

SCRT
30.1

*Sub-Capacity Reporting Tool:
ISV Product Enablement*



Note

Before you use this information and the product it supports, read the information in [“Notices” on page 17.](#)

This edition applies to version 30, release 1, modification 0 of the Sub-Capacity Reporting Tool (SCRT) and to all subsequent releases and modifications until otherwise indicated in new editions.

Last updated: 2025-09-20

IBM welcomes your comments. You may address your comments via email to: scrt@us.ibm.com

If you would like a reply, be sure to include your name, address, telephone number, or FAX number.

Be sure to include the following information in your comment:

- Title and order number of this publication
- Page number or topic title related to your comment

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 2017, 2025.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Summary of changes.....	V
Summary of changes for SCRT 30.1.0.....	V
Chapter 1. Overview of ISV product enablement for SCRT.....	1
Chapter 2. Enabling ISV products for reporting by SCRT.....	3
Support for dynamic products.....	3
Restrictions and limitations on dynamic products.....	3
Specifying dynamic products.....	4
Creating a library file.....	4
Root document element.....	4
Vendor information elements.....	4
Product definition elements.....	5
Dynamic product definition elements.....	6
Sample library file.....	7
Example of dynamic product usage.....	8
Creating sample SCRT JCL.....	8
Chapter 3. Customer usage of the ISV library file.....	9
What gets reported by SCRT.....	9
Report changes.....	9
Chapter 4. Validating an ISV report.....	11
Prerequisites for the report validation utility.....	11
Obtaining the report validation utility.....	11
Installing the report validation utility.....	11
Running the report validation utility.....	12
Appendix A. Summary of changes in prior SCRT versions.....	13
Summary of changes for SCRT 28.2.0.....	13
Summary of changes for SCRT 28.1.0.....	13
Summary of changes for SCRT Version 27.2.0.....	13
Summary of changes for SCRT Version 27.1.0.....	13
Accessibility.....	15
Notices.....	17
Trademarks.....	18

Summary of changes

This topic summarizes the changes made to this document in the current version of the Sub-Capacity Reporting Tool (SCRT).

Summary of changes for SCRT 30.1.0

This document includes terminology, maintenance, and editorial changes.

New and changed information

There are no technical changes in this publication for SCRT 30.1.0.

Chapter 1. Overview of ISV product enablement for SCRT

Starting with SCRT V24.11.0, SCRT supports the generation of product reports for independent software vendor (ISV) program products.

What is ISV product enablement?

The Sub-Capacity Reporting Tool (SCRT) is a no-charge tool that reports license capacity for sub-capacity eligible IBM® products.

SCRT also supports reporting sub-capacity utilization for ISV products. When supplied with a library file provided by an ISV, SCRT reports on the products defined in that file, instead of on the installed IBM products.

This document is a companion to *Using the Sub-Capacity Reporting Tool*. Refer to that publication for details about installation or usage not covered here.

Restrictions for ISV product enablement

The following restrictions apply to ISV product enablement:

- The usage of some IBM products might be reduced by certain IBM offerings (such as Mobile Workload Pricing). These offerings do not apply to ISV products.
- Dynamic product support is available only for z/OS® products; z/VSE® products are not supported. Non-dynamic z/VSE products are supported and can be included in an ISV library file.

Chapter 2. Enabling ISV products for reporting by SCRT

To enable SCRT to generate ISV-specific product reports, an ISV must supply a *library file* (or *product catalog*) that describes the products that are to be reported. The library file includes products that are instrumented with the IFAUSAGE or IFAEDREG services that generate SMF type 89 records, and NO89 products that do not invoke these services. The library file, or catalog, is also referred to by its DD name, ISVLIB.

The library file specifies a list of reportable ISV products based on the product ID (PID), as specified on product registration services (IFAEDREG or IFAUSAGE). Only products that match the indicated PID and product owner will be reported by SCRT. This documentation refers to these products as *regular products*.

The library file can also specify one or more dynamic product entries. Dynamic product entries can match multiple products at run time based on information provided to the product registration services. This documentation refers to such products as *dynamic products*.

Support for dynamic products

Dynamic product support allows an ISV to specify product entries in the ISVLIB product catalog that match one or more products at report generation time. SCRT V26.1.1 adds support for dynamic product specification in the ISVLIB product catalog.

Instead of specifying a product catalog comprised of a hardcoded list of products based on product identifiers (PIDs), dynamic product entries can match multiple products, such as all products from a particular ISV.

Unlike regular product entries, dynamic product entries can uniquely identify ISV products based on product registration information other than the product identifier (PID). A product key identifies ISV products by an ISV-specified combination of fields that correspond to parameters of the IFAEDREG or IFAUSAGE services.

When using dynamic products, SCRT reports on every unique product found in the SMF type 89 records at run time that matches the key of a dynamic product definition. You can also use dynamic product support to customize the description of your products in the SCRT report using a combination of static text and runtime information from the SMF type 89 records.

Restrictions and limitations on dynamic products

The following restrictions and limitations apply to specifying and reporting on dynamic products.

- SCRT V26.1.1 or later is required to process product catalogs that contain dynamic product entries.
- Dynamic product entries only apply to z/OS products. You cannot specify a dynamic product entry for a z/VSE product.
- If your products use both IFAUSAGE and IFAEDREG, values for certain parameters used in the **<key>** tag may differ. In particular, **PRODVERS** is an 8-byte field in the IFAUSAGE service, and a 2-byte field in the IFAEDREG service. IFAUSAGE does not support the **PRODMOD**, **PRODREL**, or **FEATURENAME** fields. Differences in parameter values might cause SCRT to recognize these records as different products. If necessary, you can restrict product generation to a specific SMF 89 subtype by specifying the **recordtypes** attribute on the **<dynamicproduct>** element in the product catalog.
- Fields in the SCRT product report that show the PID continue to show the actual product PID from the SMF records. These fields are not replaced by the generated dynamic product key. In some cases, the PID in the SMF data may differ between records that resolve to the same product based on the specified key. In these cases, SCRT uses the PID from the first SMF record that generated a product entry.
- The product description that appears in the SCRT product report is generated from the first SMF record that generated the product entry. This can make the product description that appears in the report

unpredictable. For example, if the product key specifies the use of the **PRODNAME** and **PRODVERS** fields, but the product description uses the **PRODNAME** and **FEATURENAME** fields, the description will reflect the feature name from the first (and only the first) SMF record that generated a product entry.

- The SCRT **Exclude** control statement cannot be used to do product-level excludes for dynamic products. The **Exclude** control statement can still be used to exclude periods of time at the CPC or LPAR level.

Specifying dynamic products

You specify dynamic products similarly to regular products in the ISVLIB product catalog, but you use the **<dynamicproduct>** tag and specify a **<key>** tag. The **<key>** tag describes how SCRT is to uniquely identify products. The values that you can use to describe a key correspond to parameters on the registration services. You can also specify a dynamic product description.

For example, a dynamic product key can specify that products are to be identified by the combination of the product name and the product version. SCRT will include in the report all unique combinations of product name and product version.

The **<pid>** tag is optional in a dynamic product entry. If you specify the **<pid>** tag, the dynamic product entry applies only to products with that PID and the PID becomes an implicit part of the product key. Only one product entry per PID is permitted. If you omit the **<pid>** tag, the entry is considered a generic dynamic product entry and will apply to all otherwise unspecified products by the ISV. One one generic dynamic product entry is permitted within an ISVLIB catalog.

You can specify both regular product entries and dynamic product entries with an ISVLIB file. Dynamic product entries will apply to products that do not match any regular product entry.

Creating a library file

A library file is an XML document that identifies the vendor and describes the supported products. The XML schema contains the following elements:

- Root document element
- Vendor information elements
- Product definition elements

You can use a plain-text editor, such as Windows Notepad, or other XML-aware editor to create your library file.

Root document element

The XML root document element is **<vendor>**.

Table 1. Root document element

Element/tag name	Required or optional	Description
<vendor>	Required	This is the root element of the XML document. Exactly one <vendor> element is permitted per library file. A corresponding </vendor> element must appear at the end of the document. The <vendor> element contains vendor information elements, as described in “Vendor information elements” on page 4 .

Vendor information elements

[Table 2 on page 5](#) describes the elements that appear within the **<vendor>** element.

Table 2. Vendor information elements

Element/tag name	Required or optional	Description
<isvname>	Required	The ISV name as it is to appear in SCRT product reports.
<prodowner>	Required	The product owner name as specified by the PRODOWNER parameter to the IFAUSAGE or IFAEDREG services.
<isvprefix>	Required	A 3-character prefix that SCRT uses to create the output member name when the customer chooses to write the report to a PDS.
<legalstmt>	Optional	The legal statement that is to appear in section B5 of the SCRT product report. Multiple lines are allowed; however, you must insert a plus sign (+) as a continuation character wherever line breaks are to occur in the output.
<product>	Required	<p>The beginning of a product definition. At least one product definition or dynamic product definition is required.</p> <p>The <product> element contains product definition elements, as described in “Product definition elements” on page 5.</p>
<dynamicproduct>	Optional	<p>The beginning of a dynamic product definition. At least one product definition or dynamic product definition is required.</p> <p>The <dynamicproduct> element contains dynamic product definition elements, as described in “Dynamic product definition elements” on page 6.</p> <p>This element optionally accepts the recordtypes attribute. The recordtypes attribute specifies the SMF record type and subtype to which the dynamic product definition applies. Valid values for the recordtype attribute are:</p> <p>89.1 SMF type 89 subtype 1 records generated by the IFAUSAGE service</p> <p>89.2 SMF type 89 subtype 2 records generated by the IFAEDREG service</p>

Product definition elements

Table 3 on page 5 describes the elements that appear within a **<product>** element.

Table 3. Product definition elements

Element/tag name	Required or optional	Description
<pid>	Required	<p>The product identifier for the product.</p> <p>For products instrumented with IFAUSAGE or IFAEDREG services, this value must match the PRODID parameter. For non-instrumented products, this value must be unique among all ISV products.</p>
<desc>	Required	The product name or description as it is to appear in SCRT product reports.

Table 3. Product definition elements (continued)

Element/tag name	Required or optional	Description
<flags>	Required	<p>Comma-separated values that identify the operating system on which the product runs and the measurement type, in the form: <i>os,measurement</i></p> <p>Valid values for <i>os</i> are:</p> <p>ZOS The product runs on z/OS systems.</p> <p>VSE The product runs on z/VSE systems.</p> <p>Valid values for <i>measurement</i> are:</p> <p>ENAB The product generates SMF type 89 records through the use of the IFAUSAGE or IFAEDREG services. Only z/OS products (the <i>os</i> value is ZOS) support ENAB as a measurement type; this type cannot be specified for z/VSE products.</p> <p>NO89 The product does not generate SMF type 89 records. The customer must self-report the usage of NO89 products. All z/VSE products (the <i>os</i> value is VSE) must specify NO89 as the measurement type.</p>

Dynamic product definition elements

Table 4 on page 6 describes the elements that appear within a **<dynamicproduct>** element.

Table 4. Dynamic product definition elements

Element/tag name	Required or optional	Description
<pid>	Optional	<p>The product identifier for the product. This value must match the PRODID parameter on the IFAUSAGE or IFAEDREG services.</p> <p>This element is optional for dynamic products. If specified, the product identifier becomes part of the product key.</p> <p>If you specify more than one dynamic product entry, only one may omit the <pid> element.</p>
<key>	Required	<p>The product key, defined in terms of one or more parameters specified on the IFAUSAGE or IFAEDREG services.</p> <p>Values must be specified in uppercase letters, must correspond to applicable parameters, and must be enclosed in curly braces ({}). Valid values are:</p> <p>{PRODOWNER} {PRODID} {PRODNAME} {PRODVERS} {PRODMOD} {PRODREL} {FEATURENAME}</p>

Table 4. Dynamic product definition elements (continued)

Element/tag name	Required or optional	Description
<desc>	Required	<p>The product name or description as it is to appear in SCRT product reports. The description may include static text and one or more parameters specified on the IFAUSAGE or IFAEDREG services.</p> <p>Registration parameter values must be specified in uppercase letters, must correspond to applicable parameters, and must be enclosed in curly braces ({ }). Valid values are:</p> <ul style="list-style-type: none"> {PRODOWNER} {PRODID} {PRODNAME} {PRODVERS} {PRODMOD} {PRODREL} {FEATURENAME}
<flags>	Required	<p>Comma-separated values that identify the operating system on which the product runs and the measurement type, in the form: <i>os, measurement</i></p> <p>For dynamic products, the only supported value for <i>os</i> is:</p> <p>ZOS</p> <p>The product runs on z/OS systems.</p> <p>For dynamic products, the only valid value for <i>measurement</i> is:</p> <p>ENAB</p> <p>The product generates SMF type 89 records through the use of the IFAUSAGE or IFAEDREG services.</p>

Sample library file

Figure 1 on page 7 shows an example of the contents of an ISV library file that defines regular products.

```
<?xml version="1.0"/>
<vendor>
  <isvname>Alpha Beta Corporation</isvname>
  <prodowner>ABCorp</prodowner>
  <isvprefix>ABC</isvprefix>
  <legalstmt>Lorem ipsum dolor sit amet, consectetur +
adipiscing elit, sed do eiusmod tempor incididunt ut +
labore et dolore magna aliqua. Ut enim ad minim
  </legalstmt>

  <product>
    <pid>ABCD-123</pid>
    <desc>ABC Widget Counter V2</desc>
    <flags>ZOS,ENAB</flags>
  </product>

  <product>
    <pid>ABCD-122</pid>
    <desc>ABC Widget Counter V1</desc>
    <flags>ZOS,N089</flags>
  </product>
</vendor>
```

Figure 1. A sample ISV library file

Example of dynamic product usage

Assume that the following dynamic product entry exists in an ISVLIB catalog file:

```
<dynamicproduct>
  <key>{PRODNAME} {PRODVERS}</key>
  <desc>{PRODNAME} V{PRODVERS} by {PRODOWNER}</desc>
  <flags>ZOS,ENAB</flags>
</dynamicproduct>
```

And assume that the following product registrations have occurred:

```
IFAEDREG ...
  PRODOWNER='ABC VENDOR'
  PRODNAME='WIDGET FACTORY'
  PRODVERS='1'

IFAEDREG ...
  PRODOWNER='ABC VENDOR'
  PRODNAME='WIDGET FACTORY'
  PRODVERS='2'

IFAEDREG ...
  PRODOWNER='ABC VENDOR'
  PRODNAME='BACKUP FOR Z'
  PRODVERS='1'
```

SCRT reports on three different products with the following descriptions:

```
WIDGET FACTORY V1 by ABC VENDOR
WIDGET FACTORY V2 by ABC VENDOR
BACKUP FOR Z V1 by ABC VENDOR
```

Note that SCRT creates unique products for each combination of fields specified in the **<key>** element in the dynamic product entry. For each product, a corresponding description is generated from the fields specified in the **<desc>** element.

Creating sample SCRT JCL

ISVs should supply their clients with sample JCL for invoking SCRT with their ISVLIB library file. In particular, the JCL sample should show the usage of the ISVLIB DD statement and the NO89 DD statement listing all of the NO89 products that are defined in the ISV product library. This sample can be modeled after the sample JCL for IBM products that appears in *Using the Sub-Capacity Reporting Tool*.

Figure 2 on page 8 shows an (incomplete) example of SCRT JCL that specifies the ISVLIB DD statement and an ISV-specific NO89 DD.

```
//VENDNABC JOB MSGCLASS=H,NOTIFY=HLQ,REGION=0M,TIME=20
//*****
//* Sample JCL for invoking SCRT for vendor ABC
//*****
//SCRT EXEC PROC=JVMPCRC86,
// JAVACLS='com.ibm.scrt.SCRTe'
//STDENV DD ...
//STDOUT DD ...
//OUTPUT DD ...
//SMF DD ...
//ISVLIB DD DISP=SHR,DSN=EXAMPLE.SCRT.ISVLIB(VENDNABC)
//*
//NO89 DD *
* ABC WIDGET COUNTER V1
ABCD-122=NONE
```

Figure 2. Sample SCRT JCL with ISVLIB and NO89 DDs

Chapter 3. Customer usage of the ISV library file

Customers who use the z/OS version of SCRT can specify the ISV library file via a new ISVLIB DD statement in their SCRT JCL. Customers who use the Linux® or Windows version of SCRT can specify the ISV library file through the SCRT dialog panels.

What gets reported by SCRT

When an ISV library file is specified, SCRT only reports on the following products:

- The IBM operating system or systems that are in use
- The IFAUSAGE or IFAEDREG instrumented ISV products that are in use
- The non-instrumented (NO89) ISV products that the customer has indicated are in use

Report changes

SCRT product reports for ISV products differ from IBM sub-capacity reports in the following ways:

- Section B5 differences:
 - The header text contains the ISV name.
 - The legal statement, if one was provided by the ISV, appears in this section.
- In section C5, the "Justification for low data collection" field is not included; however, section C5 still reports the percentage of data collected for IBM operating systems.
- In section E5, standard sub-capacity values for ISV products appear in the MLC section.
- Section W5 is not present in ISV reports.
- Section W9, not present in IBM sub-capacity reports, is included and identifies the report as having been prepared by the ISV's customer.
- The report authentication code follows section W9.

All other applicable report sections are included and unchanged.

See *Using the Sub-Capacity Reporting Tool* for information about other SCRT report sections.

Chapter 4. Validating an ISV report

IBM provides a command line utility to validate SCRT product reports for ISV products. Successful report validation provides limited assurance that the report has not been modified after it was generated by SCRT.

Prerequisites for the report validation utility

- The report validation utility requires a Windows, Linux, or z/OS UNIX System Services (z/OS UNIX) system with a Java™ 7 or Java 8 runtime environment.
- You must install and configure the runtime environment before executing the validation utility.

Considerations for character set encoding

The report validation utility reads the SCRT report using the default character encoding of the JVM, which can vary based on platform and locale and environment. The encoding of reports being verified must match this encoding. For instance, if you are running the validation utility on Windows with a US locale, the default encoding may be CP1250. Consult your JVM documentation for information about determining or changing the default encoding.

You should inform your customers as to the report encoding that they should use when submitting ISV reports to you. Reports that are encoded in a character set other than that which the validation utility expects may fail validation.

Obtaining the report validation utility

Complete this task to obtain the report validation utility.

About this task

IBM provides the report validation utility as a .zip file that you can download.

Procedure

1. Go to the same Dallas ISV secure web site from which you obtained this documentation.
2. Download the `scrtivu.zip` file to your system.

Installing the report validation utility

Complete this task to install the report validation utility.

About this task

The `scrtivu.zip` file that you downloaded contains a single Java archive (JAR) file.

Procedure

1. Extract the `scrtivu.jar` file from the `scrtivu.zip` file.
2. Copy the JAR file to the desired location on your system.

Running the report validation utility

Complete this task to validate SCRT product reports.

Procedure

1. Copy or move the reports to be verified to the system on which you installed the validation utility.
2. Run the validation utility, passing the name or names of the report files to validate as command line arguments.

```
java -jar scrtrvu.jar [-w] file1 [file2 ...]
```

The optional **-w** flag enables warnings. The validation utility issues a warning in the following cases:

- The SCRT version of the report being validated is later than the version that the validation utility is known to process correctly. The report might or might not be validated successfully. Check for an updated version of the report validation utility.
- The SCRT report appears to be an IBM SCRT report, not an ISV report. Report validation fails.

Results

For each report file that you specified, the validation utility indicates whether or not the report is valid.

If all reports successfully pass validation, the utility ends with exit code 0. If one or more reports fail validation, the utility ends with a non-zero exit code.

Appendix A. Summary of changes in prior SCRT versions

This section summarizes the changes made to this document in prior versions of SCRT.

For a summary of the changes made in the current version of SCRT, see [“Summary of changes” on page v](#).

Summary of changes for SCRT 28.2.0

This document includes terminology, maintenance, and editorial changes.

New and changed information

Technical changes or additions to the text and illustrations for the current edition are indicated by a vertical line to the left of the change.

- Information about character set encoding considerations has been added in [“Prerequisites for the report validation utility” on page 11](#).
- Information about the **-w** option has been added in [“Running the report validation utility” on page 12](#).

Summary of changes for SCRT 28.1.0

This document includes terminology, maintenance, and editorial changes.

New and changed information

There are no technical changes in this publication for SCRT 28.1.0

Summary of changes for SCRT Version 27.2.0

This document includes terminology, maintenance, and editorial changes.

New and changed information

There are no technical changes in this publication for SCRT V27.2.0

Summary of changes for SCRT Version 27.1.0

This document includes terminology, maintenance, and editorial changes.

New and changed information

There are no technical changes in this publication for SCRT V27.1.0

Accessibility

Publications for this product are offered in Adobe Portable Document Format (PDF) and should be compliant with accessibility standards. If you experience difficulties when using PDF files, send an email to scrt@us.ibm.com or write to:

IBM Corporation
Attention: MHVRCFS Reader Comments
Department H6MA, Building 707
2455 South Road
Poughkeepsie, NY 12601-5400
USA

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. SCRT relies on the major accessibility features available in z/OS and z/VSE systems which enable users to:

- Use assistive technologies such as screen readers and screen magnifier software
- Operate specific or equivalent features using only the keyboard
- Customize display attributes such as color, contrast, and font size

Notices

This information was developed for products and services offered in the USA or elsewhere.

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 grant you any license to these patents. You can send license inquiries, in writing, to:

*IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
US*

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

*Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan*

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 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. 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.

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:

*IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
US*

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 IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

The performance data and client examples examples cited are presented for illustrative purposes only. Actual performance results may vary depending on specific configurations and operating conditions.

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

All statements regarding IBM'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 IBM, 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. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered 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 \(www.ibm.com/legal/copytrade.shtml\)](http://www.ibm.com/legal/copytrade.shtml).

Adobe is a trademark or registered trademark of Adobe Systems Incorporated in the United States, and/or other countries.

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

Windows is a trademark of Microsoft Corporation in the United States, other countries, or both.

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

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

