

- Install activation keys from removable media
- Uninstall activation keys
- Export activation keys or removable media for backup or before a repair is performed, for example, a planar replacement

Chapter 4. Troubleshooting

This chapter provides some problems, the possible cause, and how to fix it.

Table 2. Features on Demand troubleshooting

Sympton	Possible cause	Fix
Machine type and serial number are not seen in the Features on Demand website	If the system board was replaced, the vital product data (VPD) on the new system board might not be updated with the machine type and serial number.	Follow the instruction in the *Problem Determination and Service Guide* for the system to update the VPD. The instructions are in the remove and replace the system board sections.
Feature shows in the Features on Demand website, but the function does not work	There might be a problem with the hardware.	Use the *Problem Determination and Service Guide* to isolate the problem. If the issue cannot be resolved, contact Hardware Support.
Feature is not working	The feature might not be set up as authorized on Features on Demand	Follow the steps in this *User Guide* to activate or reactivate your feature.
	The feature is entitled to a specific server, which is not the server the adapter is installed in.	Moving the adapter will deactivate the feature by separating it from its key file/entitled hardware pair.
	The feature is attached to a movable adapter, which has been installed in a new system, but the key has not also been moved to the new system.	The feature activation key must be installed on the system where the adapter is installed to be activated. You can obtain a copy of the entitled key for the adapter from the KMS website or by exporting it from the system it was previously installed in.
	The feature key unique identifier does not match the target identifier.	Make sure that the unique identifier embedded in the key matches the identifier in the file. The unique identifier is case sensitive. The key file is a binary file and the critical fields can be viewed with a text editor. The unique identifier is displayed between the system description and the feature description text in the key file.

System board replacement

The Features on Demand activation keys for server-based and chassis-based keys are stored on the system board on the Integrated Management Module II (IMM2) or the Chassis Management Module (CMM) respectively. As such, activation keys are not easily lost, except if the system board is replaced.

To prevent the loss of activation key information if the system board is replaced, use the following best practices guidelines:

- If the system board is replaced, make sure that the vital product data (VPD) for the machine type and serial number (MTSN) are restored to their original values. Most of the Features on Demand activation keys are tied to MTSN and do not work if the system MTSN is changed. For more information about restoring the VPD information, see the system *Problem Determination and Service Guide*.

- Periodically run the DSA tools to obtain the report on the Features on Demand features that are activated on your system. Store this information in an external storage device so that in the event of a system board failure, you have the key information readily available.

   Note: The key activation history can be obtained from the IBM Features on Demand website (KMS), if needed. If you have trouble retrieving the key history from the Features on Demand website, contact IBM support as described in Chapter 5, "How to get help with Features on Demand," on page 31.

- If the system board is replaced and the VPD data is restored to the original values, you can import the existing activation keys.

Adapter replacement guidelines

Some Features on Demand keys activate optional function on adapters, such as activating additional ports or a network function such as Fibre Channel over Ethernet. If a repair action requires that you replace an adapter on which an Features on Demand feature is activated, a new Features on Demand key might be required. Most Features on Demand features are associated with the machine type and serial number of the server, in this case, the Features on Demand feature will be available as soon as the new adapter is installed in the server. However, some server-based options are tied to a different UID, which might be the case for a network adapter. If the Features on Demand function is tied to a different UID, a new key must be generated. To obtain a new Features on Demand activation key, contact IBM support as described in Chapter 5, "How to get help with Features on Demand," on page 31.

Chapter 5. How to get help with Features on Demand

Many answers to questions you might have about IBM registration, Features on Demand website functions, activating or reactivating features, or lost features can be found in this *User's Guide*.

If you need technical assistance for the feature that you have purchased, review the *Problem Determination and Service Guide* for your product. If you are unable to find the answers to your questions, contact IBM support at http://www.ibm.com/planetwide/.

The Features on Demand team can assist with activation, lost keys, and reactivation questions worldwide.

How you can contact IBM:
- Features on Demand support. Go to http://www.ibm.com/systems/x/fod/ and click **Contacts** in the left navigation pane.
- English-only email request to FOD@us.ibm.com.
- Local language level 1 submissions through IBM Support for your software product. For software contacts in your country, go to http://www.ibm.com/planetwide/.

If you are unable to access the Features on Demand website, you can send an email directly to FOD@us.ibm.com. Make sure that you enter `FOD` in the subject line of the email.

Before you submit a Features on Demand request for support, make sure that you have the following information available:
- Customer name
- Phone number
- Email address
- Machine type and serial number of the system, and if applicable, the unique identifier (UID) of the device with the feature
- Authorization Code
- Any specific details you want to provide

Appendix A. Features on Demand MIB

This chapter provides the Features on Demand management information base (MIB).

```
****************************************************************************
-- ****************************************************************************
--
-- File       : fod.mib
-- Description : MIB definitions for IBM Features On Demand Activation Key
--              functions.
-- By          : IBM
-- Version     : 1.5
-- Date        : February 2, 2012
--
--
-- Copyright (c) 2010-11 IBM  All Rights Reserved.
--
--
-- Contains MIB description for:
--   This MIB is to be used to provide configuration support of IBM Features
--   on Demand features.
-- ****************************************************************************
-- ****************************************************************************
-- ****************************************************************************
-- Revisions:
-- ****************************************************************************
IBM-FEATURE-ACTIVATION-MIB DEFINITIONS ::= BEGIN

        IMPORTS
            MODULE-IDENTITY, OBJECT-TYPE,
            enterprises, NOTIFICATION-TYPE
                FROM SNMPv2-SMI          --RFC2578
            MODULE-COMPLIANCE, OBJECT-GROUP,
            NOTIFICATION-GROUP
                FROM SNMPv2-CONF          --RFC2580
            DateAndTime, DisplayString
                FROM SNMPv2-TC            --RFC2579
            Uri
                FROM URI-TC-MIB;          --RFC5017

ibmFeatureActivationMIB MODULE-IDENTITY
    LAST-UPDATED "201202021538Z"      --2 February 2012 15:38 GMT
    ORGANIZATION "International Business Machines Corp."
    CONTACT-INFO
        "Fred Bower

        International Business Machines Corporation
        Systems and Technology Group System x Development
        Research Triangle Park, NC, USA

        E-mail: bowerf@us.ibm.com"
    DESCRIPTION
        "This module provides a simple interface for
        IBM Features On Demnad Activation Key functions."
    -- Revision History
    REVISION    "201202021538Z"          --2 February 2012
    DESCRIPTION
            "Added return code definition for device still
            performing key action requirested to indicate
            that a long-running process is still pending
            completion.  Users should poll status until this
            status clears."
    REVISION    "201108111805Z"          --11 August 2011
    DESCRIPTION
```

```
                    "Added return code definition for pre-requisite
                    key action required to indicate that another key
                    must be installed or uninstalled prior to the
                    action attempted by the command that triggers this
                    return code."
          REVISION    "201106072003Z"              --7 June 2011
          DESCRIPTION
                    "Updated return code definitions to include
                    return code for protocol not supported when
                    URI specifies protocol not supported by device."
          REVISION    "201103300733Z"              --30 March 2011
          DESCRIPTION
                    "Updated data types and added traps for status
                     change notification.  Clarified return codes
                     from events."
          REVISION    "201102021949Z"              --2 February 2011
          DESCRIPTION
                    "Added support for SFTP protocol file transfers."
          REVISION    "201012081833Z"              --8 December 2010
          DESCRIPTION
                    "Initial Revision."
          ::= { ibmArchitecture 31 }

          -- IBM enterprise group
          ibm         OBJECT IDENTIFIER ::=   { enterprises 2 }

          -- IBM architecture group
          ibmArchitecture      OBJECT IDENTIFIER ::=   { ibm 5 }

          -- Features on Demand Objects
          ibmFodNotifications OBJECT IDENTIFIER ::= {ibmFeatureActivationMIB 0 }
          ibmFodObjects OBJECT IDENTIFIER ::=  { ibmFeatureActivationMIB 1 }
          ibmFodConformance OBJECT IDENTIFIER ::= { ibmFeatureActivationMIB 2 }

     -- ***********************************************************************
          --  Activation Key Install/Update
          -- ***********************************************************************
          -- Feature activation keys can be installed (to activate), uninstalled
          -- (to deactivate), exported (for backup purposes), and inventoried.
          -- The action desired is set via the ibmFodAction object (which is never
          -- read).  The required sub-objects and their use is listed here as well
          -- as in the DESCRIPTION comments for each of the fields for user
          -- understanding.
          -- Action: installActivationKey
          -- Requires: ibmFodFileUri
          -- Process: Installer sets the ibmFodFileUri field to indicate where to
          -- retrieve activation key file from, then sets the ibmFodAction to
          -- installActivationKey.
          -- Result: Activation key is transferred from URI to the target device,
          -- validated, and result is available for reading via ibmFodStatus.  An
          -- alert should also be issued if the key actually changes device state.
          -- That is, if the key is successfully validated and stored and function
          -- is either queued for activation after a reboot or is activated, an
          -- alert should be generated with the updated key status information.
          --
          -- Action: inventoryInstalledActivationKeys
          -- Requires: ibmFodFileUri
          -- Process: Administrator sets ibmFodFileUri field to indicate where to
          -- place file with results of inventory of device, then sets ibmFodAction
          -- to inventoryInstalledActivationKeys.
          -- Result: Activation key inventory is transferred to URI from target
          -- device and result is available for reading from ibmFodStatus.
          -- Inventory file format is comma-separated with fields ordered as
          -- follows:
          --
          -- <Index>,<status>,<Feature Descriptor Type Description (text)>
          -- <Constraint Descriptor Type Description (text)>:<Constraint Descriptor,
```

```
              -- Type Optional Information (text)> 0..n
              --
              -- The 0..n notation is to indicate that there may be zero or more
              -- constraints for any given activation key.  New records start with a
              -- newline character after the last constraint.  If a constraint does not
              -- have optional information text, the colon separator is omitted and a
              -- comma denotes the start of the next constraint descriptor type
              -- description.  This activity should not result in any alerts, as it
              -- does not alter activation key state on the device.
              --
              -- Action: uninstallActivationKey
              -- Requires: ibmFodIndex
              -- Process: Administrator sets ibmFodIndex with value from inventory
              -- report process, above, then sets ibmFodAction to
              -- uninstallActivationKey.
              -- Result: Activation key is uninstalled and result of action is placed
              -- in ibmFodStatus for reading.  An alert should also be issued if the
              -- action changes device state.  That is, if there is a key at the
              -- designated index and it is uninstalled, the device key state will
              -- change, thus triggering an alert with the updated device information.
              --
              -- Action: exportActivationKey
              -- Requires: ibmFodIndex, ibmFodFileUri
              -- Process: Administrator sets ibmFodIndex with value from inventory
              -- report process, above, then sets ibmFodFileUri to the desired location
              -- for the exported key file to be placed, then sets ibmFodAction to
              -- exportActivationKey.
              -- Result: Activation key file is exported to designated URI location
              -- provided that the index supplied maps to an existing key.  Status of
              -- the command is placed in ibmFodStatus for reading.  No alert will be
              -- issued from this activity, as it does not affect activation key state
              -- on the device.
              --
ibmFodAction  OBJECT-TYPE
                  SYNTAX  INTEGER {
                  installActivationKey(1),
                  uninstallActivationKey(2),
                  exportActivationKey(3),
                  inventoryInstalledActivationKeys(4)
                  }
                  MAX-ACCESS  read-write
                  STATUS  current
                  DESCRIPTION
                  "Target action for activation method.
                    1 - Install Activation Key
                    2 - Uninstall Activation Key
                    3 - Export Activation Key
                    4 - Inventory Installed Activation Keys"
                  DEFVAL { 4 }
                  ::= { ibmFodObjects 1 }

ibmFodIndex OBJECT-TYPE
                  SYNTAX INTEGER (1..255)
                  MAX-ACCESS read-write
                  STATUS current
                  DESCRIPTION
                  "Activation key index to uninstall or export.
                  This is only required for uninstall and export actions.
                  This is also used to identify the key associated with alerts."
                  ::= { ibmFodObjects 2 }

ibmFodFileUri   OBJECT-TYPE
                  SYNTAX  Uri
                  MAX-ACCESS  read-write
                  STATUS  current
                  DESCRIPTION
                  "URI of where key file resides for install and
```

```
                        where it should be placed for export or inventory.
                        This is not used for uninstall action."
                        ::= { ibmFodObjects 3 }

        ibmFodStatus    OBJECT-TYPE
                        SYNTAX INTEGER {
                          success(1),
                          rebootRequired(2),
                          versionMismatch(3),
                          corruptKeyFile(4),
                          invalideKeyFileTarget(5),
                          keyFileNotPresent(6),
                          communicationFailure(7),
                          keyStoreFull(8),
                          ftpServerFull(9),
                          userAuthenticationFailed(10),
                          invalidIndex(11),
                          protocolNotSupported(12),
                          preRequisiteKeyActionRequired(13),
                          actionIncompleteDeviceBusy(14)
                        }
                        MAX-ACCESS  read-only
                        STATUS  current
                        DESCRIPTION
                        "Return status of the last firmware activation method
                        initiated through SNMP method.
                        Valid return codes are:
                        Code    Action(s)   Meaning
                         1      1,2,3,4     Success
                         2      1,2         Reboot Required
                         3      1           Firmware Version/Update Issue
                         4      1           Key Corrupt
                         5      1           Key Not Valid for Device
                         6      1,2,4       Key File Not Found
                         7      1,3,4       Failure to Communicate with File Server
                         8      1           Key Storage Full
                         9      3,4         TFTP/SFTP Server Storage Full
                         10     1,3,4       SFTP User/Password Authentication Failed
                         11     2,3         Invalid Index
                         12     1,3,4       Protocol Specified in URI Not Supported
                         13     1,2         Pre-Requisite Key Action Required
                         14     1,2,3,4     Action Still In Process/Busy"
                        ::= { ibmFodObjects 4 }
ibmFodKeyChangeTime OBJECT-TYPE
                        SYNTAX DateAndTime
                        MAX-ACCESS accessible-for-notify
                        STATUS current
                        DESCRIPTION
                        "The date and time of the event described in
                        this notification of activated function status change."
                        ::= { ibmFodObjects 5 }

ibmFodKeyOldStatus OBJECT-TYPE
                        SYNTAX INTEGER {
                          noPreviousStatus (1),
                          keyValid (2),
                          keyInvalid (3),
                          keyValidElsewhere (4),
                          keyFeatureActive (5),
                          keyFeatureRequiresHostReboot (6),
                          keyFeatureRequiresBMCReboot (7),
                          keyExpired (8),
                          keyUseLimitExceeded (9),
                          keyInProcessOfValidation (10)
                        }
                        MAX-ACCESS accessible-for-notify
                        STATUS current
```

```
                    DESCRIPTION
                    "The prior status of the activation key associated
                    with this status change."
                    ::= { ibmFodObjects 6 }

    ibmFodKeyNewStatus OBJECT-TYPE
                    SYNTAX INTEGER {
                       keyRemoved (1),
                       keyValid (2),
                       keyInvalid (3),
                       keyValidElsewhere (4),
                       keyFeatureActive (5),
                       keyFeatureRequiresHostReboot (6),
                       keyFeatureRequiresBMCReboot (7),
                       keyExpired (8),
                       keyUseLimitExceeded (9),
                       keyInProcessOfValidation (10),
                       keyReplaced (11)
                    }
                    MAX-ACCESS accessible-for-notify
                    STATUS current
                    DESCRIPTION
                    "The new status of the activation key associated
                    with this status change."
                    ::= { ibmFodObjects 7 }

    ibmFodKeyUpdateData OBJECT-TYPE
                    SYNTAX DisplayString
                    MAX-ACCESS accessible-for-notify
                    STATUS current
                    DESCRIPTION
                    "String containing constraint data.  This is only used
                    for ibmFodNewStatus value of keyReplaced (10).  Otherwise,
                    this string should be NULL."
                    ::= { ibmFodObjects 8 }

    -- Notifications
    ibmFodActivationChangeAlert NOTIFICATION-TYPE
                    OBJECTS {
                        ibmFodIndex,
                        ibmFodKeyChangeTime,
                        ibmFodKeyOldStatus,
                        ibmFodKeyNewStatus,
                        ibmFodKeyUpdateData
                    }
                    STATUS current
                    DESCRIPTION
                    "This is an SNMP notification of a change to an existing
                    feature activation on an endpoint.  Data in the
                    notification payload describes the change."
                    ::= { ibmFodNotifications 1 }

    -- Conformance Information
    -- Compliance Statements
    ibmFeatureActivationCompliances OBJECT IDENTIFIER ::= { ibmFodConformance 1 }
    ibmFeatureActivationGroups OBJECT IDENTIFIER ::= { ibmFodConformance 2 }

    ibmFeatureActivationCompliance MODULE-COMPLIANCE
        STATUS current
        DESCRIPTION
            "The compliance statement for the IBM-FEATURE-ACTIVATION-MIB."
        MODULE --This module
        MANDATORY-GROUPS { ibmFeatureActivationBaseGroup,
                            ibmFeatureActivationNotifGroup }
        ::= { ibmFeatureActivationCompliances 1 }

    -- MIB Groupings
```

```
ibmFeatureActivationBaseGroup OBJECT-GROUP
    OBJECTS {
        ibmFodAction,
        ibmFodIndex,
        ibmFodFileUri,
        ibmFodStatus,
        ibmFodKeyChangeTime,
        ibmFodKeyOldStatus,
        ibmFodKeyNewStatus,
        ibmFodKeyUpdateData
    }
    STATUS current
    DESCRIPTION
        "The group of mandatory objects for all implementations
        to be compliant."
    ::= { ibmFeatureActivationGroups 1 }

ibmFeatureActivationNotifGroup NOTIFICATION-GROUP
    NOTIFICATIONS { ibmFodActivationChangeAlert }
    STATUS current
    DESCRIPTION
        "The notification group required for compliance in alert
        semantics for feature activation implementations."
    ::= { ibmFeatureActivationGroups 2 }

END
```

Appendix B. Notices

This information was developed for products and services offered in the U.S.A.

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

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:
> IBM Director of Licensing
> IBM Corporation
> North Castle Drive
> Armonk, NY 10504-1785
> U.S.A.

INTERNATIONAL BUSINESS MACHINES CORPORATION 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 states 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. IBM 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-IBM 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 IBM product, and use of those websites is at your own risk.

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

Trademarks

IBM, the IBM logo, and ibm.com are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at http://www.ibm.com/legal/copytrade.shtml.

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

Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc., in the United States, other countries, or both and is used under license therefrom.

Intel, Intel Xeon, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

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

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

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

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

Important notes

Processor speeds indicate the internal clock speed of the microprocessor; other factors also affect application performance.

CD drive speeds list the variable read rate. Actual speeds vary and are often less than the maximum possible.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for approximately 1000 bytes, MB stands for approximately 1 000 000 bytes, and GB stands for approximately 1 000 000 000 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity may vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives available from IBM.

Maximum memory might require replacement of the standard memory with an optional memory module.

IBM makes no representation or warranties regarding non-IBM products and services that are ServerProven®, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

IBM makes no representations or warranties with respect to non-IBM products. Support (if any) for the non-IBM products is provided by the third party, not IBM.

Some software may differ from its retail version (if available), and may not include user manuals or all program functionality.

Index

A
attention notices   4

I
important notices   4

N
notes   4
notes, important   40
notices   39
notices and statements   4

S
statements and notices   4

T
trademarks   39

IBM ®

Part Number: 60Y1433

Printed in USA