Justin C. Haase
Axel Lachmann

IBM i 7.1 BRMS Enterprise Enhancements

Introduction

This IBM® Redpaper™ publication describes the configuration and use of the IBM i 7.1 Backup, Recovery, and Media Services (BRMS) Enterprise Enhancements. It focuses on the web-based IBM Navigator for i, which provides a comprehensive set of system management features for the IBM i system. The quantity of underlying BRMS features that are managed through BRMS Enterprise is extensive.

The scope of this Redpaper is limited to a general overview of the product. Also, it is important to note that only graphical access to this feature is available. No 5250 terminal character-based interface is offered for BRMS Enterprise.

Terminology

The following list includes a few new terms related to the BRMS Enterprise version:

- Enterprise hub (or hub)

  The *enterprise hub* is a central system that monitors BRMS backups for other BRMS systems called *enterprise nodes*.

  Requirement: The enterprise hub must be IBM i operating system release 7.1 or later.

- Enterprise node (or node)

  Enterprise nodes are BRMS systems that are monitored by an enterprise hub. Enterprise node properties are defined by and maintained on the hub. No enterprise-specific configuration is required on the nodes. However, for reports that are run on the node, remote writers must be configured. If the spooled files are being saved on the node, an output queue must be created.

  – Each node has an associated *node policy*. The node policy defines properties that can be shared between multiple nodes. Each node can reference the node policy for any of its properties.

  - *Node groups* enable an administrator to assign a name to a group of nodes. The node groups can be based on attributes the nodes have in common, such as owner, location, and time zone.

- Enterprise network

  The nodes that are monitored by the hub are called an *enterprise network*.

  The enterprise network can include BRMS stand-alone and BRMS networked systems. Communication is configured through each of the nodes in the enterprise network and is independent of traditional BRMS network configuration.

- Enterprise report definition (or report definition)

  Report definitions define how and when a report is generated for a node. The report definition can be run manually, or it can be scheduled to run at defined intervals.

  The output that is created by running a report definition is stored in a user-designated output queue on the hub. The output can also be stored in a user-designated output queue on the node and emailed to the contacts for the node.

  - Each report definition has an associated *report policy*. The policy defines properties that can be shared between multiple report definitions. Each report definition can reference the report policy for any of its properties.
  - When a report definition is run for a node, a report is generated, which produces *report output*. Each report identifies when the report definition was run, what report output was produced, and where the report output was stored. Report output can include multiple files.

- Enterprise contact (or contact)

  Contacts are users who are associated with the hub and nodes. The contacts get various notifications that include reports of errors that were encountered while generating reports.

The Start Recovery using BRMS (STRRCYRM), Start Maintenance for BRM (STRMNTBRM), Display Log for BRM (DSPLOGBRM), and Print Report using BRM (PRTRPTBRM) command reports have these characteristics:

- Manually run or scheduled
- Stored and viewed on the hub
- Optionally, stored on the node
- Email notifications for report errors
- Email reports

Also, the following items can be viewed from the central enterprise hub, rather than individually on each enterprise node:

- Status of backup control group processing
- Display and filter the BRMS log
- Connectivity status

Prerequisites

The hub and the nodes must all have current base licenses for IBM Backup, Recovery, and Media Services for i (5770BR1 *BASE for i 7.1, 5761BR1 *BASE for i 6.1, or 5769BR1 *BASE for i 5.4). The hub must also have current licenses for the BRMS - Network Feature (5770BR1 Option 1) and BRMS - Advanced Feature (5770BR1 Option 2) options.

The enterprise hub must be IBM i version 7.1 or later. The enterprise nodes can be running IBM i versions 7.1, 6.1, or 5.4.

The following PTFs must be applied to all the systems that will be part of the enterprise network:

- IBM i 7.1: SI50292
- IBM i 6.1: SI50291
- IBM i 5.4: SI50290

Tip: For 7.1 only, language-specific PTFs are applied for each secondary language on the system as a co-requisite.

All BRMS activity must stop while these PTFs are applied. In addition, users must sign off and on again before they use BRMS after the PTF is applied.

BRMS Enterprise is supported exclusively through the BRMS on IBM Navigator for i (web interface) or IBM System i® Navigator (GUI) release 7.1 and later.

Getting started

Before you start to use BRMS Enterprise, read this section, which describes the interface and its functions.

Accessing BRMS Enterprise through IBM Navigator for i

To access the BRMS Enterprise feature, complete these steps:

1. Ensure that the Admin HTTP server is running on the BRMS Enterprise hub system. If it is not started, issue the following command:

   ```
   STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
   ```

2. Open a Microsoft Internet Explorer or Mozilla Firefox browser window to this URL:

   ```
   http://<yoursystem>:2001
   ```

3. Sign in with your IBM i user profile, as shown in Figure 1.

Note: If you have difficulty accessing the Admin web page on your IBM i system, before performing any troubleshooting or contacting the IBM i Global Support Center, first end and restart the ADMIN server. The command to end is **`ENDTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)`**. The command to start is listed in Step 1.

Figure 1 IBM Navigator for i login

4. Expand the **IBM i Management** tree, select **Backup, Recovery and Media Services**, and click **Advanced**, as shown in Figure 2.

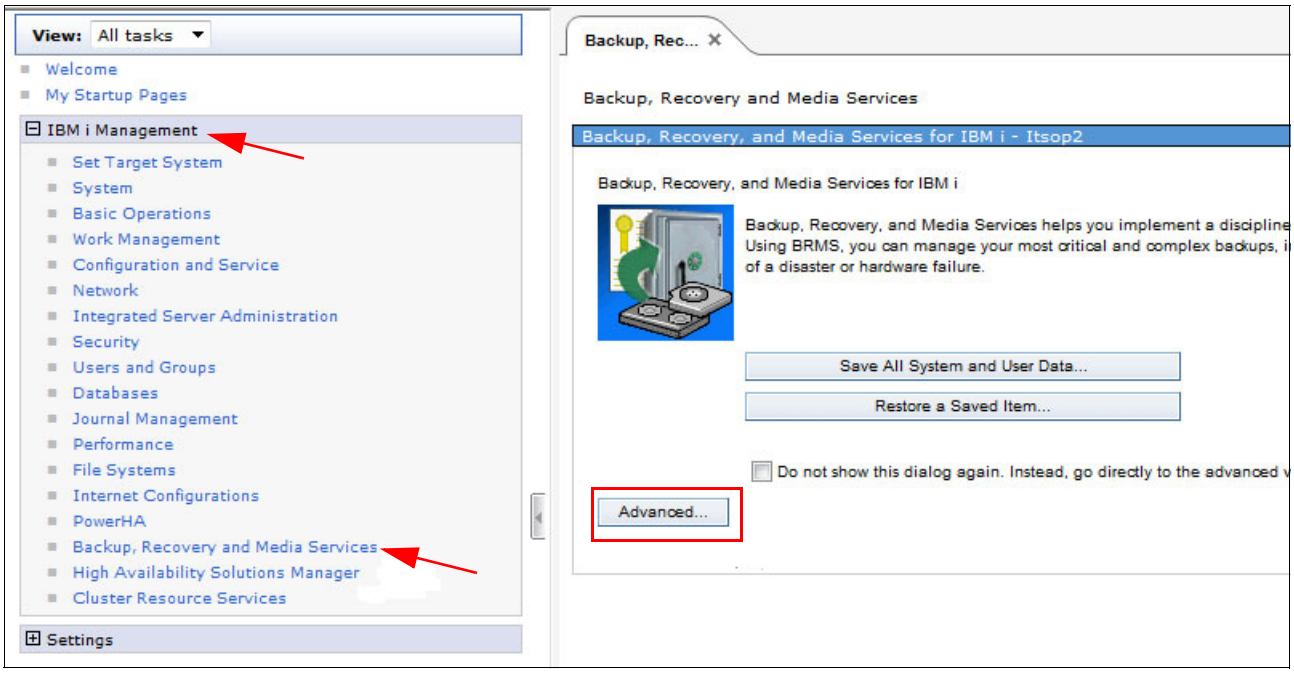

Figure 2 Locating the BRMS section in IBM Navigator for i

5. Select the **Enterprise Services** option that is listed under the main BRMS welcome panel. The icon that is used is the main **Backup, Recovery and Media Services for IBM i** icon with an E superimposed over it, as shown in Figure 3.

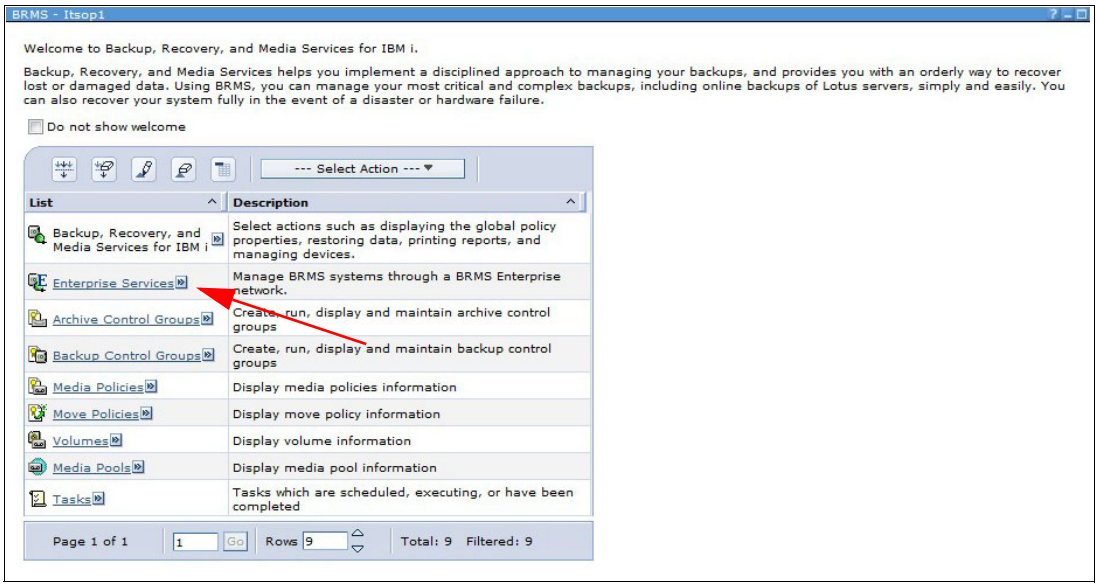

Figure 3 Location of Enterprise Services in the BRMS section of the IBM Navigator for i

Adding nodes

To add nodes, complete these steps:

1. Select **Enterprise Services**.
2. The Hub Center window displays the nodes that are in the enterprise network, as shown in Figure 4. At first, the enterprise network does not contain any nodes. Click **Add**.

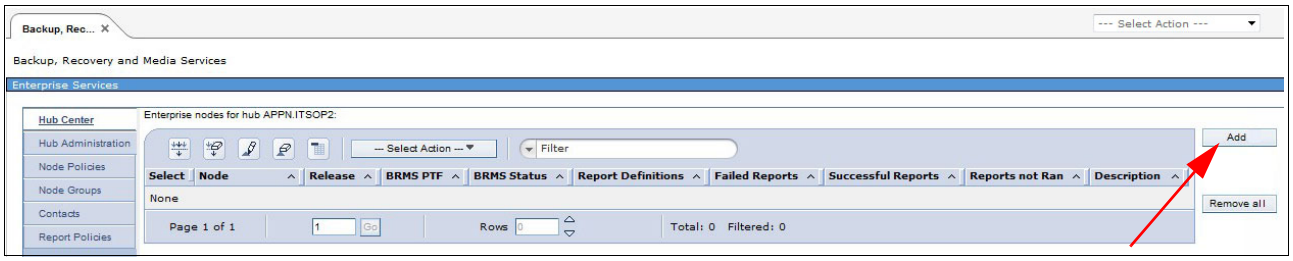

Figure 4 Adding a node

3. You can add nodes either individually or as a complete BRMS network, but your initial node must be added individually. Enter your network data and your DDM connection properties in the appropriate fields (Figure 5), and then click **OK**.

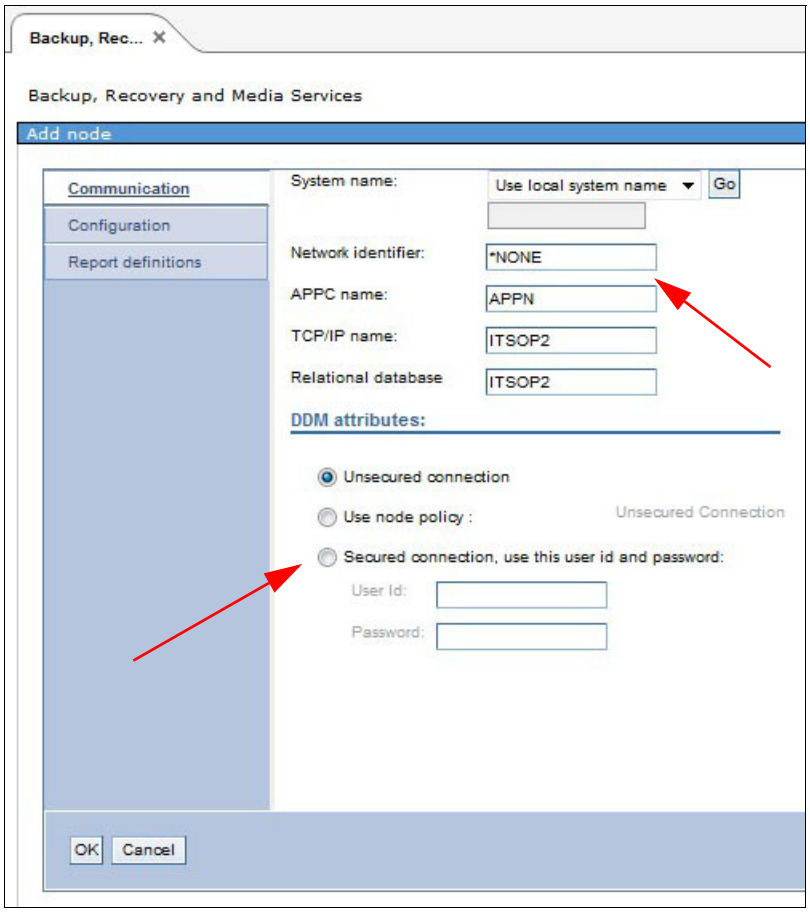

Figure 5 Add Node dialog window

Tip: To find the current values for network attributes of a system, use the Display Network Attributes command, **DSPNETA**, in a 5250 session.

4. Your initial node is displayed as shown in Figure 6. The node's release, BRMS group PTF, and the connection status are listed.

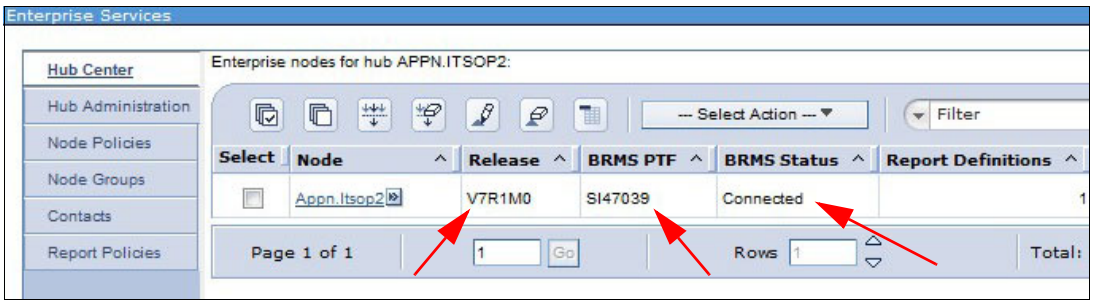

Figure 6 Initial node information

5. After a node exists in the enterprise network, the systems that are in that node's BRMS network can be added to the enterprise network. Right-click the node and select **Add all systems in the BRMS network**, as shown in Figure 7.

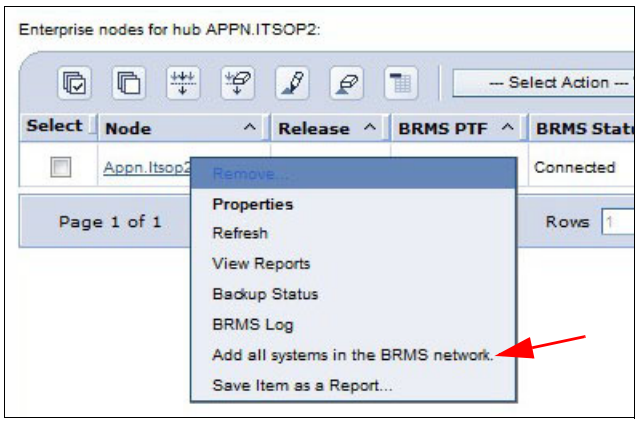

Figure 7 Adding all BRMS networked systems

6. Click **Yes** to confirm the added systems in the confirmation window shown in Figure 8.

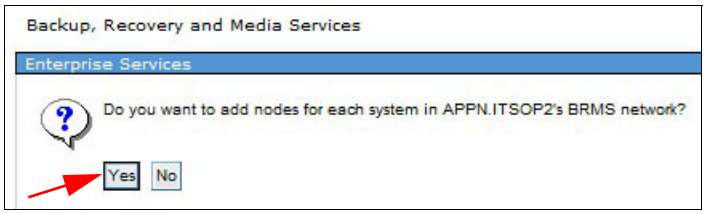

Figure 8 Add network confirmation

All of the BRMS systems that are networked with your initial node are automatically imported. At first, these systems show a BRMS status of "Not Connected." However, after the next BRMS network refresh, you will see a "Connected" status and other system details.

Node properties

To change node properties, click **Select Action**, and then select **Properties** for a node, as shown in Figure 9.

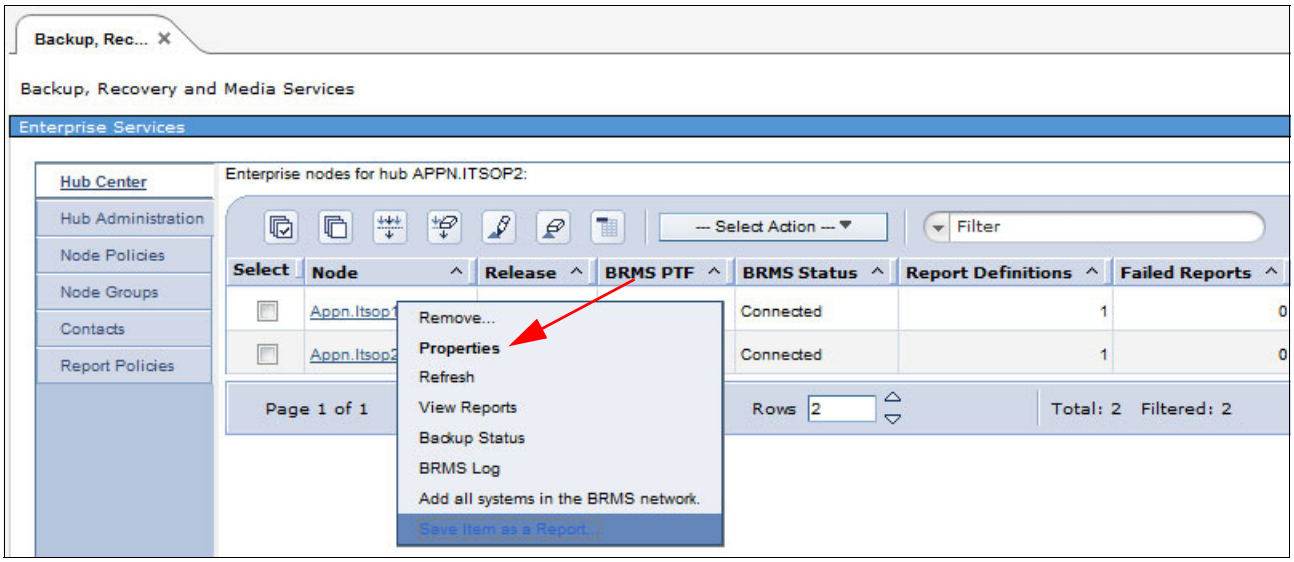

Figure 9 Selecting the node properties

The Node Properties window is displayed as shown in Figure 10.

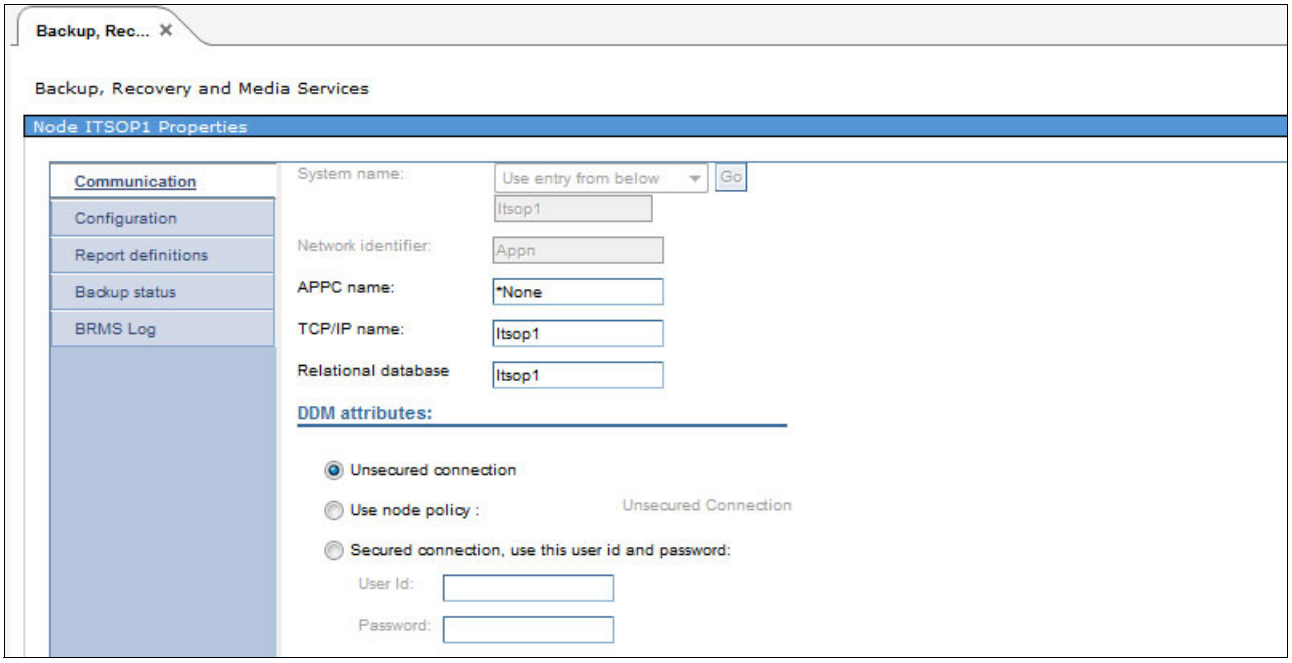

Figure 10 Node Properties window

The information that is presented on each tab is contained within the Node Properties window. This configuration is especially important to be aware of when using the “Report definitions” tab from this Node Properties window. When you add or edit properties on the “Report definitions” tab, click **OK**, and then click **OK** again on the Node Properties window to save your changes.

Communications

On the Node Properties window, you use the Communications tab (Figure 10 on page 7) to specify how to establish a connection with the node. BRMS does not use this information to set up communication or create the necessary systems configuration. BRMS expects that the communication setup has been done by the user. The information on the Communications tab indicates to BRMS what to use to establish the remote connection.

Report definitions

The report definition properties, shown in Figure 11, indicate what and when reports should be run on a node.

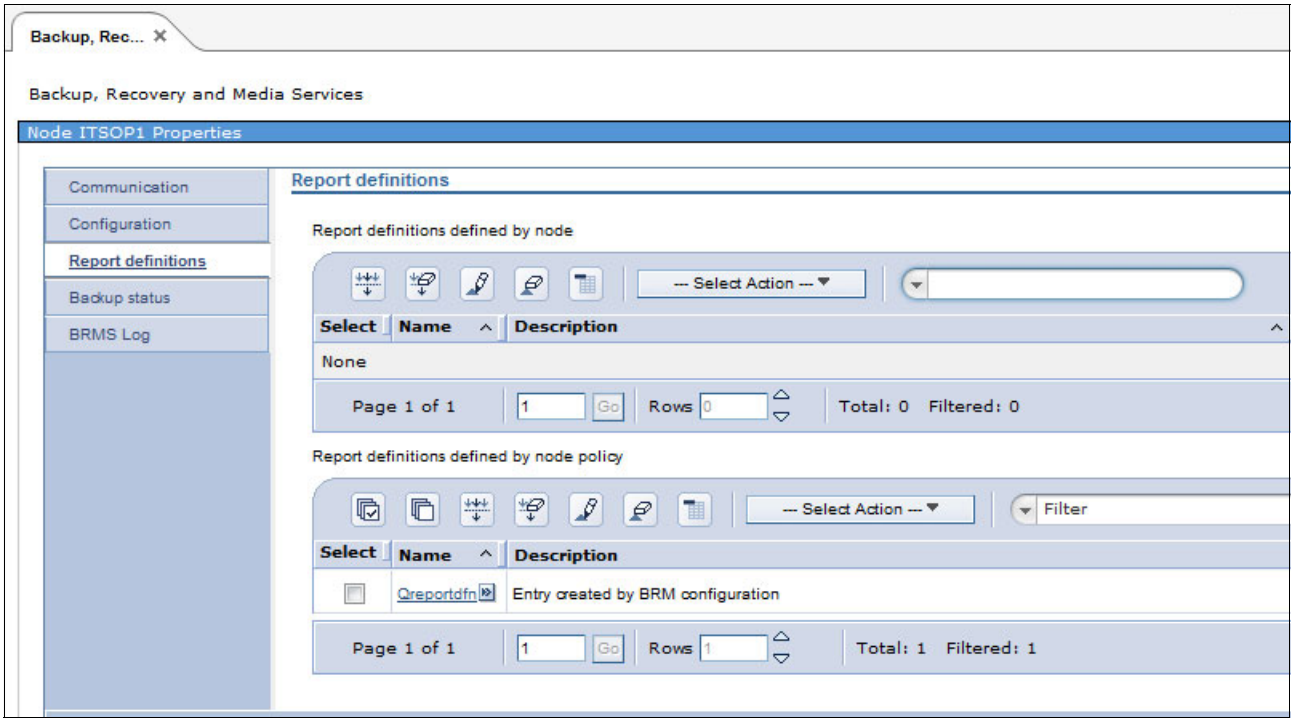

Figure 11 Report definitions

You can add new report definitions or edit existing definitions. Adding or changing report definition properties affects the next time that a report is scheduled to run.

You can specify the BRMS command to run for the report and the report frequency, as well as other runtime options, as shown in Figure 12.

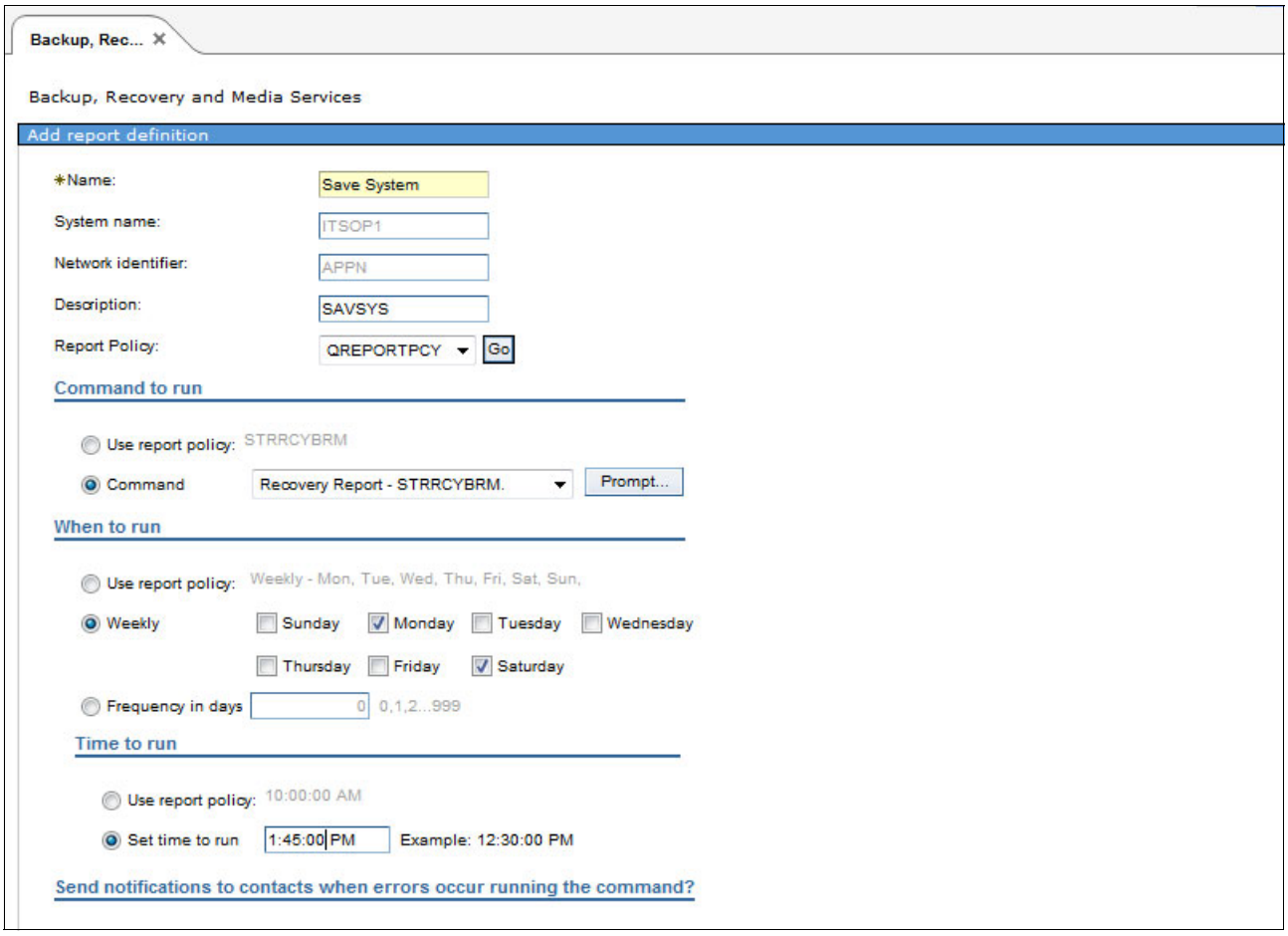

Figure 12 Report definition properties

If you select **Weekly** in the “When to run” field, the report runs at the next scheduled day and time.

For a report definition using a when-to-run attribute of “Frequency in days,” the report is run on the current day. If the scheduled time has passed, the report runs immediately. Otherwise, it runs at the scheduled time. The next run date is based on the current day and the frequency in days attribute.

Report policies

Although each report definition can have individual attributes on a node, you can use report policies to set default or group behavior for your report definitions. To get to your report policy, select **Report Policies** in the BRMS Enterprise main window, as shown in Figure 13.

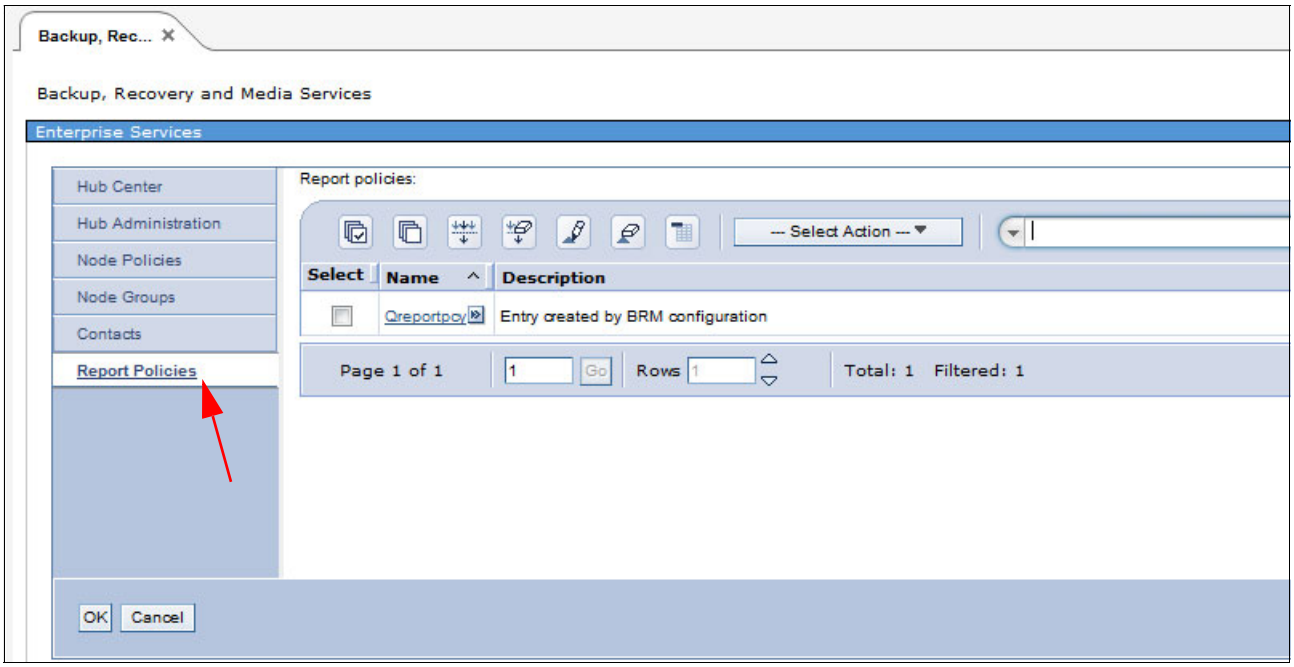

Figure 13 Report policies

You can either modify existing policies or create new policies. The BRMS default report policy is Qreportpcy. When you create your own policies, you can select and set your command options by using these BRMS commands:

STRRCYBRM	Start Recovery using BRMS
STRMNTBRM	Start Maintenance for BRM
DSPLOGBRM	Display Log for BRM
PRTRPTBRM	Print Report using BRM

You can also set your scheduling options, notification options, and the number of reports to save, as shown in Figure 14.

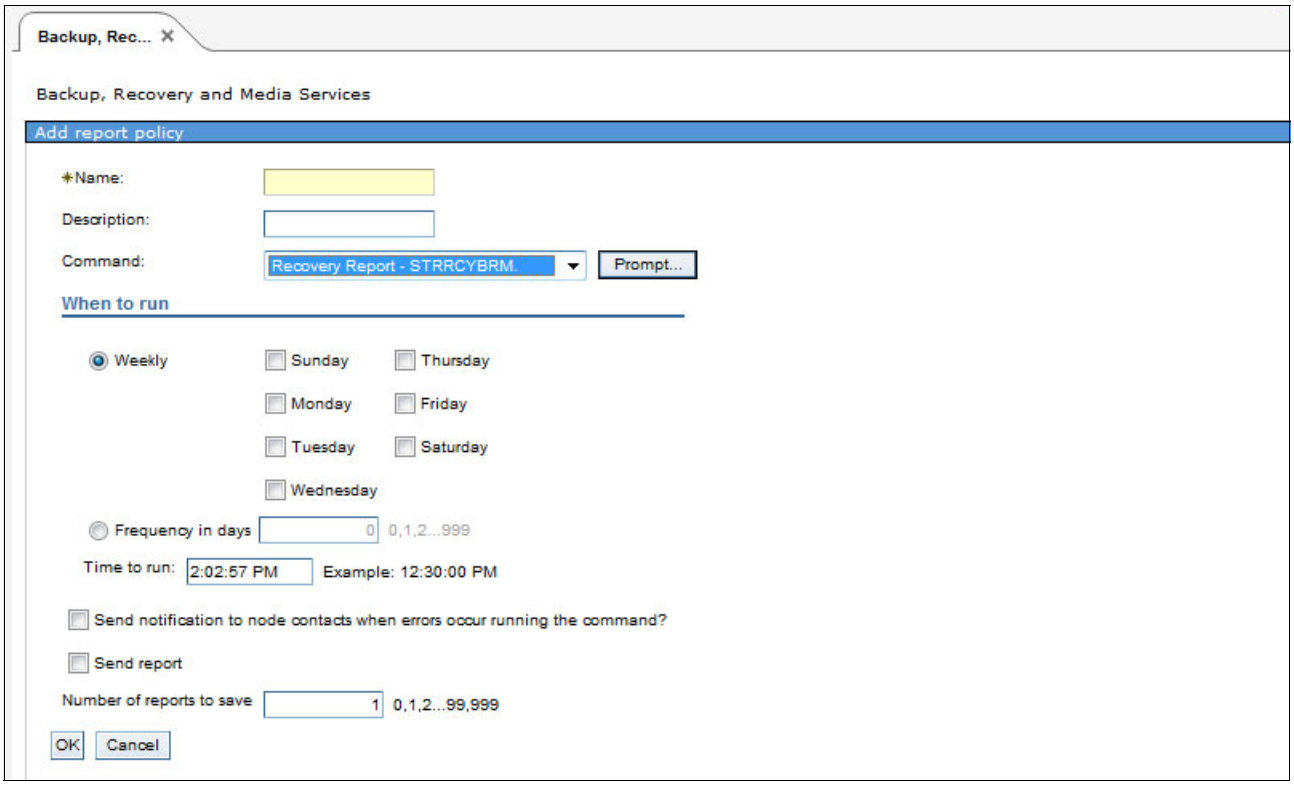

Figure 14 Report policy attributes

Contact information

On the Contacts tab, you can add and maintain contact information. Initially, there is no contact on the system. To add a contact, click **Add**, as shown in Figure 15.

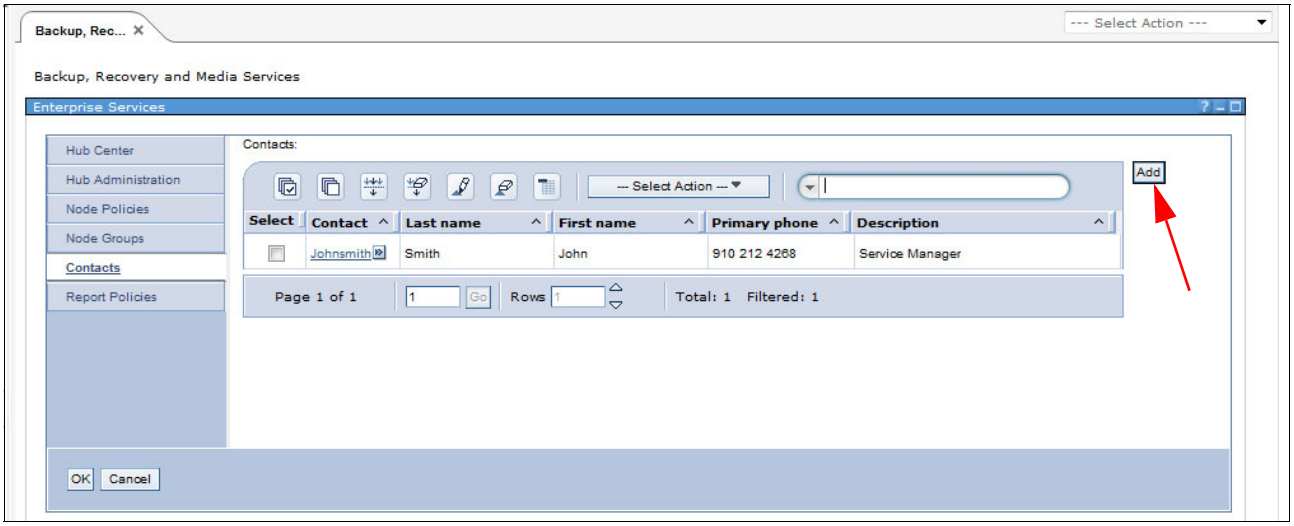

Figure 15 Adding a contact

For each contact, you can specify the information that is shown in Figure 16.

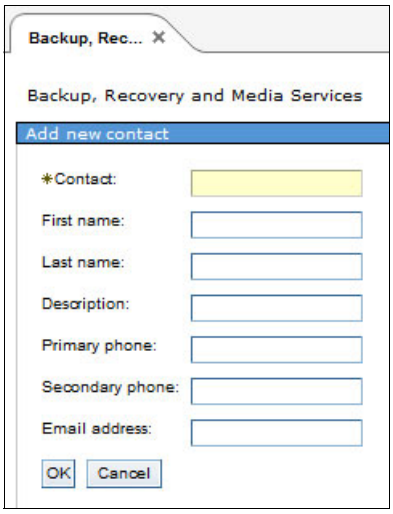

Figure 16 New contact details

The email address that you enter is used for SMTP notifications. If you have any SMTP trouble, see “Email configuration” on page 18.

Hub administration

The hub system has options that can be set by using the Hub Administration panel shown in Figure 17, such as contacts and default behavior.

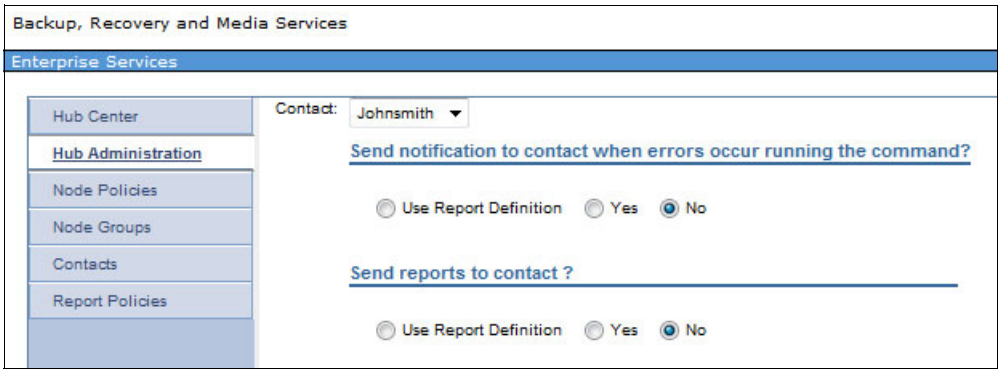

Figure 17 Hub Administration panel

Monitoring nodes

The main purpose of the BRMS Enterprise feature is to monitor the BRMS backups for the IBM i systems in a network. The backups can be monitored by using these methods:

- Hub Center
- Backup status
- BRMS log
- Reports

Hub Center

The Hub Center is the main BRMS Enterprise panel. The Hub Center helps you manage nodes from a central location. You can use it to view, at a glance, the BRMS release, BRMS PTF level, the BRMS connection status, indications of BRMS network health, and a summary of report statuses, as shown in Figure 18. The displayed nodes can be subsetted by using the standard table filter on any of the columns that are displayed in the table.

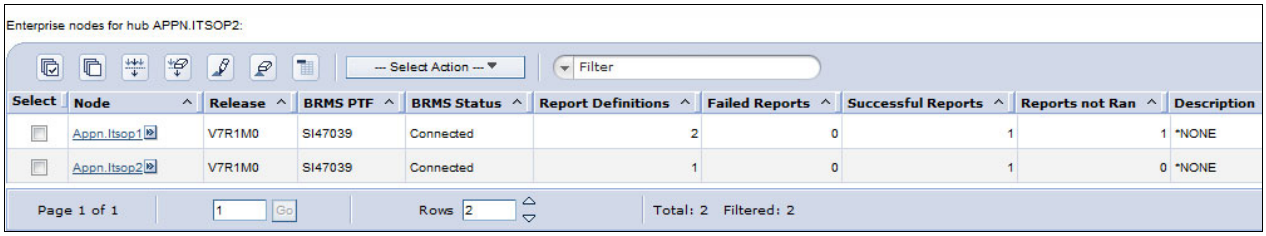

Figure 18 BRMS system health

The data in the Hub Center window reflects information collected the last time that a report definition was run on a node. To see the current node information, select **Refresh** on the node, as shown in Figure 19.

Note: In IBM i 7.1, an enhancement has been implemented that keeps the latest node system status up-to-date at the enterprise hub level. This results in a much faster refresh time than the previous need to query the node when a status update is requested.

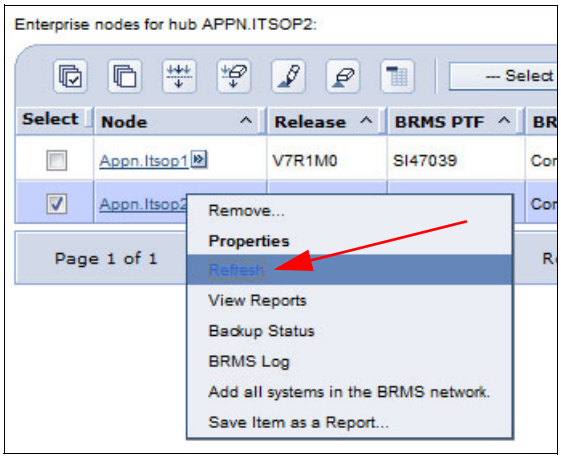

Figure 19 Refreshing system status

The Report Definitions column shows the number of report definitions that exist for the node. The Failed Reports, Successful Reports, and Reports Not Run columns reflect the most recent report status for the report definitions that are defined for the node. These columns indicate whether the last run of the report definition was successful, failed, or has not been run. The number of Failed Reports, Successful Reports, and Reports Not Run should equal the number of report definitions.

Backup status

Backup control groups are run through BRMS to back up data on IBM i systems. It is important to monitor control group backups to verify that they run properly. The BRMS Enterprise feature provides a Backup Status window for each node, which you can use to monitor control group backups.

You can view the backup status for nodes in the enterprise network by selecting the **Backup Status** option on the menu for the node, as shown in Figure 20, or by clicking the **Backup Status** tab on the Node Properties window shown in Figure 10 on page 7.

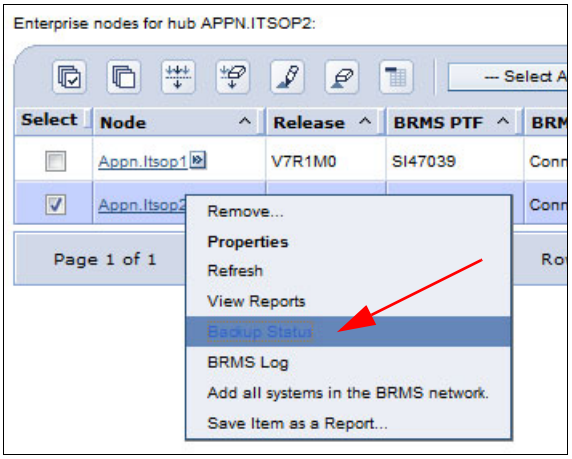

Figure 20 Selecting Backup Status from drop-down menu

The Backup Status window can be set up to display the control group run status, start time, end time, elapsed time, job information, number of objects saved, and amount of data saved, as shown in Figure 21.

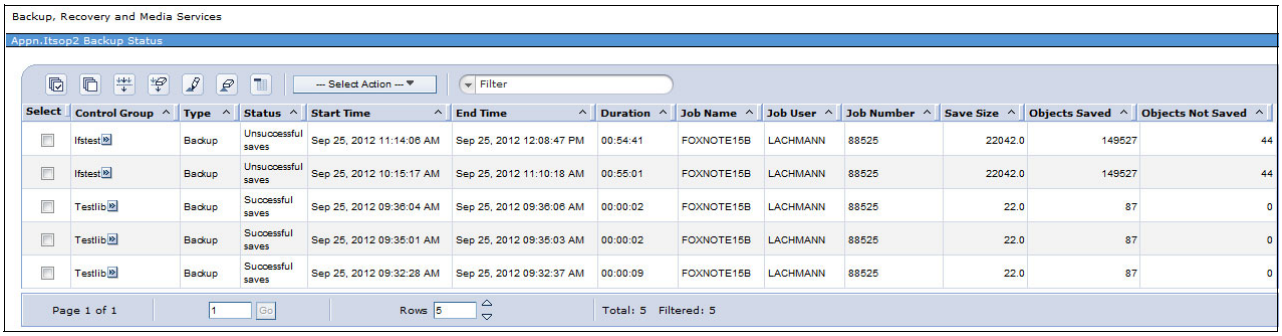

Figure 21 Backup status display

BRMS log

All BRMS activity can be monitored through the BRMS log. Filters can be used to subset the messages in the log. View the BRMS log for nodes in the enterprise network by selecting **BRMS Log** in the menu for the node, as shown in Figure 22. You can also click the **BRMS Log** tab on the Node Properties window as shown in Figure 10 on page 7.

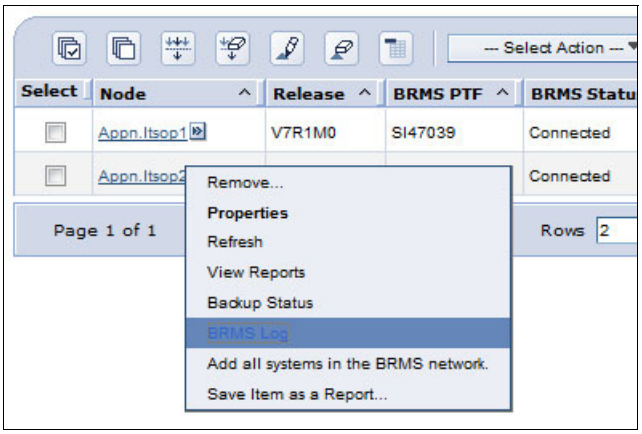

Figure 22 BRMS log access

You can use the BRMS log preselection window to preselect log entries as you would with the Display Log for BRMS command, **DSPLOGBRM**. The BRMS Log display gives you access to your usual BRMS messages, as shown in Figure 23.

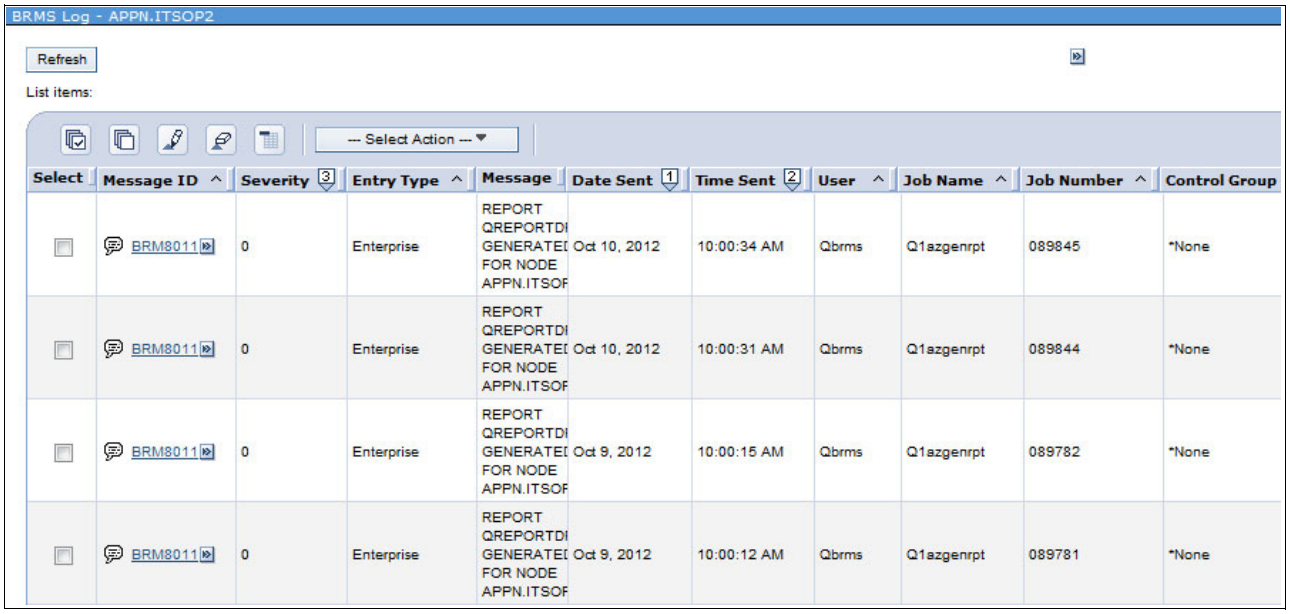

Figure 23 BRMS log display

Report definitions

The majority of reports within BRMS are created by using the following commands:

STRRCYBRM	Start recovery using BRM
STRMNTBRM	Start maintenance for BRM
DSPLOGBRM	Display log for BRM
PRTRPTBRM	Print report using BRM

These commands can also be run and managed by using BRMS Enterprise. The reports are defined by using report definitions. The report definitions can be run manually by selecting **Run report** on the Report Definition menu. You can also schedule them to run at intervals by selecting **Properties** on that menu.

To work with existing report definitions or to create new ones, right-click the node in the Hub Center, select **Node Properties**, and then click **Report Definitions** in the Node Properties window, as shown in Figure 24.

You can either add your own report definitions here or modify existing definitions.

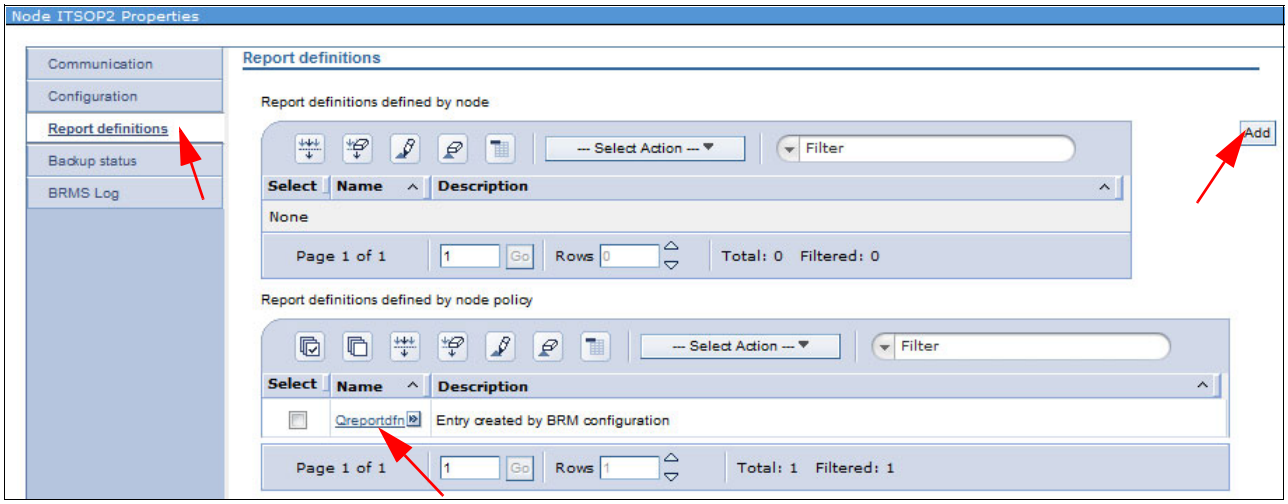

Figure 24 Report definitions

Reports

When report definitions are run, reports are generated. Reports contain information that identifies how, where, and when a report definition was run. Reports also identify what report output was generated.

All reports for a node can be viewed by right-clicking the node and selecting **View Reports**, as shown in Figure 25 on page 17.

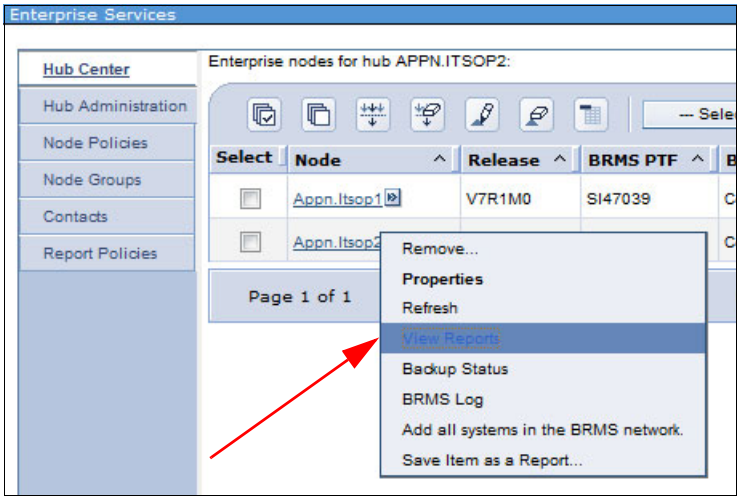

Figure 25 Selecting the View Reports option

A list of all reports that are available on the node that you selected is displayed. To see the reports for a specific time stamp, select the report as shown in Figure 26.

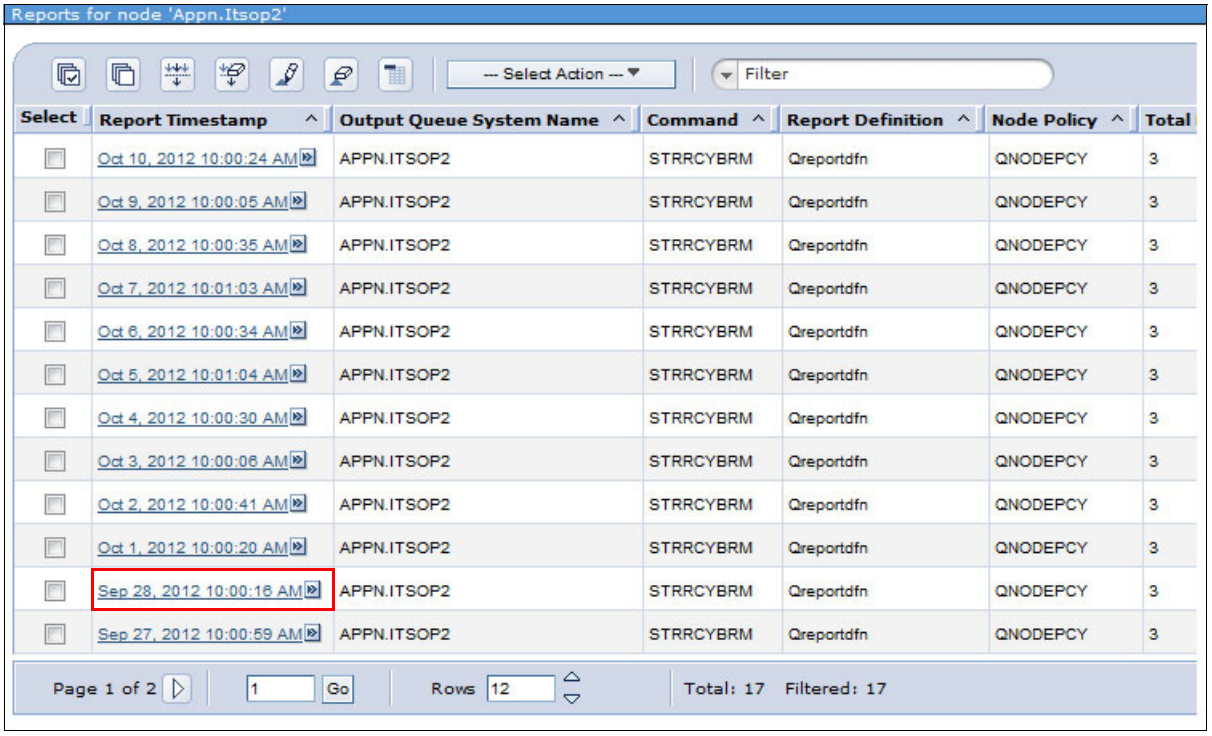

Figure 26 Selecting a time frame

You can also select a report to download as a PDF file.

To view the reports for a specific report definition, right-click the report definition and select **View reports**.

Report output

When report definitions are run, they produce reports. The reports identify the report output that was generated. The report output can be viewed by right-clicking the report and selecting the **View Report** option, as shown in Figure 27.

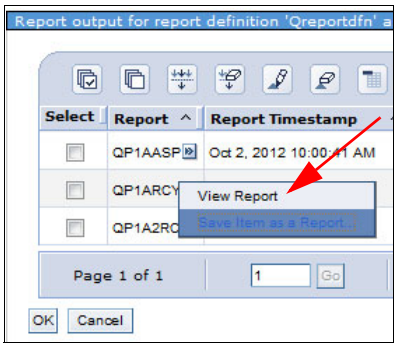

Figure 27 View report

BRMS Enterprise special considerations

Keep these tips in mind when you are working with the BRMS Enterprise feature.

Remote output queues and writers on nodes

The spooled files that are generated for a report on a node are stored in a remote output queue. The spooled files are then copied or moved to the hub by using a remote writer. The remote writer requires that a TCP/IP interface is configured in the operating system, an IP address on the printer side, and a line printer daemon (LPD) TCP/IP process running on the print server.

For more information about configuration for remote output queues and remote writers, see the IBM Technote titled *Configuring a RMTOUTQ to Send SPLFs from One IBM System i to Another Using LPR/LPD:*

`http://www.ibm.com/support/docview.wss?uid=nas1c7b1e076e7740a9c86256ab90057b4fd`

Email configuration

Email addresses can be specified for enterprise contacts. The contacts can be used to indicate where to send email for BRMS Enterprise functions. For example, reports or report error notifications can be sent to the contacts for a node.

BRMS uses TCP/IP SMTP to send email, you must configure SMTP for Enterprise email functions to work properly. For more information about SMTP configuration, see “Simple Mail Transfer Protocol on IBM i5/OS™” in the IBM i 7.1 section of the IBM Knowledge Center:

`http://ibm.co/1smh6ax`

TCP/IP SMTP needs a system directory entry for a user to send email. Because scheduled report definitions run in a BRMS job under user QBRMS, BRMS automatically adds a directory entry for QBRMS if one does not exist. If a report definition is run manually by clicking **Run report**, the user running the report must have a directory entry defined to successfully work with SMTP. For more information, see the Work with Directory Entries (**WRKDIRE**) command.

Run the following command to check whether SMTP is working correctly:

```
SNDDST TYPE(*LMSG) TOINTNET((memyself@my.company.com)) DSTD('SMTP test')
LONGMSG('SMTP test')
```

Time zone considerations

The dates and times that are used for scheduled activities that are initiated through the hub, such as report definition run times, are relative to the hub. For example, if the hub is in the Central Standard Time (CST) time zone and has a report definition run time that is defined as 06:00, the report definition runs on the node at 06:00AM CST, regardless of the time zone of the node.

Authors

This paper was produced by a team of specialists from around the world working at the IBM International Technical Support Organization, Rochester Center.

Justin C. Haase is a technical manager for Sirius Computer Solutions, an IBM Business Partner headquartered in San Antonio, Texas, in the US. He works in the Managed Services practice of the company, where Sirius provides system management and technical support for customers running various platforms, including IBM i software running on IBM Power Systems™. He has 15 years of experience in service bureau and hosting environments that run the IBM i family of operating systems, with his first managed system being a 9406-740 12-way IBM AS/400e™ at V4R5 of the OS, which was the largest IBM AS/400® machine that IBM produced at the time. He has also assisted IBM in development of Power Systems certification tests as a subject matter expert.

Axel Lachmann is a freelance systems architect at FoxCom, an IBM Business Partner in Germany. He has 18 years of experience in the IBM OS/400®, IBM i5/OS, and IBM i fields and more than 10 years of experience writing for IBM Redbooks® publications. He holds multiple IBM technical certifications. His areas of expertise include system design, performance analysis, BRMS, IBM WebSphere® on IBM i, and logical partitions (LPARs). Axel also teaches technical and certification courses for IBM Learning Services in Germany, UK, and Scandinavia. You can reach him by email at alachmann@foxcom.de.

Thanks to the following people for their contributions to this project:

Hernando Bedoya
Debbie Landon
Linda Robinson
IBM International Technical Support Organization, Poughkeepsie Center

David Bhaskaran
IBM Rochester

MJ Thompson
IBM Rochester

Now you can become a published author, too

Here's an opportunity to spotlight your skills, grow your career, and become a published author—all at the same time. Join an ITSO residency project and help write a book in your area of expertise, while honing your experience using leading-edge technologies. Your efforts will help to increase product acceptance and customer satisfaction, as you expand your network of technical contacts and relationships. Residencies run from two to six weeks in length, and you can participate either in person or as a remote resident working from your home base.

Find out more about the residency program, browse the residency index, and apply online:

ibm.com/redbooks/residencies.html

Stay connected to IBM Redbooks

- Find us on Facebook:

  http://www.facebook.com/IBMRedbooks
- Follow us on Twitter:

  http://twitter.com/ibmredbooks
- Look for us on LinkedIn:

  http://www.linkedin.com/groups?home=&gid=2130806
- Explore new Redbooks publications, residencies, and workshops with the IBM Redbooks weekly newsletter:

  https://www.redbooks.ibm.com/Redbooks.nsf/subscribe?OpenForm
- Stay current on recent Redbooks publications with RSS feeds:

  http://www.redbooks.ibm.com/rss.html

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 grant 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.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: 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.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

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.

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 the names and addresses used by an actual business enterprise 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.

This document REDP-4926-01 was created or updated on October 20, 2014.

Send us your comments in one of the following ways:

- Use the **Contact us** form:

  ibm.com/redbooks

- Send comments by email:

  redbooks@us.ibm.com

- Mail your comments:

  IBM Corporation, International Technical Support Organization
  Dept. HYTD Mail Station P099
  2455 South Road
  Poughkeepsie, NY 12601-5400 U.S.A.

Trademarks