IBM

IBM Administration Runtime Expert for i

Getting Started Guide

August 3, 2023

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Requirements

Before installing the IBM Administration Runtime Expert for i product, it is important to ensure all required software products are installed on your system, and that the products are updated to the correct PTF levels. The required software products, and the PTF levels for them, are listed below.

Once you build templates using the ARE product, those templates can be used to verify other IBM i systems. To verify a system using a template, the ARE product is NOT required. However, the system must have the following products and PTF levels.

Note: The product and PTF level requirements on a system that will be verified using a template are a subset of the requirements for a system where the ARE product itself is installed. It is important to understand that **the requirements below are for a system that is to be verified** using a template built on system where the ARE product is installed.

IBM i 7.5

Products

- 5770SS1 option 3 – Extended Base Directory Support
- 5770SS1 option 12 – Host Servers
- 5770SS1 option 30 – QShell
- 5770SS1 option 33 – PASE
- 5770JV1 option 16 – J2SE 8 32 bit
- 5770DG1 – IBM HTTP Server for i

PTF requirements

- HTTP Server Group PTF SF99952

IBM i 7.4

Products

- 5770SS1 option 3 – Extended Base Directory Support
- 5770SS1 option 12 – Host Servers
- 5770SS1 option 30 – QShell
- 5770SS1 option 33 – PASE
- 5770JV1 option 16 – J2SE 8 32 bit
- 5770DG1 – IBM HTTP Server for i

PTF requirements

- HTTP Server Group PTF SF99662 level 13

IBM i 7.3

Products

- 5770SS1 option 3 – Extended Base Directory Support
- 5770SS1 option 12 – Host Servers
- 5770SS1 option 30 – QShell
- 5770SS1 option 33 – PASE
- 5770JV1 option 16 – J2SE 8 32 bit
- 5770DG1 – IBM HTTP Server for i

PTF requirements

- HTTP Server Group PTF SF99722 level 32

IBM i 7.2

Products

- 5770SS1 option 3 – Extended Base Directory Support
- 5770SS1 option 12 – Host Servers
- 5770SS1 option 30 – QShell
- 5770SS1 option 33 – PASE
- 5770JV1 option 11 – J2SE 6 32 bit
- 5770DG1 – IBM HTTP Server for i

PTF requirements

- HTTP Group PTF SF99713 level 2 or later

Installation

Ensure that all [required software products](#) and [PTF levels](#) are present on your system prior to installing the IBM Administration Runtime Expert for i product.

The IBM Administration Runtime Expert for i product must be installed by a user profile that has a minimum of *ALLOBJ and *IOSYSCFG special authorities.

Load an image catalog with the product media and run the command below, substituting OPT01 with the name of your optical device.

QSYS/RSTLICPGM LICPGM(5733ARE) DEV(OPT01) OPTION(*BASE) RSTOBJ(*ALL)

Prior to installing, the product's software license agreement is displayed. If the agreement is accepted, the product install will complete with no further actions required. Upon successful completion of the product install, you will see message CPC3DC7 – Objects for product 5733ARE option *BASE release *FIRST restored – in the job log of the user profile that performed the install.

For more information, follow these links:

https://www.ibm.com/support/pages/how-download-and-install-individual-ibm-i-licensed-program-products-lpps

https://www.ibm.com/support/pages/installing-and-restoring-lpps-image-catalog

Important: Once the product has been installed successfully, load and apply the latest PTFs for the 5733ARE product. A list of the latest ARE PTFs can be found [here](#). It is a good idea to periodically check for new ARE PTFs to stay current with the latest fixes and enhancements.

Usage

Once the IBM Administration Runtime Expert for i (ARE) has been installed, it can be started using the following command:

QSYS/STRTCPSVR SERVER(*HTTP) HTTPSVR(IBMARE)

The IBM Administration Runtime Expert for i is a Web application that runs in an integrated Web application (IAS) server. The name of the IAS server where the ARE Web application runs is IBMARE. All jobs associated with the ARE Web application run in the QHTTPSVR subsystem.

If the server jobs for ARE have all started, there will be a total of four IBMARE jobs in the QHTTPSVR subsystem:

```
                        Current
Opt  Subsystem/Job      User         Type  CPU %  Function         Status
___  QHTTPSVR           QSYS         SBS     .0                    DEQW
___    IBMARE           QTMHHTTP     BCH     .0    PGM-QZHBMAIN     SIGW
___    IBMARE           QTMHHTTP     BCI     .0    PGM-QZSRLOG      SIGW
___    IBMARE           QTMHHTTP     BCI     .0    PGM-QZSRHTTP     SIGW
___    IBMARE           QWEBADMIN    BCI     .0    PGM-jvmStartPa   THDW
```

If the ARE server needs to be stopped, it can be stopped using the following command:

QSYS/ENDTCPSVR SERVER(*HTTP) HTTPSVR(IBMARE)

Once the ARE application server has been started, the Web user interface is accessible using a modern Web browser. The following Web browsers are supported:

- Mozilla Firefox
- Microsoft Internet Explorer
- Google Chrome

The ARE application can be accessed at this URL:

http://system_name:12401/are

where 'system_name' is the name of the IBM i system where the ARE application server is running. The ARE server runs under the QWEBADMIN user profile. When a user logs into the ARE application, the server will use the credentials of the logged in user for all system operations. Because building a deployment template often requires access to restricted resources, **the ARE GUI requires that any user that logs in have *ALLOBJ special authority**.

Once you have logged in, you are presented with the deployment template editor landing page. From this page, you can create new templates, or edit/update your existing templates. You can also launch the console, where you can use templates you have built to verify one or more systems.

Usage examples

IBM Administration Runtime Expert for i (ARE) is a very powerful new product for which we are still discovering new and exciting uses. ARE gives you complete control of what you want to verify, so there are a great deal of possible uses for this product. Thus far we have seen ARE used in a number of ways that have resulted in countless hours of saved time, improved product quality, and increased efficiency. Here are some examples of how others, and you, can make use of the ARE product.

Simple example of how users can benefit from using ARE

To help understand the practical application of this tool, and how it can impact your daily activity, let's start with a simple example. You have an application that you support or a system you use for your daily activity. You then get a call telling you the application or system is not working as expected. Now what do you do? One of the most common reasons for an application or system problem is that something in the application, or its environment, has changed or was not installed correctly. So how do you figure out what has changed? With today's complex systems and software stacks, manually determining this can be a very time consuming activity. This is where the ARE product can provide significant help. The ARE product can automate the process of determining what has changed by allowing you to quickly get to a "known good" state. ARE allows you to quickly take a snapshot of a wide array of system and application attributes. This snapshot can then be used to compare the state of some other system or the same system at a later point in time. The report generated shows exactly what is different, saving you from doing any of this comparison by hand. With the easy to use GUI, you can easily continue to update your snapshot with additional attributes as needed, allowing you to constantly improve your automated verification.

See the subsequent sections for more ways ARE can help optimize the service and support of your applications.

Application service and support

Applications today are very complex. They can consist for thousands of files, each of which has a unique set of attributes. How do you manage all of these files and settings when you get a call stating your application is not working as well as it should be? Today, about the only way to verify this would be to look at each file and directory by hand one at a time. With ARE you can quickly built a template that contains every file or directory within your application along with a complete authority profile for every single directory and file specified. Once you have this template, you can now *automatically* verify this set of directories and files against any other system that has this application installed on it. Not only can you verify the files and directories that make up your application, you can also verify many other settings and attributes on the system that can have a direct affect on the performance and stability of your application. Using ARE on a regular basis for application service and support has the potential to dramatically improve problem determination for your applications, saving you valuable time by speeding up the process of narrowing down, or actually finding, the root cause of issues.

Product install testing

When you install your application today, how do you know for sure that its been installed correctly? Start the application and see if it runs as you expect? The IBM Administration Runtime Expert for i can help you ensure you know and understand your application install process, and that it is truly working correctly and as expected. Once you have installed your product, you can use ARE to build a template which captures a snapshot of the product's attributes and settings. You can then use the template to verify your application install on other systems. Using this template can help ensure that the wide variety of install scenarios (upgrade, full, system restore, different OS levels, etc) for your application result in the same, correct deployment.

System landscape monitoring

Not only are today's applications complex, the systems they run on are also highly complex, with many different attributes and setting that can directly affect the running and performance of your system and the applications running on it. Using ARE you can capture a snapshot of critical system attributes such as system values, network attributes, user IDs, etc in a single template. Once that template is built, you can use it to verify the system attributes at any point in the future. This can be useful for a single system, to help ensure you can restore the system to the correct environment at a later time if necessary. It is also very useful for an environment where are a large number of systems or partitions. For example, you can create a 'daily monitor' template to check the basic settings and status of a system on a daily basis; helping to identify issues before they become problems. In the IBM development lab, we made use of ARE for the system translation testing cycle. We had approximately 30 systems that the translation team used for their verification. As part of this testing, we used an ARE template to verify each system on a daily basis. The template helped us identify numerous system settings, on various systems, that would periodically be changed to incorrect values. Because of our use of ARE, we were able to reset the system environments back to their 'baseline' every morning, thus saving many potential hours of unnecessary debug time.

Auditing

With today's increased focus on ensuring you actually know what is happening on your systems, ARE can help you keep track of what files, directories, user profiles, and system values on your system have changed over time. Once you build a template with the contents you need to keep track of, you can use the template to see if any application or system attributes captured in the template have changed since the time the template was built. With the easy to use GUI interface, it only takes a few minutes to build a useful template.

PTF Currency

One of the most important tasks for the system administrator is managing PTF currency. You might be interested in knowing, for instance, if all of your systems are at the same fix level. Is your production machine running the same level of fixes as my test partition? You might also be interested in knowing if you have the latest PTF groups applied. With ARE, you can set up a verification to verify whether a target system has the same level of PTFs installed as the system running ARE. You can also check if that system is current. This is based on data used by the IBM Preventive Service Planning pages. Of course, the ARE infrastructure lets you run this verification across any number of partitions! If PTFs or PTF Groups are missing, you can send

them from a central system or load them from an image catalog that has been defined as a device named QIBMAREPTF. You may need to verify that the QIBMAREPTF device is configured properly for use with the LODPTF command. You are also encouraged to use an integrated template when doing PTF verification. With this technology, you can rest easy knowing that you have a handle of PTF currency within your enterprise!

SSL Configuration

Administration Runtime Expert for i supports SSL to ensure your information security between client and server. And now you can configure SSL for your server manually. The process of configuration is not very complex. You just need to login the Web Administrator for i by the URL http://your_system:2001/HTTPAdmin — your_system is IP address or hostname of your IBM i. Then you can follow the wizard to configure SSL for both HTTP Server and Application Server.

Customize URL

IBM Administration Runtime Expert for i supports you to run PTFs verification against group PTFs from Preventive Service Planning (PSP). And now you can customize the URL of PSP since you may connect to internet by proxy server. To enable the function, you need to make the following configurations.

a. Create a configuration file under the user home directory:

   - /home/QWEBADMIN/SystemDefault.properties if you run the template on console.

   - /home/Your_AS400_Profile/SystemDefault.properties if you run the template by command.

b. Edit SystemDefault.properties file and input the customized URL.
   The example of SystemDefault.properties:

   #AllowOptions
   -Dcom.ibm.ibmi.are.plugin.PTFListFile.URL=http://www.example.com

Release notes

The latest IBM Administration Runtime Expert for i enhancements are available with following PTFs:

- IBM i V7.5: SI83943 (5733ARE), SI83616 (5770SS1)

- IBM i V7.4: SI83943 (5733ARE), SI83617 (5770SS1)

- IBM i V7.3: SI83943 (5733ARE), SI83618 (5770SS1)

PTF SI83943 upgrades the Web user interface to version 3.2.8.

How to automatically fix problems

The IBM Administration Runtime Expert for i, or ARE, is probably best known for its ability to use a template to verify a system and report any problems found during the verification. And that is a good thing – verifying systems is truly the primary goal of ARE. However, there is another ARE feature that also deserves attention: the ability to automatically fix problems detected by ARE.

To be clear, when we say "automatically" fix problems, we are still talking about two distinct steps. First, you use ARE to verify a system and then, based on the verification results, you have the option to use ARE to fix detected problems. Of course not all detected problems can be automatically fixed. For example, if a file is missing, ARE is not going to know how to get that file back. But for some problems, ARE has enough information in the template to determine how to fix the problem. Here is a list of problems that ARE can automatically fix:

- Authority – This includes ownership, primary group, authorization list, and private authority.

- User Profiles – Some, but not all, user profile attributes can be fixed.

- Symbolic Links – If ARE detects a symbolic link is missing, it has the capability to re-create the link.

There are two different ways to use ARE to fix detected problems. You can use the console Web user interface, or you can use a script.

For information about using the console Web user interface to fix problems, see the 'Fixing detected problems' section of the Using the console to verify a system (PDF, 1.38MB) document.

For information about using a script to fix problems, see the 'areFix.sh' script section in the Script interfaces to ARE (PDF, 150KB) document.